



Roswell Pits and Ely Cathedral

W. H. Palmer

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EDITORIAL

It will be noticed that the Annual Report section in this Journal has been considerably shortened this year, and that the reports from individual committees no longer appear. The inclusion of these in the past nearly always led to some unavoidable overlapping in their contents and, in addition, by no means all members found them of sufficient interest. We are, however, publishing these separately.

It has been a year of steady progress, and the Trust continues to grow in a most satisfactory manner. Not only has our membership practically reached 3000, but the total acreage of our reserves is now approaching 1000.

SIXTEENTH ANNUAL REPORT 1972

The Trust has completed a year of considerable growth. Its two main activities, the increase of its membership and of its area of reserves, have both prospered, as has been referred to in the Editorial. Other important activities have not been neglected: education, publicity, recording, management and liaison with other organisations have continued to employ many of the Trust's members. It is no exaggeration to affirm that the Trust is now accepted as an important and permanent body in all matters of the countryside, its advice being constantly sought by individuals and official organisations alike in matters of wildlife conservation, recreation, rural amenity and so on. Some acknowledgement of this was made during the year by the payment of a modest financial grant by the County Council to the Trust for the first time, in addition to the usual help given in return for the facilities enjoyed at our reserves by schools.

There are now 25 reserves under the Trust's management. New sites added during the year include Overhall Grove at Knapwell, a further area at Roswell Pits, Soham Green Hills, and the little meadow at Chettisham, near Ely, where *Orchis morio* grows. Negotiations for several further reserves are in an advanced state. Additional land was also acquired in the Ouse Washes, and further substantial grants were made by the World Wildlife Fund (International) and the Minet Trust to help with land purchase and management there. Much management work at our other reserves has been carried out at the instigation of local committees, and the Trust is greatly indebted to the Cambridge Conservation Corps for an enormous amount of practical work carried out under the leadership of Jo Burgon and Camilla Huxley. Our gratitude is especially due to the former for his enthusiasm and hard work, which have been largely respon-

sible for the rapid expansion of the Corps. Our contacts and relationship with the farming world have steadily improved, though much further work in that direction remains to be done.

The retirement of Mr C. Spode as Honorary Treasurer was a sad blow, but we are very grateful for all the hard work he carried out for the Trust over a number of years. He continues as a member of Council. He has been succeeded by Mr B. Routledge, who has rapidly familiarised himself with our rather complicated finances. Mrs H. While, who also did much useful work for the Trust, has had to resign from the Secretaryship of the Isle of Ely Committee on leaving the area. Her place has been taken by Mr D. Howat of Wisbech.

To deal with the increasing amount of administrative work in the office, Mrs Morley has been made Assistant Secretary, and is now working twice her former weekly hours. But it must never be forgotten what an enormous debt the Trust owes to its numerous voluntary helpers, whether in the field, the office or on our various committees; they are indispensable to its well-being.

TREASURER'S REPORT

The detailed accounts for 1972 are printed separately from this report. It will be seen that the financial position of the Trust at the end of the year was most satisfactory. Despite the doubling of the subscription rates, the membership fall-out has been small and there has been a steady increase in the number of members throughout the year. This, together with the fact that the sales turnover has exceeded £2000, has made it possible for the Trust to increase its administrative staff, an essential move in the efficient running of this rapidly growing concern.

The Trust now has available a useful balance for the purchase of land, together with the residue from the Ouse Washes Appeal. But this must not be an excuse for complacency, as land prices (especially in known conservation areas) are rising rapidly, and the Trust will be faced with increased management costs, an item which has so far been relatively small.

NATIONAL TRUST

EXTRACTS FROM THE REPORT OF THE WICKEN FEN LOCAL COMMITTEE

Report for 1971-72

A small party of Royal Engineers from the Airfields unit at Waterbeach carried out various works on the Charles Raven Marshland Reserve during the summer of 1971. The major item was the construction of a large pond and scrape area in the S.E. corner, and in addition two valuable ditches were dug. One product of the visit was a spoil mound near the N.E. corner of the Mere. This provides a good view of this end of the Mere, and it is intended to erect a hide here and to clear some of the vegetation between it and the open water.

Progress on the development of the Demonstration Garden near the William Thorpe Building has continued, and the beds have now been planted.

Visitors

During 1971, 17,151 people visited the Fen compared with 15,932 during the previous year. It is thought that only some 70% of the visitors bother to sign the book, and the total number of visitors might well be over 24,000.

Publications

A new guide by Dr J. Smart on Butterflies went to the printer during the year.

Zoological Secretary's Report

Dr J. P. Dempster of Monk's Wood has sent the following report on his work on the Swallowtail during 1971: 'A study of the population ecology of *Papilio machaon* L. was begun in 1971 on the Bure Marshes in Norfolk and at Wicken Fen. The aim of the work at Wicken is to investigate the requirements of the butterfly so as to improve the chance of establishing it on the Fen. The first year's results indicate that the survival of introduced eggs is no worse at Wicken than on the Bure Marshes, where the butterfly thrives, (i.e. through the larval stage to pupation). This suggests that any factor limiting success at Wicken probably acts in the pupal or adult stages.

Stocks of *P. machaon* are being built up at Monk's Wood, and by Mr H. G. Short in Esher, in the hope of making another introduction at Wicken in 1973 or 1974.'

Bird-Ringing Report

During the six months between 2 April to 16 October the 35 members of the Wicken Fen Ringing Group ringed 4308 birds of 54 different species. The major scores were Swallow (841), Reed Warbler (519), Sedge Warbler (328) and Reed Bunting (325). Interesting species ringed in small numbers were Water Rail (1), Woodcock (1), Long-eared Owl (1), Redstart (1), Nightingale (2), Yellow Wagtail (1), Lesser Spotted Woodpecker (1), Great Reed Warbler (1), and Coal Tit (4). The last two species are additions to the list of birds recorded at Wicken. Eight birds ringed elsewhere (Isle of Man, Herts, Somerset, and other parts of Cambs.) were trapped at Wicken during the year. In addition, 14 birds ringed at Wicken were recovered abroad—Germany (Blackbird, Brambling), France (Redpoll), Spain (Redwing) and Morocco (Whitethroat).

Botanical Secretary's Report

Dr H. L. K. Whitehouse has sent the following report on the bryophyte flora of the Fen: 'Altogether 86 species of bryophytes (72 mosses and 14 liverworts) have now been recorded from the Fen. There have been 33 additions to the list since 1963, when J. M. Lock first discovered calcifuge bryophytes in the fen carr near the brickpits. The total number of terrestrial calcifuge species seen on the Fen is now 29, the latest addition being *Pellia epiphylla*, found by Dr D. E. Coombe in January 1972. All but three of these calcifuge plants were first seen in 1963 or later, and it is believed that they arrived at Wicken by natural spore dispersal, the spore output of the capsules of these mosses being very high.

In January 1972 Dr Whitehouse and Dr Coombe independently discovered a patch of *Hookeria lucens* about a yard across in the carr near the brickpits. This species had not been re-found since J. M. Lock discovered two very small patches there in 1963. Wire has now been placed round the colony to avoid accidental damage. This moss has only been recorded in two other localities in East Anglia. The maintenance of these calcifuge bryophytes in the brickpits area and elsewhere on the Fen would seem to require the water-table to be kept reasonably high, but not unduly so. Direct access of the calcareous water in the dykes would be fatal, and it must be essential for water to reach the areas in question by seepage through the peat.

The floating liverwort *Ricciocarpus natans* was abundant in the dyke by the brickpits in the summer of 1971. It was first recorded by T. M. Harris in 1928, but its appearance since then has been erratic, as is usual with this species. This may be related to uncertain winter survival, which is believed to occur at the bottom of the water.

CAMBRIDGE NATURAL HISTORY SOCIETY

President: Dr J. E. Treherne

Report for 1972

At the six General Meetings held in the Lent and Michaelmas terms the following lectures were given:

14 January	Dr Findlay E. Russell	Venomous Animals and their Toxins (with film)
21 January	Prof. E. J. H. Corner, F.R.S.	Moments Botaniques
25 February	Prof. Sir V. B. Wigglesworth, F.R.S.	Pure Science and Applied Biology
13 October	Dr S. M. Walters	The Endemic Flora Europe
10 November	Prof. Ivor H. Mills	Competition and the Biology of Affluence
24 November	Dr Martin Rudwick	The History of Natural History

The Zoological, Entomological, Geological, Botanical and Cell Biology sections each held at least six meetings during the season. A successful *Conversazione* was held in the University Zoological Department on 10 March, and the Annual General Meeting was held, as usual, on the same day. Members of the Trust are entitled to attend the Society's General meetings, which are held in the main Lecture Room of the Zoological Department in Downing Street. Likewise, Members of the N.H.S. may attend the Summer excursions organised by the Trust.

Subscriptions: Life Membership: £5, Annual: 50p, Members of Homerton and Hughes Hall (annual): 25p. Undergraduates (3 years): £1.25 Corporate Membership (for schools etc.): £2

Applications to: Mr I. Hepburn, 8 Millington Road, CB3 9HP

(City Secretary)

Mr N. M. Heath, St Catharine's College

(University Secretary)

FIELD MEETINGS IN 1972

Sunday, 13 February, Welches Dam Washes

For the first meeting of the season some 50 members paid a very enjoyable and instructive visit to the Trust's new hide near Coveney, on the Ely side of the New Bedford River. It was a perfect afternoon and the light on the flooded washland could not have been better, enabling the party to get a

splendid view of a wide range of wildfowl. With the light coming from behind and the exceptionally clear conditions, the birds, for once, looked just like the illustrations in a bird-book and identification was much easier than usual.

There were, of course, many Wigeon and Mallard, with smaller numbers of Teal, Shoveler and Pintail. The majority of the Swans were situated lower down the Washes, but there were a few Bewick's, distinguishable by their straight necks and smaller size from the larger and more relaxed Mutes. Two Short-eared Owls flew past one of the parties, and a Kingfisher was observed briefly before it flew away.

It was possible to see considerable numbers of watchers visiting the old hide across the water at Welches Dam, but despite all this activity on both sides of the water, the birds took little notice. The constant flighting of small parties of duck up and down the flooded Washes, sometimes high against the clouds and at other times just skimming the water, was a fascinating sight. Only the experts, however, were able to be certain of identifying these birds on the wing.

Sunday, 14 May, Fleam Dyke

This excursion took place too early in the year for the chalk grassland vegetation to be seen at its best, and the 25-30 members present were able to see only a hint of the feast of colour to come later. There were multi-coloured Milkworts in profusion, but only occasional glimpses of the golden gleam of Rockrose, Bird's-foot Trefoil and Horse-shoe Vetch. Cowslips were still plentiful, particularly in the shade of the rapidly encroaching bushes.

Most of the rarities of this area were seen to be surviving in their long-established stations. The Juniper bushes seem to change little, year by year, although several are heavily screened by hawthorns. Field Fleawort (*Senecio integrifolius*) in its early stages was seen dotted here and there beside the path, and sharper eyes detected a few leaves of the local Lesser Meadow-Rue (*Thalictrum minus*) as well as two small patches of the rare sedge, *Carex ericetorum*.

Many of the party would have been content to remain in the wide bushy area where members had assembled. Here Nightingales were singing continuously throughout the afternoon, accompanied by a chorus of Willow-warblers, Blackcaps, Whitethroats, Chiff-chaffs and Corn Buntings, as well as all the more familiar garden birds.

Sunday, 28 May, Ouse Washes Reserves

The combination of a cold, windy and somewhat rainy day and the fact that it was during the Spring holiday period kept the number of members low. The 15 or so who came were rewarded with some very exciting bird-

watching. Thanks to the generous facilities provided by Mr Jeremy Sorensen, the R.S.P.B.'s Warden at Purl's Bridge, half the party were taken by boat to remoter parts of the reserve and were able to view the birds in comfort from the public hides.

Despite the weather, there was great activity among the birds, several species being observed with young. The rare Black-tailed Godwit was much in evidence, and the still rarer Reeve was also seen. According to Mr Sorensen, it had been a particularly successful breeding season for the former, but less so for the latter. In addition, Yellow Wagtails, Shovelers, Ringed Plovers, Gadwalls, and Reed and Sedge Warblers were seen. The call of the Redshanks was constantly heard during the afternoon.

Saturday, 24 June, Worts Causeway Beechwood, Roman Road and Wandlebury

This excursion offered ample opportunity for demonstrating the problems of nature conservation in areas which are also public open spaces extensively used for recreation. The Trust's new Beechwood reserve was explored with this conflict of interests very much in mind. It was satisfactory to see good populations of the White Helleborine and of the two interesting Hawkweed species characteristic of this area, but the squalor of litter, and the wear and tear caused by excessive traffic was all too obvious.

The same considerations applied to the short length of the Roman Road traversed by the party, where it seems that the Spring Cinquefoil has now finally disappeared. All the same, many interesting plants survive such as the Perennial Flax, the Purple Milk-vetch and the Tall Broomrape, parasitic on the roots of the Greater Knapweed, and many characteristic chalk plants like Rockrose and Thyme.

In the beechwoods leading to Wandlebury some large bushes of Deadly Nightshade, flowering freely but without any ripe fruits, were observed. Also plentiful was the Least Lettuce, though the interesting lesser Broomrape, which is sometimes parasitic on the roots of this lettuce, was not seen this year.

Mr John Faulkner proved an admirable guide, and was most helpful in identifying members' botanical finds.

Sunday, 23 July, Chippenham Fen

A visit to this highly interesting reserve was long overdue, and the 30 odd members who came on the expedition spent a most enjoyable afternoon. They were fortunate in having Mr Peter Wright of the Nature Conservancy to explain the history of the area, and to conduct the party to the most rewarding spots. The botanists had a feast of interesting plants to observe.

Particularly impressive was the fine display of orchids, especially the Marsh Helleborine (*Epipactis palustris*) and the Fragrant Orchid (*Gymnadenia conopsea*). Many plants of the local rarity, *Selinum carvifolia*, sometimes called the 'Cambridge Parsley', were seen but none of them were yet in flower. Similarly, specimens of the rare Saw-wort (*Serratula tinctoria*) were found not yet in flower. On the other hand, plants of Columbine (*Aquilegia vulgaris*), seen along the edge of one of the rides, were already in seed. It was good to see the abundance of such species as the tall sedge (*Cladium mariscus*) and the Bog Rush (*Schoenus nigricans*), which are rare in most other parts of the county.

The Fen is also a classic area for lepidoptera, and the party was lucky to have Mr B. O. C. Gardiner with them. He was able to show them a number of local specialities such as the Silver-Bar Moth, the Black-neck and the Narrow-winged Pearl Moth.

The whole party enjoyed their ramble through this attractive reserve, consisting of open fenland, woodland and wet meadows, and the pleasantly warm weather fortunately did not produce a plague of flies.

Sunday, 19 August, River Excursion to Ely

Some 45 members boarded the 'Viscountess Bury' at Victoria Bridge in bright sunshine and enjoyed the 3-hour trip to Ely under ideal conditions. Kestrels, Herons, Plovers, a Canada Goose and riverside plants were observed on the way, cattle and horses grazing on the banks giving an atmosphere of rural peacefulness. It was interesting to identify, with the aid of a map, the various lodes leading across to the eastern edge of the Fens.

On arrival at Ely a short walk to the start of the nature trail at Springhead Lane to meet our guides and some local members was a pleasant change from the boat. During a circular walk round our new reserve at Roswell Pits and back across the meadows to the Maltings there were attractive views across the water, with the cathedral in the distance. Among the water plants, the uncommon Giant Horsetail (*Equisetum telmateia*) was much in evidence. The party followed a section of the proposed nature trail extension, which is to be laid out as a joint project by the Ely Urban District Council and the Trust. The route runs through an area rich in various kinds of wildlife—the party saw Kingfishers, Great Crested Grebes and a large number of Swifts and Sand-martins beginning to assemble before migration.

The chalk grassland round the small pit was full of colour, and numerous grasshoppers were chased by the youngest members of the party without success. The surprise of the afternoon was the discovery of a Juniper bush on a chalky mound, but all traces of the earlier-flowering Bee Orchid had

disappeared. The pits show a whole range of development from new excavation to maturity, and together form a most attractive reserve. The Trust is most grateful to the Great Ouse River Authority and its tenants, the Ely Sailing Club and the Angling Club of the B.S.C.'s factory, for access to this area away from the public footpaths.

A happy climax to the afternoon was provided by a magnificent tea prepared and served in the Maltings by Ely members and their wives, for which the visitors were most grateful. After this the boat party made a leisurely return to Cambridge, arriving about sunset.

Saturday, 7 October, Fungus Foray at the Lodge, Sandy

Some 30 members travelled by coach and as many more by car to visit the beautiful grounds of the R.S.P.B. headquarters. It was a beautifully warm afternoon, and despite the exceptionally long spell of dry weather the leader, Professor Corner, was kept busy identifying many different species, some of which had been discovered by the children present.

Not surprisingly, most of the fungi were in a parched state, and even the non-poisonous ones looked far from edible. Tree-stumps, bracken and, in the case of the Shaggy Parasol (*Lepiota rhacodes*), dry grass yielded a mixture of colourful and both sweet and unpleasant smelling species. We heard that *Fistulina hepatica*, less appetising than its common name of 'Poor man's beefsteak' suggests, could tap water from its host oak-tree. Others must have penetrated deeply for moisture, but what nourished the Earth-balls in burnt-up turf remained a mystery.

Allowing for the fact that mycological nomenclature is not always uniform, it would appear that one or two new species or sub-species, not present among the 197 fungi listed by the surveyors of the Reserve between 1961 and 1972, were observed e.g. *Polyporus squamosus*.

The outing was rounded off by a visit to the lakeside hide, the Warden kindly providing ornithological information. There were too many people for good bird-watching, but Crossbills were observed in the distance and a Kestrel or two. Altogether a very pleasant afternoon, thanks to the expert guidance of Professor Corner and the Warden.

A NOTE ON COMPARATIVE INVERTEBRATE SURVEY: THE SPIDER FAUNAS OF WICKEN AND WOODWALTON FENS

Eric Duffey

The Nature Conservancy, Monks Wood Experimental Station

Assessments of the scientific importance of ecologically similar sites are often required in conservation work and usually made on the basis of vegetation types, floristics and vertebrate animals, especially birds. Similar comparative studies using invertebrate groups are much more difficult, partly because specialists are few in relation to the larger numbers of botanists and ornithologists, and partly because extensive and repeated sampling may be necessary to obtain sufficient data. Nevertheless in spite of these disadvantages the importance of invertebrate faunas cannot be ignored and attempts must be made to improve methods of comparative survey.

The following account compares the spider faunas of two famous fenland nature reserves, Wicken Fen in Cambridgeshire and Woodwalton Fen in Huntingdonshire. Both are exceptional sites, having been studied by biologists for many years so that extensive information is available on their history, fauna and flora. For example arachnologists have visited Wicken Fen since about 1860 (Bristowe 1938), although nearly all the work done at Woodwalton Fen dates from after 1945. Both areas are particularly valuable to the zoologist interested in fen faunas because they serve as a standard against which the numerous other, but less well-known, East Anglian Fens may be compared.

These different histories are probably responsible for the longer species list of spiders recorded for Wicken, 203 (Duffey 1970) compared with 148 for Woodwalton, with 110 (45.6%) shared by both. Comparisons based on species lists are frequently made in zoological survey but may be very misleading, even in the case of such well-worked sites as these two fens. The Wicken list is derived from collections made over a period of 100 years, during which time the habitat conditions have almost certainly changed, so that some species, not recorded for many years, may be extinct and the status of others altered. The Woodwalton list is less complete but on the other hand is probably a better reflection of the fauna as it is today.

In the absence of information on the methods and duration of collecting, examination of these two lists for information on faunal differences must rely heavily on the known rarities. The presence or absence of rare species provides valuable information on the scientific quality of a site and is often the only data readily available to the conservationist when comparing the biological interest of similar areas. The main limitation is that it uses only a

small part of the available information; about 7% of the Wicken species list and 6% of that for Woodwalton. Any method, therefore, which makes use of a greater proportion of the available data should make comparative assessments more informative and reliable.

A third source of information, easily added to the total species lists and the ecological significance of the rarities, is a simple quantitative study of the fauna of each site based on short visits made during the same season. In this case seven members of the British Arachnological Society visited both fens on a single day, 24 October 1971, collecting at Woodwalton in the morning and Wicken in the afternoon. The field method used which has been tried out on many sites during the last 10 years, was to select a particular vegetation type where each member of the party would collect by hand for a period of one hour. Seven 'samples' were thus obtained for each reserve, totalling over 1,500 specimens. In both cases tall herbaceous fen about 1 m in height was selected, a *Calamagrostis canescens*/*Molinia* sward with *Filipendula ulmaria*, *Eupatorium cannabinum* and scattered *Cladium* in open fen woodland at Woodwalton, and a *Calamagrostis canescens*/*Juncus subnodulosus* sward with *Peucedanum palustre*, *Lysimachia vulgaris* and *Eupatorium* at the latter. The peaty soil of Woodwalton Fen was crumbly and moist while at Wicken the peat was much wetter but not waterlogged. There was a well formed litter-layer on both fens but moss was much more common on the wetter ground surface at Wicken. The collecting site in each case had been cleared of encroaching bush growth during the last 2-3 years but no burning had taken place apart from the bonfires of cut material. Adjacent to the Woodwalton sites were numerous large willow and hawthorn bushes and several birch trees which created more shaded conditions than did the low Alder Buckthorn carr at the Wicken site.

The seven members of the survey party started and finished each hour together and worked fairly close together, each separated by a few metres from his nearest colleague. The whole party collected only in the litter layer and ground vegetation, catching spiders with a dry tube or using a pooter and shaking loose material over a sheet, whichever was the most appropriate. Collecting was strictly non-selective, all spiders seen during the hour being taken, whether adult or immature, common or rare.

Apart from the bias created by sampling only a small area in each case, the material is subject to two sources of 'error', (a) variation in the individual performance of the collector and (b) patchiness, which may not be random in the area selected, in the distribution of the animals. The data in Table 1 have been influenced by both these factors although there is an indication that at least one collector was consistently more successful than the others, having obtained the largest number of species and specimens on each site. However the variance ratio for the number of species and also for

the number of specimens taken on the two fens by each collector does not reach the 0.05 significance level, so we can assume that the collections are representative samples for comparative purposes.

Table 1. The total number of specimens, total species and percentage of adult spiders taken by each collector on Woodwalton Fen and Wicken Fen nature reserves on 24 Oct. 1971. Each total represents the spiders taken during hand collecting for 1 hour.

	Collectors							Mean
	1	2	3	4	5	6	7	
<i>Woodwalton Fen</i>								
Total species	12	15	12	17	27	16	11	15.7
Total number of specimens	38	50	63	72	129	68	61	68.7
% adults	36.0	42.0	38.0	40.0	33.6	42.6	21.3	36.2%
<i>Wicken Fen</i>								
Total species	17	18	18	20	24	15	13	17.8
Total number of specimens	167	75	73	128	208	193	191	147.8
% adults	15.0	33.0	47.9	44.0	28.8	16.6	8.3	27.6%

The total number of species recorded on each reserve (including immature stages identified to genera which were not represented by adults) was 47, the same in each case. Nevertheless only 25 species (36.5%) occurred in both lists, suggesting that there may be real differences between the two faunas. The difference between the means of the number of species taken on each site, as determined by the 't' test, is not significant but for the difference between the means of the numbers of specimens $P < 0.01$. The larger number of immature specimens in the Wicken totals ($P < 0.01$) suggests the presence of environmental conditions in the ground zone, at the time of collecting, which were more favourable for survival of eggs and young than at Woodwalton.

In Table 2 the frequency of occurrence on 24 October of adults of 20 common species shows that four were taken only at Wicken and another four only at Woodwalton. The remaining 12 occurred on both reserves, although some were more numerous on one fen compared with the other. The woodland element is emphasised by the Woodwalton list while the Wicken fauna is more characteristic of an open herbaceous vegetation on a wetter soil. *Bathyphantes nigrinus* and *Floronia bucculenta* (typical species of shady fen carr) were taken only at Woodwalton while *Antistea elegans*, *Donacochara speciosa* and *Bathyphantes pullatus* (species of more open and wet conditions) only at Wicken. Other species such as *Pachygnatha clercki*, *Lophomma punctatum* and *Taranucnus setosus*, also typical of open wet fen,

were more frequent and numerous at Wicken while the converse was true for *Lepthyphantes zimmermanni*, a species, which in the southern half of Britain, is more typical of wooded areas.

Table 2. Frequency of occurrence of 20 common spiders, 24 October 1971.

First column under each site name=number of times a species was recorded out of a total of 7 collections for each site. Second column=total number of adult specimens taken.

	Woodwalton Fen	Wicken Fen
<i>Bathyphantes nigrinus</i>	4 (9)	—
<i>Centromerus sylvaticus</i>	3 (6)	—
<i>Floronia bucculenta</i>	5 (6)	—
<i>Zora spinimana</i>	4 (9)	—
<i>Antistea elegans</i>	—	4 (9)
<i>Donacochara speciosa</i>	—	3 (3)
<i>Wideria antica</i>	—	3 (11)
<i>Bathyphantes pullatus</i>	—	7 (16)
<i>Corniculatus unicornis</i>	6 (8)	6 (10)
<i>Pachygnatha clercki</i>	5 (8)	7 (14)
<i>Bathyphantes gracilis</i>	5 (10)	5 (32)
<i>Lophomma punctatum</i>	2 (2)	6 (27)
<i>Clubiona phragmites</i>	2 (2)	4 (10)
<i>Agracina striata</i>	3 (5)	3 (3)
<i>Taranucnus setosus</i>	2 (2)	3 (10)
<i>Lepthyphantes ericaeus</i>	2 (3)	3 (13)
<i>L. tenuis</i>	6 (42)	7 (51)
<i>L. zimmermanni</i>	3 (15)	1 (1)
<i>Linyphia clathrata</i>	3 (6)	1 (1)
<i>Erigone atra</i>	1 (1)	3 (3)

This type of ecological interpretation can be extended in a different way by an examination of the characteristics of the 24 rare spiders known from the two fens, only 7 (29.1%) of which occur in both. The 20 recorded at Wicken (only 16 recorded in recent years) are nearly all true fen species and occur elsewhere in East Anglia wetlands. On the other hand 4 of the 11 Woodwalton rarities have not been found elsewhere in East Anglia, while the two best known are not normally associated with fen habitats. *Synageles venator* is a sand-dune species on the south and south-west coasts of England but has been known from the Yaxley/Holme/Woodwalton group of fens for many years. *Lycosa paludicola* is associated with acid peaty soils in its European range and not known from fenlands. *Euryopis flavomaculata* is known in East Anglia only from Woodwalton and the specimen of *Myrmarachne formicaria* was immature and, as it cannot be traced, it must be considered doubtful. The status of most of the true fen rarities which have been taken at Woodwalton is largely unknown because there are so few records, for example *Zora armillata*, *Hypomma fulvum* and *Lycosa rubrofasciata* are listed on the basis of only one or two specimens (Table 3).

Table 3. Rare spiders recorded from Wicken and Woodwalton Fens.

	<i>Status of Species</i>	
	<i>Wicken Fen</i>	<i>Woodwalton Fen</i>
Maso gallica	Widespread	Not known
Gongyliidiellum murcidum	"	"
Entelecara omissa	"	"
Marpessa pomatia	"	"
Neon valentulus	"	"
Glyphesis servulus	"	"
Saloca diceros	"	"
Dolomedes fimbriatus	last record 1861-4	"
Singa heri	undated old record	"
Centromerus incultus	1♀ 1915	"
Collinsia distincta	Rare	"
Robertus arundineti	"	"
Pirata piscatorius	1924	"
Hypomma fulvum	Widespread	1♂ 1972
Zora armillata	"	1♂ 1♀ 1960
Lycosa rubrofasciata	"	1♂ 1971
Porrhomma oblitum	Rare	Rare
Ceratinella scabrosa	"	"
Agracina striata	Frequent	Frequent
Synageles venator	Not known	"
Lycosa paludicola	"	Widespread
Euryopsis flavomaculata	"	1958
Myrmarachne formicaria?	"	1 im. 1960
Maro sublestus	1♀ 1914	local

A final point of interest is why many more rare species have been recorded from Wicken compared with Woodwalton. The most plausible explanation is derived from a comparison of the history of the two fens, especially during the past 100-150 years, (Evans 1925, Godwin & Clifford 1938, Poore 1956, Duffey 1971). Extensive peat-cutting and drainage at Woodwalton Fen during the second half of the 19th century resulted in widespread and permanent changes to the vegetation cover and surface topography. In later years almost the whole fen became covered with bush growth and fen woodland, restricting the open herbaceous vegetation to local areas. On the other hand, Wicken appears to have maintained a consistently higher water table and although Alder Buckthorn (apparently unknown in 1860) spread rapidly, as the importance of sedge and reed cutting declined, fen woodland and tall sallow carr did not develop. Moreover although peat-cutting was practised at Wicken it does not appear to have been as extensive as at Woodwalton and parts of the Sedge Fen may well have escaped. Continuity of ecological conditions is probably essential to the survival of certain specialised species which disappear or become rare following major environmental change. Although land-use history is probably responsible for the larger number of rarities at Wicken today, other historical factors may have determined the species associa-

tions. For example it is known that much of the vegetation in the Woodwalton area, before the 1851 reclamation began, consisted of species characteristic of acid peat conditions (Poore 1956). Very little is known about the invertebrate fauna of that time but it is possible that some species survived the peat-exploitation period as did some plants. The presence of *Lycosa paludicola*, for example, suggests a possible link with a pre-drainage fauna comparable to the survival of *Calluna vulgaris*, *Erica tetralix*, *Salix repens*, *Myrica gale* and *Viola stagnina* which were common plants in the vegetation of the early 19th century.

Summary. Three types of data are used in this account to compare the spider faunas of two fenland nature reserves, (a) the total species lists (b) the numbers and species taken during seven 1 hour collections on 24 October 1971 for each site and (c) the numbers and ecological requirements of the rare species. Statistical tests can be applied to (b) but not (a) and (c). The proportions of species occurring on both fens, in each of the three lists, are (a) 45.6% (b) 36.5% and (c) 29.1%.

In spite of the inadequacy of numerical data for analysis, each of the three types of information contributes to an explanation of the differences between the faunas. Knowledge of the ecology of individual species is particularly important in this respect but is usually a weak point in the expertise of specialists.

Land-use history at Wicken and Woodwalton appears to have had a major influence on the survival of species to the present day.

Wicken and Woodwalton Fens are exceptional sites because they have been more intensively studied than most other nature reserves. However the method outlined could be extended to other, less well-known, fenlands by using Wicken and Woodwalton as 'standards'.

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The nomenclature used for spider names follows Locket and Millidge, 1953.

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LEONARD JENYNS'S NOTES ON CAMBRIDGESHIRE FISHES

By Alwyne Wheeler

Department of Zoology, British Museum (Natural History)

Leonard Jenyns, later Blomefield*, is perhaps most remembered today as the author of the volume on fishes in Darwin's *Reports on the Voyage of the Beagle* and the *Manual of British Vertebrate Animals* (1835). The latter, a competent but rather dull survey concentrating on detailed description of specimens purged of most of their interest as animals. It does, however, illustrate one facet of the character of the author in that he was a methodical worker who set out his information in a well-ordered manner. This habit can be seen in his surviving manuscripts (still preserved in the Zoology Department Museum at Cambridge) for he wrote on proforma sheets printed with headings for basic measurements and descriptions to be given, and also perhaps in the way in which he ensured their survival by presenting his manuscripts to the Cambridge Philosophical Society's Museum in 1869.

Surviving manuscripts include his notes on the 'Beagle' fishes, a volume entitled 'Notes on British fishes 1830-40', the contents of which differ slightly from the descriptions of fishes in the *Manual* . . . , for which it is probably the first draft, and a volume 'Collections towards a Fauna Cantabrigiensis—Vertebrata and Mollusca' of 164 leaves. Examination of the second manuscript reveals a number of notes of interest which were omitted in the published *Manual* . . . , while the 'Fauna Cantabrigiensis' contains much of local interest.

Fishes are the least well locally documented of vertebrate animals in Britain, and Jenyns's notes form a valuable contribution to the literature of fishes. The period in which they were primarily compiled, ca 1830 to 1849,

*Jenyns was born in London in 1800, the son of George Leonard Jenyns, Canon of Ely. He inherited from a relative, Soame Jenyns, the estate of Bottisham Hall, Cambridgeshire, and after 1823 when he was ordained became vicar of Swaffham Bulbeck, a parish next to his estate. He resigned in 1849, moved to the Isle of Wight and later to Bath, where he founded the Bath Natural History Society. In 1871 he inherited the Blomefield property and assumed that surname. He died at Bath in 1893.

adds to their value in that at that date the waters of the area had not been greatly affected by pollution, abstraction, the various practices associated with land drainage, or 'improvement' of the fauna by angling interests, which were later to change the enclosed waters, rivers and their fauna so dramatically.

The purpose of this note is to draw attention to some of the more interesting and well-documented of Jenyns's notes on fishes (which occupy pages 105–120 of the 'Fauna Cantabrigiensis'). Some of these notes were published by Jenyns in his *Observations in Natural History* (1846: 208–224), and were subsequently quoted by Whiting (1938) in his contribution on fishes to the *Victoria History of Cambridgeshire and the Isle of Ely*. In the list that follows the freshwater fishes that Jenyns noted are listed; in the case of species of restricted distribution or whose status has subsequently changed explanatory notes are given. The scientific names used by Jenyns are given in parentheses where different from the current nomenclature; the latter follows Wheeler (1969). The arrangement of the list follows the manuscript.

Perch *Perca fluviatilis*. Common.

Ruffe *Gymnocephalus cernua* (*Perca cernua*). Recorded from Reach Lode, and Bottisham Lake.

Bullhead *Cottus gobio*. Recorded from Chesterton Sluice. Common in streams with gravelly bottoms.

Stickleback *Gasterosteus aculeatus*. Common. Abundant in pond in Old Botanic Garden.

Ten-spined stickleback *Pungitius pungitius* (*Gasterosteus pungitius*). Recorded in pits near Madingley. Less abundant than above.

Carp *Cyprinus carpio*. Occasional in river at Ely.

Goldfish *Carassius auratus* (*Cyprinus auratus*). Abundant in Old Botanic Garden pond.

Barbel *Barbus barbus* (*B. vulgaris*). One 7 lb in weight from the cut between the river and Waterbeach station, June 1858.

Gudgeon *Gobio gobio* (*G. fluviatilis*). In river, and Bottisham and Reach Lodes.

Tench *Tinca tinca* (*T. vulgaris*). Not uncommon in Burwell Fen; in fish ponds at Ely, and Bottisham Park.

Bream *Abramis brama*. River below Ely, in canal Bottisham Park.

Silver bream *Blicca bjoernka* (*Abramis blicca*). Very common in the Cam; about Ely; in Reach Lode and many other waters. The silver bream is a fish of limited distribution in England, being found only in eastern rivers from the Thames to Yorkshire. Its abundance in Cambridgeshire when Jenyns wrote is interesting although in keeping with its present distribution.

Bream x Roach hybrid (*Abramis Buggenhagii*). Canal in Bottisham Hall, 17 June 1839. This specimen is still preserved in the Zoology Department Museum, Cambridge. The hybrid between roach and bream occurs fairly frequently, but at the date Jenyns wrote was regarded as a distinct species.

Roach *Rutilus rutilus* (*Leuciscus rutilus*). Very common.

Chub *Leuciscus cephalus*. Found in Cam, Reach Lode etc. but not abundantly. Also in river at Ely.

Dace *L. leuciscus* (*L. vulgaris*). Very common.

Rudd *Scardinius erythrophthalmus* (*L. erythrophthalmus*). Not uncommon in the Cam and other waters. Particularly abundant in Reach Lode.

Bleak *Alburnus alburnus* (*L. alburnus*). Common in the river.

Minnow *Phoxinus phoxinus* (*L. phoxinus*). Common.

Stone loach *Noemacheilus barbatulus* (*Cobitis barbatula*). In rivers and streams with gravel bottom, but not so abundant in Cambridgeshire.

Spined loach *Cobitis taenia* (*Botia taenia*). ' . . . found in plenty in certain localities in Cambridgeshire. In the Cam, in Reche Lode, in the fish ponds at Ely, and especially in the pits by Cow Bridge, near Swaffham Bulbeck—I have often met with it. It keeps near the bottom, and appears to reside more in the mud than the Bearded Loach.' This loach is of restricted distribution in the British Isles being only found in eastern England. It is probably the least recorded of all our freshwater fishes, and Jenyns's notes have considerable value as records. It is also interesting that at that date he had observed the fundamental differences in behaviour of the two species, the stone loach being essentially a fish of stony bottoms, while the spined loach is found in soft mud, and particularly in filamentous algae in slow-flowing rivers.

Pike *Esox lucius*. In the Cam, and canal at Bottisham Hall.

Salmon *Salmo salar*. Recorded twice in the river below Ely (no dates given).

Trout *Salmo trutta* (*S. fario*). Occasionally but rarely in the Cam.

Smelt *Osmerus eperlanus*. 'Smelts ascend the Hundred-foot River in large numbers every year in the months of March and April for the purpose of spawning. At Mepal, and other places higher up, quantities are taken for the table, and distributed about the county. They often have their gills much infested by a species of *Ascaris* . . . Smelts also occur in the Nene.'

The note recording the occurrence at Mepal is dated 10 April 1824 in Jenyns (1846: 218), at which date the fish were said to have been full of unshed spawn. Another reference to smelt in the Hundred-foot River is dated 21 March 1826, and the period of their occurrence there is given as from 10 March to 15 April. The smelt is essentially an estuarine fish which spawns in freshwater. Like other migratory species it has suffered greatly from

pollution in the lower reaches of rivers and is now much less common along the eastern English coast than it was in Jenyns's time.

Burbot *Lota lota* (*L. vulgaris*). 'Common in the Cam, and in the navigable cuts communicating with that river. In Reche Lode they are frequently taken, and sometimes attain to a considerable size, reaching the length of nearly two feet, and the weight of between three and four pounds. A singularly coloured variety of this fish, taken at Clay Hithe, in March 1845 . . . In Cambridgeshire, this fish is called an *Eel-pout*.' Jenyns (1846: 220) added to this note that a burbot of 23½ inches length and 3 lb 4½ oz was caught in Reach Lode, in May, 1829. Jenyns's observations on the abundance of the burbot are of the greatest interest for, since his time, the species has declined to the verge of extinction in England.

Flounder *Platichthys flesus* (*Platessa flesus*). Two specimens (13 inches in length) in the Cam at Upware Sluice, August 1844. This flatfish is common in estuaries and is often found in freshwater.

Eel *Anguilla anguilla* (*A. acutirostris*). Common in the deeper ditches of the Fens. Two specimens from a drain at Wisbech, 28 and 22 pounds in weight, one was 6 feet long. (*A. latirostris*) common in the Fens.

Jenyns followed William Yarrell (1836) in recognising several species of freshwater eel. These, popularly known as the sharp-snouted eel and the broad-snouted eel, are names applied to growth stages of the one species, today recognised as *Anguilla anguilla*. The large size of the two Wisbech specimens seems remarkable, if not entirely incredible!

Conger eel *Conger conger* (*C. vulgaris*). One from Hundred-foot River, near Mepal, 61 inches long, and upwards of 20 pounds in weight, on 2 January 1843. The occurrence of this marine eel in freshwater seems surprising enough to question whether it had been correctly identified.

Sturgeon *Acipenser sturio*. In river near Ely Bridge, 18 June 1816, 8 stone in weight, 79 inches long. In the Nene, and the Old Wash at Sutton. In the Nene about four miles below Wisbech, 19 May 1849.

Lamprey *Petromyzon marinus*. Occasionally in the Cam as well as the Nene.

Lampern *Lampetra fluviatilis* (*Petromyzon fluviatilis*) in both the Cam and Nene, more common than the lamprey. One below Ely in April 1835; also captured at Chesterton.

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MOLLUSCA OF CAMBRIDGESHIRE

M. J. Bishop

University Museum of Zoology, Cambridge

Mollusca in Cambridgeshire are represented by the slugs and snails of land habitats, and the pond snails and mussels of fresh-water habitats. For those who are unfamiliar with the group, a useful introduction is provided by the work of Horst Janus, 'The Young Specialist Looks at Land and Fresh-water Molluscs', Burke, London, 1965.

Recently, much work has been done on the distribution of molluscs in Cambridgeshire in connection with the Conchological Society's 10 km mapping scheme. Those who would like more information on the mapping scheme should write to Dr M. P. Kerney, Department of Geology, Imperial College, Prince Consort Road, London SW7 2BP.

Previous accounts of the Mollusca of Cambridgeshire are given by H. H. Brindley in J. E. Marr and A. E. Shipley (Editors), 'Handbook to the Natural History of Cambridgeshire', Cambridge, 1904 and in A. D. Imms (Editor), 'Victoria County History of Cambridgeshire and the Isle of Ely', Volume 1, 1938. The County List presented here (representing records for vice county 29), has been compiled from the Conchological Society's Census (1951), and later Recorder's Reports in the Journal of Conchology. There are unconfirmed reports of the occurrence of the following additional species in Cambridgeshire: *Hydrobia ventrosa* agg., *Lymnaea (Myxas) glutinosa*, *Pyramidula rupestris* and *Zonitoides excavatus*, but in the absence of specimens these must be regarded as in doubt. There are no post 1950 records of *Helicigona lapicida*, *Laciniaria biplicata*, *Segmentina nitida*, or *Testacella haliotidea*, but all other species on the List have been observed recently. *Hygromia liberta* has been recorded from the County, but its taxonomic status is in doubt.

Thirty-four 10 km squares lie within or partly within the County. Two 10 km squares have more than 80 species recorded from them, twenty-two squares have more than 60 and ten squares have more than 40. This represents a reasonably good coverage of the species present in the area. Provisional distribution maps are to be published in 1974, and patterns of distribution of the more common species will then become apparent. The following species are rare, very local or poorly known in the County, the number of post 1950 10 km square Cambridgeshire records being given in parentheses: *Pomatias elegans* (3), *Valvata macrostoma* (2); *Arion fasciatus* (1), *A. subfuscus* (2), *Azeca goodalli* (2), *Balea perversa* (1), *Helix pomatia* (1), *Limax flavus* (1), *Milax gagates* (2), *Vertigo moulinsiana* (2); *Pisidium hibernicum* (2), *P. moitessierianum* (4), *P. pulchellum* (1).

A number of species have been discovered in Cambridgeshire within the

past ten years. *Viviparus viviparus*, first found by Dr L. Lloyd-Evans, is common in part of the Great Ouse [see *Conchologists' Newsletter*, 42, 271, (1972)]. *Arion fasciatus*, a species within the *Arion circumscriptus* complex, occurs in the extreme north of the County in Parson Drove churchyard. It is common further to the north. *Arion subfuscus* has been found in woodland at Hatley St George (C. R. C. Paul) and in the churchyard at Friday Bridge (M. J. & S. J. Bishop). Dr C. R. C. Paul has found *Azeca goodalli* in some of the woods on boulder clay to the west of Cambridge. *Pisidium moitessierianum* is a small species that may be easily overlooked. It occurs in Wicken Lode and although it is rare it has been found to be widely distributed in Cambridgeshire. *Pisidium supinum* (one previous record in 1920) has been found to be abundant in the Cambridgeshire part of the Great Ouse.

COUNTY LIST OF CAMBRIDGESHIRE MOLLUSCA

STREPTONEURA

(= PROSOBRANCHIA)

Bithynia leachi (Sheppard, 1823)
Bithynia tentaculata (Linnaeus, 1758)
Pomatias elegans (Müller, 1774)
Potamopyrgus jenkinsi (Smith, 1889)
Theodoxus fluviatilis (Linnaeus, 1758)
Valvata cristata Müller, 1774
Valvata macrostoma Mörch, 1864
Valvata piscinalis Müller, 1774
Viviparus contectus (Millet, 1813)
Viviparus viviparus (Linnaeus, 1758)

EUTHYNEURA

Acanthinula (Acanthinula) aculeata
 (Müller, 1774)
Acroloxus lacustris (Linnaeus, 1758)
Agriolimax laevis (Müller, 1774)
Agriolimax reticulatus (Müller, 1774)
Ancylus fluviatilis (Müller, 1774)
Aplexa hypnorum (Linnaeus, 1758)
Arianta arbustorum (Linnaeus, 1758)
Arion ater ater (Linnaeus, 1758)
Arion ater rufus
Arion circumscriptus Johnston, 1828
Arion fasciatus (Nilsson, 1822)
Arion hortensis Férussac, 1819
Arion intermedius Normand, 1852
Arion subfuscus (Draparnaud, 1805)
Azeca goodalli (Férussac, 1821)
Balea perversa (Linnaeus, 1758)
Carychium minimum Müller, 1774 seg.
Carychium tridentatum (Risso, 1826)
Ceciliodes acicula (Müller, 1774)
Cepaea hortensis (Müller, 1774)
Cepaea nemoralis (Linnaeus, 1758)

Clausilia (Clausilia) bidentata (Ström, 1765)
Cochlicopa lubrica (Müller, 1774) seg.
Cochlicopa lubricella (Porro, 1837)
Columella edentula (Draparnaud, 1805) seg.
Discus rotundatus (Müller, 1774)
Ena obscura (Müller, 1774)
Euconulus fulvus (Müller, 1774)
Helicella (Candidula) caperata
 (Montagu, 1803)
Helicella (Candidula) gigaxi (L. Pfeiffer, 1850)
Helicella (Cernuella) virgata (da Costa, 1778)
Helicella (Helicella) itala
 (Linnaeus, 1758)
Helicigona (Helicigona) lapicida
 (Linnaeus, 1758)
Helix aspersa Müller, 1774
Helix pomatia Linnaeus, 1758
Hygromia (Trichia) hispida (Linnaeus, 1758)
Hygromia (Trichia) striolata (C. Pfeiffer, 1828)
Laciniaria biplicata (Montagu, 1803)
Lauria cylindracea (da Costa, 1778)
Limax flavus Linnaeus, 1758
Limax maximus Linnaeus, 1758
Lymnaea (Galba) truncatula (Müller, 1774)
Lymnaea (Lymnaea) stagnalis
 (Linnaeus, 1758)
Lymnaea (Radix) auricularia (Linnaeus, 1758)
Lymnaea (Radix) peregra (Müller, 1774)

Lymnaea (Stagnicola) palustris (Müller, 1774)
Marpessa laminata (Montagu, 1803)
Milax budapestensis (Hazay, 1881)
Milax gagates (Draparnaud, 1801)
Milax sowerbyi (Férussac, 1823)
Monacho (Ashfordia) granulata (Alder, 1831)
Monacha (Monacha) cantiana (Montagu, 1803)
Oxychilus alliaris (Miller, 1822)
Oxychilus cellarius (Müller, 1774)
Oxychilus draparnaldi (Beck, 1837)
Oxychilus helveticus (Blum, 1881)
Physa fontinalis (Linnaeus, 1758)
Physa sp. probably *P. acuta* Draparnaud, 1805
Planorbis corneus (Linnaeus, 1758)
Planorbis (Anisus) leucostoma Millet, 1813
Planorbis (Anisus) vortex (Linnaeus, 1758)
Planorbis (Armiger) crista (Linnaeus, 1758)
Planorbis (Bathyomphalus) contortus (Linnaeus, 1758)
Planorbis (Gyraulus) albus Müller, 1774
Planorbis (Planorbis) carinatus Müller, 1774
Planorbis (Planorbis) planorbis (Linnaeus, 1758)
Pupilla muscorum (Linnaeus, 1758)
Punctum pygmaeum (Draparnaud, 1801)
Retinella nitidula (Draparnaud, 1805)
Retinella pura (Alder, 1830)
Retinella radiatula (Alder, 1830)
Segmentina (Hippeutis) complanata (Linnaeus, 1758)
Segmentina (Segmentina) nitida (Müller, 1774)

Succinea (Oxyloma) pfeifferi Rossmässler, 1835
Succinea (Succinea) putris (Linnaeus, 1758)
Testacella haliotidea Draparnaud, 1801
Vallonia costata (Müller, 1774)
Vallonia excentrica Sterki, 1892
Vallonia pulchella (Müller, 1774)
Vertigo antivertigo (Draparnaud, 1801)
Vertigo moulinsiana (Dupuy, 1849)
Vertigo pygmaea (Draparnaud, 1801)
Vitrea contracta (Westerlund, 1871)
Vitrea crystallina (Müller, 1774) seg.
Vitrina (Vitrina) pellucida (Müller, 1774)
Zonitoides nitidus (Müller, 1774)

LAMELLIBRANCHIA

Anodonta anatina (Linnaeus, 1758)
Anodonta cygnea (Linnaeus, 1758)
Dreissena polymorpha (Pallas, 1771)
Pisidium amnicum (Müller, 1774)
Pisidium casertanum (Poli, 1791)
Pisidium henslowianum (Sheppard, 1823)
Pisidium hibernicum Westerlund, 1894
Pisidium milium Held, 1836
Pisidium moitessierianum Paladilhe, 1866
Pisidium nitidum Jenyns, 1832
Pisidium obtusale (Lamarck, 1818)
Pisidium personatum Malm, 1855
Pisidium pulchellum Jenyns, 1832
Pisidium subtruncatum Malm, 1855
Pisidium supinum A. Schmidt, 1851
Sphaerium (Musculium) lacustre (Müller, 1774)
Sphaerium (Sphaerium) corneum (Linnaeus, 1758)
Unio pictorum (Linnaeus, 1758)
Unio tumidus Philipsson, 1788

INTRODUCTIONS OF THE ROMAN SNAIL IN CAMBRIDGESHIRE

E. Pollard

The Nature Conservancy, Monks Wood Experimental Station

Helix pomatia, variously called the Roman, edible and apple snail is the largest and certainly the most spectacular British land snail. Usually it measures between 40 and 45 mm. height and breadth, compared with the 30–35 mm. of its nearest 'rival' the familiar garden snail *Helix aspersa*.

The Roman snail has a mainly central European distribution which includes Austria, Hungary, Switzerland, Germany, Poland and eastern France. In some countries it is considered a culinary delicacy and in others it is quite important as an export. In 1961 for example it is estimated that some eight million snails were exported from Poland to France. This is thought to have been more than the populations could sustain and limits have been suggested for future exploitation.

Because of its food value or as a curiosity it has been introduced by man to parts of France where it is not indigenous and also to other countries such as Holland and Sweden. In all likelihood it is not native in England as it is absent from Pleistocene deposits, and there have undoubtedly been many introductions, probably from Roman times on. Some of those introductions were made by land-owners who brought it back from the Continent for their estates.

According to the mapping scheme organised by the Conchological Society there are some 70 sites in England where the Roman snail has been recorded since 1950. It is restricted to calcareous soils and this is probably because it has a high calcium requirement for its thick shell. The sites are concentrated in three main areas, on the chalk in Surrey and Hertfordshire, and on limestone in Gloucestershire. The only Cambridgeshire site is on the chalk near Harston and is about fourteen miles from the nearest Hertfordshire sites which are mainly grouped around Puckeridge.

Many of the localities are close to Roman villas and roads, and this has been used to support the argument that it was introduced by the Romans. This may well be true but of course the chalk and limestone soils were cleared of their woodland very early and were well populated by the Romans, so the association could be coincidental. Many sites are artifacts, chalk and limestone quarries, railway embankments, hedge and roadside banks.

The specific name *pomatia* is derived from the Greek *poma* a pot lid, which describes the chalky epiphragm or operculum which covers the mouth of the shell during hibernation. The name apple snail is probably a mistranslation of *poma*, confusing it with the Latin *pomum*: apple. In this area it hibernates from October until April, emerging after the first warm rains by pushing off and discarding its operculum. It is active only when the weather is damp; in dry weather the snails hide away amongst the vegetation and remain withdrawn in their shells until the next rains. In very hot dry weather they may climb up amongst the herbage perhaps two feet from the ground and seal themselves up with a mucous membrane which also secures them to a plant stem.

No snail can be described as very mobile and one of the problems of their lives seems to be that they are unlikely to encounter many other snails in

the course of a day's wanderings. Fortunately they are hermaphrodite and encounters are not wasted. As Lord Cranbrook recently put it in an article in the 'Suffolk Naturalist' 'inevitably boy meets girl'. Courtship is prolonged with the snails remaining together with their soles joined and raised off the ground for several hours. A love dart, a calcareous spicule, is fired by each snail into the head of the other before the final mating. Mating is most commonly seen in May and June but eggs may be laid from May to August providing the soil is wet enough. Egg-laying may take several days; first a flask shaped hole, two to three inches deep, is excavated and twenty to ninety eggs are laid, each the size of a mistletoe berry and with a hard shell. Finally the cavity is covered over with soil. The eggs hatch in three to four weeks and the young snails remain in the cavity feeding on the remains of their eggs and perhaps also on unhatched eggs until a suitable damp spell allows them to disperse.

The young snails may take three or even more years to become adult and during this time they are vulnerable to a variety of predators, especially thrushes and small mammals. Once adult the shell thickens and older snails make little attempt to conceal themselves when they are active in wet weather and so presumably have little to fear except perhaps from badgers and hedgehogs. The adult life may be five years or more, so that a full life span of 10 years is not impossible.

The extent to which they are collected for eating in this country is not known but is probably small. Relatively few people have a taste for them. Nevertheless this use may grow as eating habits become less conservative.

The Roman snail occurs in Britain in many isolated populations, perhaps only in Surrey is its distribution more or less continuous along parts of the chalk scarp. The existence of these discrete populations, one population often a long way from the next, suggests a very limited ability to spread after initial establishment. The Cambridge population has been in existence for at least a hundred years but is confined to a small area. It is possible that seemingly suitable habitats remain unoccupied because it has never reached them. In other words it may be a poor traveller but not too fussy about its home although of course it has certain specific requirements. If this is so, conservation need not be tied to particular sites, as it is with most local species, if one site is in danger perhaps the population or part of it can be moved to another similar one.

It was with these thoughts in mind that I decided to make some experimental introductions into chalk pits in Cambridgeshire. Three pits, managed by the Cambridgeshire Trust, seemed particularly suitable, those at Stapleford, Ickleton and Heydon, and the Trust agreed that these could be used. The snails were taken from a road verge site in Hertfordshire and fifteen were put in each pit in June 1972. Although the summer has been

very dry and unsuitable for breeding, eggs and young snails have been recorded at all three pits. This is still a long way from the successful establishment of breeding populations but it is a promising start. The study of development of colonies from the very start should prove extremely useful.

The work is part of the research programme of the Invertebrate Population Ecology Section at Monks Wood, which is studying selected rare and local species in detail so that recommendations for their conservation can be made on the basis of a sound knowledge of their ecology. The Roman snail is an undoubted asset to our fauna and it is hoped that these studies will contribute to its conservation.

SELECTED RECORDS FROM THE CAMBRIDGE BIRD CLUB ANNUAL REPORT FOR 1971

H. J. Harvey

University Department of Applied Biology, Cambridge

Nineteen seventy one was the 45th year for which the Cambridge Bird Club has produced a report on the birds seen by its members in the Cambridge area. In the early years of the club 'the Cambridge area' meant the immediate vicinity of Cambridge while later, particularly in the period between 1950 and the late sixties, areas such as the Wash and the Breckland were included. The main report for 1971 covers only the county of Cambridgeshire although reviews of the Wash, the Breckland and Wisbech Sewage Farm are included. The records in this summary are selected as being of particular interest, copies of the full report may be obtained, price 50p, from H. J. Harvey, Department of Applied Biology, Downing Street, Cambridge.

Seabirds

The variety of seabirds in an inland county such as Cambridgeshire is limited but some interesting species were seen during the year. March saw the 5th county record of a Fulmar, at Impington, and in November the 18th Gannet record was reported. A single Glaucous Gull, at Waterbeach in November, and a Little Gull, on the Ouse Washes in May, were seen and Kittiwakes in November and December. Common Terns bred in the county for the first time since records have been kept but no young were reared.

Hérons and Bitterns

The county currently has five known breeding colonies of Grey Herons and in 1971 these contained a total of 41 nests. The Bittern has not bred in the county for many years but is a regular winter visitor to areas such as Wicken Fen. Surprisingly one was seen near Grantchester in January.

Waterfowl

The Ouse Washes continue to be the major area for this group although the dry summer reduced the numbers of birds breeding there. The first winter period saw very large concentrations of birds on the flooded Washes, with Wigeon reaching a peak of 32,000 and nearly 1300 Bewick's Swans being present in February. Among the more unusual species seen were Scaup, Common Scoter, Smew and Brent Goose.

Birds of Prey

An encouraging number of records of birds of prey were received. Of the summer visitors Marsh Harriers were regularly seen, especially on the Ouse Washes, six Hobbys were recorded but only one Montagu's Harrier was seen, near Newmarket. Winter visitors were represented by Hen Harriers and a single Merlin, while two Buzzards were seen in the autumn. The most unusual record was of a Red-footed Falcon at Wicken in June.

Waders

Breeding waders generally benefited from the dry summer with Black-tailed Godwit and Ruff doing well on the Ouse Washes. A new breeding species for the county, at Mepal and on the Ouse Washes, was the Oyster-catcher. Nationally the autumn wader passage was rather poor but Little Stint, Temmink's Stint, Pectoral Sandpiper and Sanderling were all seen at Ely.

Owls

Relatively few owls were reported in the county. Only six areas produced breeding season records of Barn Owls, hopefully this is not a true picture of the population. In contrast Little Owls were seen in 34 localities.

Woodpeckers

Both Green and Great Spotted Woodpecker numbers appear to be down compared with past years, but summer records of Lesser Spotted were received from six areas. A Wryneck was seen in Littleport in September.

Tits

There was a marked influx of Bearded Tits in the autumn with birds at Waterbeach, Landbeach and Fulbourn as well as the regular party at Wicken Fen. Coal Tits were also much more common than usual in the autumn.

Warblers

The most unusual record in this group was of a Great Reed Warbler, an unusual visitor to England and the first county record, at Wicken in May. Whitethroat numbers are still low after the marked fall of 1969 but encouragingly Wood Warblers bred in Hayley Wood. This first county breeding record since 1956 may be a result of the new management policy for the area.

Shrikes

Great Grey Shrikes continue to winter in the county in small numbers, records coming from Fulbourn, Quy, Fowlmere, Wicken and Shelford, but the Red-backed Shrike only just holds its own as a county breeding species with only one pair recorded.

Finches and Buntings

A Hawfinch, a species rarely seen in the Fens, flew into a window at Chatteris and the Redpoll continued to increase. A Brambling ringed at Wicken in early April was retrapped in Heliogoland 14 days later, obviously a returning winter visitor. A Cirl Bunting was seen near Sawston in April, the first in the county since 1961.

Other groups

Kingfishers were reported from many areas and this species appears at last to have recovered from the effects of the severe winter of 1963. Two unusual species noted were a Golden Oriole at Wisbech in August and a Hoopoe on the Devil's Dyke in July.

Cambridge Bird Club is anxious to receive all records of birds, whether common or rare, which should be sent to G. M. S. Easy, Braemar, Landbeach Road, Milton, Cambridge. Records for each year should arrive as soon as possible after 31 December.

IDENTIFICATION OF BLACKBERRIES AND THEIR ALLIES IN CAMBRIDGESHIRE

R. R. Aitchison and R. J. Pankhurst
University Botany School, Cambridge

This article is intended to give the amateur botanist some help with naming the different kinds of *Rubus* to be found in Cambridgeshire. The key given here covers all those species which have been seen in the county during the present century. Cambridgeshire is not very rich in these plants, and of about 400 species described in Watson's monograph (1), we have only about 30.

The Rubi are well provided with distinguishing features, and one needs no more than a hand lens in order to identify them. Notes are given below on the meaning of the various descriptive terms used in the key, and beginners are advised to study these carefully. A very helpful introduction to the subject is given in the Flora of the British Isles (2). It is not essential to collect specimens in order to name them, but specimens cannot be named unless they are properly collected. There are clear instructions on how to do this in the above Flora (p. 372). One particular word of warning; blackberry bushes of different kinds often grow tangled up together, so one must be very careful to make sure that leaves and flowers are from the same plant.

The classification of *Rubus* is not a major concern here, but a few remarks may be helpful. The true blackberries are split into various sections, and in this county, the *Sylvatici*, the *Discolores*, the *Appendiculati* and the *Glandulosi* are represented. A further section, the *Triviales*, are intermediate in appearance between the true blackberries and the dewberry, and are believed to be of hybrid origin. There is a useful key to these sections in the Flora (p. 373). A note is given in the key below to show which section each species belongs to. Hybrids between the species occur occasionally, and are generally nearly or quite sterile, and develop little or no good fruit. Nevertheless, fertile hybrids can occur, as between *R. caesius* and *R. ulmifolius*. Hybrids can be named by reference to other named species growing nearby, but beginners may prefer to just overlook them. The section *Triviales* is particularly prone to form hybrids, and so one should not be surprised if odd specimens of these do not fit the key very well.

Relatively few species will be found on the chalk or boulder clay or in the fens. *R. ulmifolius* is commonest in these areas, along with dewberry and various members of the section *Triviales*. The brambles in the boulder clay woodland are a little more varied, and *R. vestitus*, *radula* and *rufescens* are to be found quite frequently. Blackberries by and large have a marked preference for acid sandy soils, and much the largest number of different kinds is to be found on the greensand of the Gamlingay area.

We do not claim to be connoisseurs, but a few remarks on the fruit may be appreciated. The fruit of *R. ulmifolius* has a good flavour, although it is only moderate in size and somewhat dry and pippy, but is probably the most picked since it is so common. *R. polyanthemus*, *cardiophyllus*, *vestitus* and *scabrosus* all produce large sweet berries, while those of *R. criniger* have proved to be rather insipid.

- | | | |
|----|--|-----------------------------|
| 1 | Leaves laciniate, petals pink, torn at tip. Garden escape. | <i>R. laciniatus</i> (S) |
| | Leaves simply or compound serrate. | 2 |
| 2 | Leaves pinnate, stems erect, flowers small, ripe fruit red. | Raspberry, <i>R. idaeus</i> |
| | Leaves palmate, ripe fruit black. | 3 |
| 3 | Flowers deep pink. | 4 |
| | Flowers white. | 6 |
| | Flowers pale pink or pink. | 16 |
| 4 | Leaves small, dark green and shiny above, chalky-white felted beneath. Common. | <i>R. ulmifolius</i> (D) |
| | Not as above. | 5 |
| 5 | Acicles on panicle numerous, styles reddish-based, leaves digitate, stem red-brown. | <i>R. conspicuus</i> (A) |
| | Acicles on panicle few or none, styles yellowish or greenish, leaves pedate, stem violet-purple. | <i>R. vestitus</i> (A) |
| 6 | Glands on plant few or none. | 7 |
| | Glands on plant numerous. | 11 |
| 7 | Stem prickles fairly many to many. | 8 |
| | Stem prickles few. | 10 |
| 8 | Sepals reflexed, leaves with more than 3 leaflets. | 9 |
| | Sepals clasping, leaves mostly with 3 leaflets, fruit pruinose. | Dewberry, <i>R. caesius</i> |
| 9 | Leaves grey felted beneath, terminal leaflet stalk about half as long as leaflet, stem angled, high arching, carpels glabrous. | <i>R. cardiophyllus</i> (S) |
| | Leaves not felted beneath, terminal leaflet stalk shorter, stem rounded, carpels pilose. | <i>R. sublustris</i> (T) |
| 10 | Flowers 2-3 cm in diameter, leaves moderate, margins undulate, terminal leaflet entire at base, carpels pilose. | <i>R. lindleianus</i> (S) |
| | Flowers over 3 cm in diameter, leaves large, not undulate, terminal leaflet emarginate at base, carpels glabrous. | |
| | Garden escape. | <i>R. procerus</i> (D) |

- 11 Stem not conspicuously hairy. 12
 Stem conspicuously hairy. 14
- 12 Leaves grey or white felted beneath, petals jagged at tip. 13
 Leaves not felted beneath, petals entire. *R. myriacanthus* (T)
- 13 Styles pink, flowers 2–2.5 cm diameter, stem prickles equal,
 acicles numerous. *R. warrenii* (T)
 Styles yellowish, flowers 2.5–3 cm diameter, stem prickles
 unequal, acicles few. *R. halsteadensis* (T)
- 14 Styles yellowish, stem rounded, prickles all round stem,
 leaves with 3 leaflets. *R. bellardii* (G)
 Styles pink, stem angled, prickles on angles only, leaves
 with more than 3 leaflets. 15
- 15 Leaves not felted beneath, flowers 2–3 cm diameter, filaments
 longer than styles, carpels glabrous. *R. insectifolius* (A)
 Leaves grey felted beneath, flowers up to 2 cm diameter,
 filaments more or less equalling styles, carpels pilose.
R. foliosus (A)
- 16 Glands on stem numerous. 17
 Glands on stem few or none. 25
- 17 Acicles on stem few or none, stem pruinose, anthers often
 pilose. *R. criniger* (A)
 Acicles on stem numerous. 18
- 18 Flowers up to 2 cm in diameter *R. foliosus* (A)
 Flowers 2–2.5 cm in diameter 19
 Flowers about 3 cm in diameter 22
- 19 Stem not conspicuously hairy 20
 Stem conspicuously hairy, sepals more or less reflexed 21
- 20 Panicle prickles unequal, declining and falcate,
 filaments longer than styles *R. echinatoides* (A)
 Panicle prickles patent and straight, filaments more or
 less equalling styles *R. tuberculatus* (T)
- 21 Flowers about 2.5 cm diameter, petals more than half as
 long as broad, filaments slightly longer than styles,
 leaflets coarsely serrate or jagged *R. echinatus* (*discerptus*) (A)
 Flowers about 2 cm diameter, petals about half as long
 as broad, filaments much longer than styles, leaflets
 finely serrate dentate *R. radula* (A)
- 22 Leaves not felted or green felted beneath 23
 Leaves grey or white felted beneath 24

- 23 Stem prickles few, petals about half as long as broad, stem blunt-angled, terminal leaflet broadest above the middle, basal leaflets stalked *R. rufescens* (A)
 Stem prickles numerous, petals more than half as broad as long, stem rounded, terminal leaflet broadest below the middle, basal leaflets sessile *R. scabrosus* (T)
- 24 Sepals reflexed, stem more or less angled, becoming purple, prickles more or less equal *R. purpureicaulis* (T)
 Sepals erect, stem rounded, prickles unequal *R. scabrosus* (T)
- 25 Leaves small, dark green and shiny above, chalky-white felted beneath. Common *R. ulmifolius* (D)
 Not as above 26
- 26 Petals about half as long as broad 27
 Petals more than half as long as broad 29
- 27 Styles pinkish or pink, sepals patent, leaves moderate, not felted beneath *R. mercicus* (S)
 Styles yellowish or greenish 28
- 28 Filaments pink, slightly shorter than styles, panicle prickles curved, carpels pilose *R. nemoralis* (S)
 Filaments white or yellowish, panicle prickles straight 29
- 29 Sepals not glandular or acicular, filaments much longer than styles, stem prickles short *R. poliodes* (S)
 Sepals with glands and acicles, filaments slightly longer than styles, stem prickles fairly long *R. pyramidalis* (S)
- 30 Stem prickles fairly many to many 31
 Stem prickles few 33
- 31 Sepals reflexed, leaves grey-felted beneath, stalk of terminal leaflet about half the length of the leaflet, basal leaflets stalked, filaments longer than styles *R. cardiophyllus* (S)
 Sepals erect or clasping, leaves not felted or green felted beneath, stalk of terminal leaflet shorter, basal leaflets sessile 32
- 32 Leaves with more than 3 leaflets, stem prickles unequal, stem more or less angled *R. babingtonianus* (T)
 Leaves mostly with 3 leaflets, stem prickles equal, stem rounded, fruit pruinose *Dewberry, R. caesius*
- 33 Panicle prickles curved 34
 Panicle prickles straight 35

- 34 Sepals reflexed without glands or acicles, filaments white,
slightly longer than styles *R. falcatus* (D)
Sepals patent, acicular and glandular, filaments much
longer than styles, anthers pilose *R. rhombifolius* (S)
- 35 Flowers 3 cm or more in diameter, leaves large.
Garden escape *R. procerus* (D)
Flowers 2–3 cm in diameter 36
- 36 Stem not conspicuously hairy, filaments more or less
equalling styles, plant without glands *R. conjungens* (T)
Stem conspicuously hairy, filaments longer than styles,
plant somewhat glandular 37
- 37 Stem reddish, leaves convex, with up to 7 leaflets, panicle
not acicular, petals 5 *R. polyanthemus* (S)
Stem purple, leaves flat with 3–5 leaflets, petals 5 or 6,
villous *R. vestitus* (A)

Abbreviations: T=Section Triviales, S=Sylvatici, D=Discolores,
A=Appendiculati, G=Glandulosi

Some notes for the Key

Colours and sizes of plant parts as well as development of armature may be affected by deep shade or poor growing conditions. It is, therefore, advisable to choose for study a healthy well-grown bush in open conditions.

Acicles are straight, stiff bristle-like hairs and can be of various lengths. They can occur throughout the plant.

Carpel hairs must be observed with a lens by gently thumbing back the petals and stamens of an opening flower. Care must be taken not to confuse them with receptacle hairs which often grow up between the carpels. Pilose=hairy.

Colour of the filaments, styles and petals must be observed in a newly opened flower as their colour tends to fade in sunlight. Often the base of the filaments or styles is coloured differently.

The length of the filaments relative to the styles can be seen by looking at the flower from the side and noting whether the filaments appear to protrude further from the flower than the styles. Removing filaments and styles to measure them is not required.

Glands may be sessile or have stalks of various lengths. All types are included in the term used in the key. They may occur throughout the plant.

Hairiness on the stem is said to be 'conspicuous' when it can be seen with the naked eye.

Leaf characters should always be taken from a well-grown leaf on a primary (this year's) stem except for

Leaf felt which should be looked for on the underside of the upper leaves of the panicle, although it may be found on other leaves.

Leaves are *pinnate* if their leaflets are arranged in pairs along the petiole; *palmate* if arranged like the fingers of a hand.

Palmate leaves are *digitate* if their leaves all arise from the same point; *pedate* if the basal leaflets arise from the stalks of the lateral leaflets.

Laciniate leaves are those which are cut very deeply almost to the midrib; *serrate* leaves have only small teeth round the margin.

Leaf size is given from the length of the terminal leaflet,

< 5 cm long=small, 5-10 cm long=moderate, >10 cm long=large.

Terminal leaflet shapes tend to be very variable and hard to describe. In general, however, they are either broader below the middle (ovate, ovate-lanceolate) or above the middle (obovate).

The base of the terminal leaflet may be either entire (rounded) or cut into where it joins the stalk forming lobes either side of the stalk (emarginate).

Petal hairs should be looked for on the tips of the outside of the petals with a lens.

Tips of the petals may be entire (rounded, pointed) or notched, cut or fringed (jagged).

Pruina is a whitish deposit similar to the 'bloom' on grapes and plums, which can be rubbed off. It may occur on stems (particularly near the base) on the side away from the sun and on the fruit of *R. caesius*.

An *angled stem* looks five-sided but a rounded stem is circular in cross-section.

Stem colour should be observed on a stem in the sun as true colour does not develop in shadow.

Stem prickles. Few=up to 10 per internode (or 10 cm length on collected specimens without complete internodes); fairly many to many=more than 10 per internode. They may vary greatly in length (short=up to 5 mm, long=more than 5 mm) but if they are all of approximately the same length they are said to be equal.

Sepal direction should be observed on a green unripened fruit because it tends to alter from flower opening to fruiting. The sepals may be *reflexed* (folded right back to the stalk), *patent* (held at right angles to the stalk), *erect* (standing straight up) or *clasping* the fruit. These last two are sometimes difficult to tell apart.

References

- (1) WATSON, W. C. R. Handbook of the Rubi of Great Britain and Ireland. CUP, 1958.
- (2) CLAPHAM, A. R., TUTIN, T. G. and WARBURG, E. F. Flora of the British Isles, 2nd edition. CUP, 1962.

THE REDISCOVERY OF THE FEN RAGWORT IN CAMBRIDGESHIRE

P. D. Sell

Senecio paludosus L. formerly occurred in Norfolk, Suffolk, Cambridgeshire and Lincolnshire. It was first recorded in the British Isles by John Ray in his *Catalogus Plantarum circa Cantabrigiam nascentium* in 1660. Ray states that he found the plant 'in many places about the Fens, as by a great ditch-side near Stretham Ferry'. John Martyn (1763) recorded it at Chatteris, Relhan (1785) at Littleport and Burwell Fen, and J. S. Henslow collected it near Ely in 1833. Other early localities from which it was recorded are Padnel Fen and Barroway Washes. There are a number of specimens in herbaria gathered from Wicken Fen between 1800 and 1828, and several botanists including C. C. Babington collected it there in 1857 (perhaps all from a single, large, double-stemmed plant). The Wicken record of 1857 is the last certain record for the species in the British Isles, though a published note by Babington in 1863 suggests it may still have been there for a few more years. One or part of one of the Wicken plants of 1857 (or just after), perhaps the only one, was transferred to the Botanic Garden at Cambridge, where it was still in cultivation in the beginning of the present century.

On the 18 July 1972, T. W. J. D. Dupree found three flowering and two sterile plants in a fen ditch within the area of its former distribution. The plants ranged from 90–140 cm in height and had 8–25 heads of flowers. Most of the seeds produced were sterile, but 21 out of 28 seeds which appeared to be viable have germinated in the Botanic Garden at Cambridge. A piece of one of the roots has also been grown in the Botanic Garden in case the colony becomes extinct. Conservation has been arranged with the cooperation of a farmer and the Local Authority. A detailed account of the history of the species in the British Isles will be published in *Watsonia*.

MOUSETAIL, *MYOSURUS MINIMUS*, L. AT THE OUSE WASHES

C. J. Cadbury

There have been few records of this annual in the county over the last hundred years according to the Index of Cambridge Flora at the Botany School, Cambridge. Since 1900 it has only been recorded at Ickleton (1910–14), the University Farm, Cambridge (c. 1928), by Gamlingay Wood (1911, 1949–52) and at Lolworth (1956).

It was therefore a pleasant surprise to discover thousands of flowering *Myosurus* plants on the RSPB's Ouse Washes reserve near Pymore (TL 4987) in early May, 1972. The species appeared to be confined to gateways at the upper end of five washes. It was growing on fine silt much trampled by cattle the previous summer. Since the gateways lie between the 106' and 107' N.O.D. contour, the ground on which the *Myosurus* was growing was flooded during the 1971-72 winter for only 44 days, all within the period 13 January-17 March (J. Sorensen, *in litt.*). By May, the surface soil was relatively dry.

The relative frequency of *Myosurus minimus* and the associated plants in the five gateways is given in the table below:

	Wash gateways				
	A	B	C	D	E
<i>Myosurus minimus</i>	A	LF	R	R	LA
<i>Coronopus squamatus</i>	O				
<i>Capsella bursa-pastoris</i>	O	F	F		R
<i>Stellaria media</i>		O			
<i>Atriplex patula</i> (seedlings)	O	O			
<i>Epilobium? obscurum</i> (rosettes)		O	O		
<i>Polygonum aviculare</i>			O		F
<i>Rumex crispus</i>	O				
<i>Tripleurospermum maritimum</i>			O		
<i>Matricaria matricarioides</i>		F			A
<i>Glyceria fluitans</i>					O
<i>Poa trivialis</i>					R
<i>P. annua</i>		O			

A=abundant, F=frequent, O=occasional, R=rare,
LA=locally abundant, LF=locally frequent.

Myosurus was the dominant plant in gateway A. In gateway D, less trampled than the others, the few plants discovered were on spoil from a mole run. In gateway E, *Myosurus* covered an area of 6×9 m. which included the slope of a mound of earth. In a ½ m. quadrat 119 plants, bearing a total of 534 inflorescences, were counted. A sample of 10 of these inflorescences had a mean length of 39.5 mm. (range 55-31 mm.) and bore a mean of 231 achenes (range 272-200) per receptacle. This would give a potential seed production of 27,000/m² over the 54m² in which *Myosurus* was almost uniformly abundant.

Cattle are grazed on the Washes from early May onwards and by 16 May the majority of *Myosurus* plants had been trampled into the mud. Only a

small proportion of seed may have set but it is this trampling which provides the bare, damp areas necessary for germination and the establishment of young plants. All five gateways were within half a mile of one another. It is possible that the *Myosurus* seed has been spread in mud on the hooves of cattle or even on boots.

**ALISMA GRAMINEUM LEJ.
A NEW COUNTY RECORD**

R. P. Libbey and E. L. Swann

In September 1972 a visit was made to Welches Dam to study the aquatic vegetation of the adjacent dykes and drains, the area being selected as the locality which A. Fryer enjoyed and from where he described several species of *Potamogeton*. In the Forty Foot (Vermuden's) Drain tall plants of a species of *Alisma* (Water Plantain) were noticed growing in some quantity near the edge, yet completely submerged in about 4 feet of water. In this drain the sides dip steeply into the water leaving no shallow margin. The plants were well developed, 2-3 ft. in height, the flower heads being present in all stages from tight bud to open fruit. Brief examination at the time with a hand lens showed the presence of coiled styles and curled stigmas characteristic of *Alisma gramineum* Lej. contrasting sharply with those of *A. lanceolatum* (for which this plant might be mistaken) where the styles are straight. Additional characters noticed were the long ribbon-like leaves only slightly (if at all) dilated towards the tip to form a blade, a slight arching and recurving downwards of the pedicels after flowering and small insignificant petals possibly due to the complete immersion in water. Dr S. M. Walters kindly confirmed the identification of this species. John Gilmour and he (1954) observed in their 'Wild Flowers' of the 'New Naturalist Series' that 'opening time' of the flowers is said to be 6.15-7.0 a.m., but the writers have so far not confirmed this observation! Numerous smaller and non-flowering plants were noticed growing among the mature species, so that it appears to be well established, and shows every indication of having been there for a number of years. The plants associated with *Alisma gramineum* were noted as:

<i>Ranunculus circinatus</i> Sibth.	Locally frequent
<i>Nuphar lutea</i> (L.) Sm.	Frequent
<i>Myriophyllum spicatum</i> L.	Frequent
<i>Polygonum amphibium</i> L.	Occasional
<i>Rumex hydrolapathum</i> Huds.	Occasional
<i>Sagittaria sagittifolia</i> L.	Locally frequent

<i>Elodea canadensis</i> Michx.	Abundant
<i>Potamogeton perfoliatus</i> L.	Abundant
<i>P. lucens</i> L.	Frequent
<i>Carex acutiformis</i> Ehrh.	Abundant
<i>Chara aculeolata</i> Kutz.	Abundant

The status and origin of the species at Welches Dam are naturally in some question. It is difficult to believe that *Alisma gramineum* could have passed unnoticed for any great length of time in such a well-known botanical spot. It is a native of Eastern Europe—although also occurring in North America—and extends to the countries surrounding the Baltic. Welches Dam and the neighbouring district are frequented by wildfowl which are known to feed on the seeds of *Alisma* species. Langmere, in Norfolk, where the same species was detected by the writers a week earlier (also a new county record) is likewise a haven for wildfowl and is now being developed as a Bird Sanctuary.

Apart from these two recent habitats, the plant has previously only been known in this country from two other localities. It was first discovered by Dr R. C. L. Burges in Westwood Park Pool, near Droitwich, in 1948, and seven years later Miss E. J. Gibbons found it in a large and deep drain near Surfleet in Lincolnshire. Further search in this county revealed several sites in the drainage system of the area which harboured this plant. (Lousley, 1957). These waters are all frequented by wildfowl so that transference of seed by birds from these sites to Norfolk and Cambridgeshire is quite possible, even if not direct from Baltic Countries.

Mr R. Bagnall-Oakley, was consulted on this point and he writes (personal communication): 'There is no reason whatever why the seed should not have been transferred from the Surfleet site, nor indeed from Denmark. Hundreds—indeed thousands—of duck come through Denmark from the Baltic area and beyond every autumn and early winter, and once in this country they appear to move around very freely. Inside this country there are no regular flight lines but ringing discoveries show that constant movement goes on between the various wetland areas, especially between the Ouse Washes and the Humber. A recent study of the food of ducks, made from the examination of stomach contents of many hundreds of birds shot on the Ouse Washes, by the Wildfowl Trust and the Royal Society for the Protection of Birds, shows that the seeds of a wide variety of marsh and water plants including the Water Plantains are regularly eaten. I would not suggest that such seeds would survive the digestive processes of the ducks but their inclusion in their diets does at least show that the birds move and feed regularly among the plants and could easily pick up the seeds by adhesion to their plumage. Indeed this would certainly take place when they dabble and rest along the edges of the water, where seeds

tend to accumulate in great quantities especially under flood conditions. So there is every reason to believe that your two recently discovered sites could have been established by the transference of seeds by wildfowl.'

It is hoped that further search for this species in drains and ponds during late August and September will be made by botanists; this might well prove rewarding.

References

- GILMOUR, J. S. L. & WALTERS, S. M. (1954). Wild Flowers. New Naturalist Series, Collins.
LOUSLEY, J. E. *Alisma gramineum* (1957). Proc. BSBI. Vol. 2, Pt. 4.

VASCULAR PLANT RECORDS

R. J. Pankhurst

All records are for 1972 unless otherwise stated

I notice that in last year's report, Dr Perring wished me a good year for my first season as county recorder. His wishing has been very effective, judging by the remarkable number of new county records, and of rediscoveries of old records. There have also been a good many records sent in from rubbish dumps and other waste places. It seems that such sites have been under-recorded, and even though many of the plants seen on them have the status of casuals only, they may occur repeatedly and sometimes in quantity. There has been a revival of interest in the many species of *Rubus fruticosus* (blackberry) this year, and a key is published in this issue, which it is hoped will be of use to those who might like to tackle this rather thorny problem.

Polystichum setiferum (Forsk.) Woynar. On rubble near Milton gravel pit, GR 52/478619, July 71, G. M. S. Easy. 4th county record.

Myosurus minimus L. Abundant in several patches, Ouse Washes, GR 52/49-88-May, J. Cadbury. Only 3rd modern record, and conveniently within a nature reserve! (See article in this issue).

Lepidium perfoliatum L. In newly sown grass on Gog Magogs golf course, GR 52/496544, May, N. Jardine and R. Hill. 2nd county record.

Thlaspi alliaceum L. On field margin between Ashwell and Steeple Morden, GR 52/273408, October, Prof. S. D. Garrett. 1st county record.

Camelina sativa (L.) Crantz. On rubbish tips at Chatteris, GR 52/402854 in July 71 and at Fen Drayton, GR 52/327685 in October 71, G. M. S. Easy. 3rd and 4th county records.

Colutea arborescens L. Naturalised on railway sidings at Cambridge station, GR 52/463574, September 71, and at Milton gravel pit, GR 52/482625, August 71, G. M. S. Easy. 2nd and 3rd county records.

- Lathyrus nissolia* L. Shepreth pit. GR 52/390484, June, J. E. Raven. A new locality for this intriguing plant.
- Rubus laciniatus* Willd. Naturalised in scrubby area, Madingley Road, Cambridge. GR 52/422589, May, R. J. Pankhurst. 2nd county record.
- Rubus lindleianus* Lees. Borley Wood, Linton, GR 52/57-48-, August, J. R. Ironside Wood. 3rd county record.
- Rubus rufescens* Muell & Lefev. Borley Wood, Linton, GR 52/57-48-, August, J. R. Ironside Wood. 3rd county record, perhaps passed over unrecognised, as for the above also.
- Potentilla recta* L. Waste ground, Chesterton, GR 52/470610, June 71, G. M. S. Easy. 2nd county record.
- Apium graveolens* L. Edge of dyke, The Turves, near Whittlesey, GR 52/342941, May, J. O. Mountford. Only 6th recent record.
- Carum carvi* L. Grassy waste ground, Waterbeach gravel pit, GR 52/483686, May 71, G. M. S. Easy. 3rd modern record.
- Trachystemon orientalis* (L.) G. Don. Naturalised at Coton, GR 52/40-58-, April, R. Hill. Not previously recorded in the county.
- Solanum sarrachoides* Sendtn. Sandy fields near Great Heath Wood, Gamlingay, GR 52/22-51-, and in flower bed near Botany School, Cambridge, August, R. J. Pankhurst. 2nd and 3rd county records. Can be distinguished from *S. nigrum*, which often grows with it, by yellowish green colour as against dark green, by being densely pubescent rather than subglabrous, and by the accrescent calyx in the fruiting stage.
- Senecio paludosus* L. Fen ditch, July, D. Dupree, conf. S. M. Walters. Believed extinct in Great Britain, not seen since last century! (See article in this issue).
- Anthemis tinctoria* L. Rubbish tips at Fen Drayton (GR 52/48), Cambridge and Thriplow (GR 52/44), June 71, G. M. S. Easy. The only modern records.
- Hieracium strumosum* (W. R. Linton) A. Ley. Grassland under willows, Whittlesey, GR 52/280966, June, J. O. Mountford. 4th county record and 1st from the Fens.
- Alisma gramineum* Lejeune. Drain near Welches Dam, GR 52/468859, September, R. P. Libbey conf. S. M. Walters. New county record. (See article in this issue).
- Allium oleraceum* L. Roadside, Little Abington, GR 52/535497, September, Mrs B. A. Jackson. First record in the county since 1905.
- Lolium temulentum* L. Rubbish tips at Ely and Kennett, June 71, G. M. S. Easy. 3rd and 4th modern records.

CAMBRIDGE CONSERVATION CORPS

J. P. Burgon

The Cambridge Conservation Corps was started 10 years ago, and a brief anniversary report seems fitting at this time. The Corps originated within the Trust and consisted largely of its own members. The first recorded task was at Barrington Parish Pit in the early part of 1962, clearing scrub, when the attendance was 15 people. In 1962 six tasks were undertaken and 69 man days recorded. In 1972, 28 tasks were undertaken and a total of 500 man days nearly reached.

The majority of volunteers at present come from within the University, although there has been an increase in the number of people coming from the City—an encouraging trend. During the past few years there has been a fairly active involvement with County Youth Groups, nine in all, but this relationship has now lapsed. On the other hand the Cambridge Corps are now co-operating with the newly formed Ely Wildlife Youth Service Conservation Corps.

Besides working for the Trust on its reserves, work is also undertaken for the Nature Conservancy at Chippenham Fen and Cavenham Heath, and now for the Suffolk County Council on their country parks at Brandon and Clare. But the main bulk of the work is still done on Trust reserves, especially at Hayley Wood where the coppicing of the ninth one-acre plot has just been completed. Smaller tasks, requiring only a few people, are carried out for example at Upware south pit, one of the three remaining sites for the Water Germander. Here the Corps has explored the pit for the plant, and undertaken appropriate management work to ensure its survival.

What of the next 10 years? With increasing awareness of environmental problems and increasing pressure on the land, there will be a need to manage reserves even more carefully. In addition, there will be an increasing need to provide facilities for recreational pursuits without endangering the countryside. Clearly the Cambridge Conservation Corps will be fully occupied.

WEATHER NOTES FOR CAMBRIDGESHIRE 1972

J. W. Clarke

With a total rainfall of 15.96 inches 1972 was the driest year since 1921, when only 12.86 inches fell at Swaffham Prior. Although the summer was cooler, the weather pattern was similar to that of the last three years—mild winter, cold prolonged spring, with drought in late summer and early autumn.

There was no marked cold spell in January or February, and only one

day with snow lying. In the middle of March the weather became very sunny and warm. The temperature reached the sixties over a period of ten days and attained 69°F. on the 20th. Cool conditions soon returned and persisted throughout April, May and June—69°F. was not reached again until 15 June. July and August were only slightly cooler than average, but September was much cooler than usual. In October mean maximum temperatures were some 4°F. above normal. November was just a little colder than average but was remarkably free of fog. December had several foggy days, although the month as a whole was very mild and the mean temperature was 3°F. above normal.

Rainfall was near average during the first four months of the year. From May to October every month had a considerable deficit. In June less than half the average amount of rain fell. August was very dry with only four rain days—almost the whole of the total for the month fell on the 1st. A period of absolute drought extended from the 10 August–8 September. The rainfall in September was about half the average and fell on five rain days. October was even drier with only 0.11 inches on four rain days. Another period of absolute drought occurred from 18 September–9 October (0.03 ins.)–26 October. November rainfall returned to normal but December again had a deficit.

Thunderstorms were notably lacking in the summer, due to the cool conditions. In Cambridgeshire it is usual for a large proportion of the rain to fall in thunderstorms during the summer.

Weather Records at Swaffham Prior 1972

Temperature °F

<i>Month</i>	<i>Mean max.</i>	<i>Mean min.</i>	<i>Highest</i>	<i>Lowest</i>	<i>Rainfall ins.</i>
January	42°	34°	50 on 23rd	12 on 31st	1.76
February	45°	34°	50 on 29th	25 on 1st	1.29
March	54°	35°	69 on 20th	29 on 2nd	1.45
April	54°	42°	61 on 6th	31 on 25th	1.88
May	62°	45°	68 on 24th	39 on 12th	1.09
June	66°	47°	73 on 17th	39 on 16th	0.91
July	70°	53°	80 on 18th	43 on 10th	1.85
August	70°	52°	79 on 14th	42 on 23rd	1.38
September	63°	47°	73 on 1st	33 on 26th	0.86
October	60°	44°	73 on 7th	27 on 4th	0.11
November	47°	38°	61 on 6th	27 on 18th	1.94
December	48°	38°	57 on 13th and 14th	23 on 31st	1.44
Annual mean	56.7	42.1		Total	15.96

Number of days over 80° F

1

Number of days over 70° F

43

Number of days with a maximum under 32° F

1

Number of days with a minimum under 32° F

46

Last air frost of the spring

25 April

First air frost of the autumn

4 October

Average rainfall for the ten year period 1963–72

20.99 ins.

**LIST OF NEW MEMBERS FROM
1st DECEMBER 1971 TO 30th NOVEMBER 1972**

- Aarseth, Dr and Mrs S. J., 47 New Road, Barton, Cambridge
- Ablett, E. J. F., Pump Hall, 35 Ermine Way, Arrington, Royston
- Abrams, Mrs E. A., 52 Whittlesford Road, Little Shelford, Cambridge
- Adams, B. K., Mrs, 20 Chalk Grove, Cambridge
- Adams, Miss J. C., 42 Springfield Road, Cambridge
- Alexander, Miss J., Spring Cottage, Haslingfield, Cambridge
- Alford, M. H. T., 4 Millington Road, Cambridge
- Allen, D. C., 67 Montague Road, Cambridge
- Allin, D., 237 Chesterton Road, Cambridge
- Anderson, Mrs M. D., 23A Chaucer Road, Cambridge
- Andrew, Dr and Mrs C. M., 67 Grantchester Meadows, Cambridge
- Angood, J., 9 Bowlers Mead, Buntingford, Herts.
- Archer, Mrs M. T., Tanglewood, Fordham, Ely
- Armstrong, Dr T. E., Harston House, Harston, Cambridge
- Ashley, J. A., 48 North Road, Abington, Cambridge
- Askwith, Miss B. M., 21 Highsett, Hills Road, Cambridge
- Atkinson, Miss A., 6 Highsett, Hills Road, Cambridge
- Austin, C. R., Manor Farm House, Toft, Cambridge
- Bacon, Mrs D. M., 7 Riverside Court, Chesterton Road, Cambridge
- Baker, Dr and Mrs A. R. H., 21 Dunstal Field, Cottenham, Cambridge
- Barker, F. J., 22 Sandringham Road, Northampton
- Barlow, G., 66 Hartington Grove, Cambridge
- Barrett, G. A., The Grange, London Road, Chatteris, Cambs.
- Barrington, E. A., 23 Wingate Way, Trumpington, Cambridge
- Barton, H. F., 14 Fen Road, Milton, Cambridge
- Bateson, P., 37 Panton Street, Cambridge
- Bell, C., 7 Water Street, Chesterton, Cambridge
- Bennett, G. M. W., Arncliffe, 20 Haslingfield Road, Harlton, Cambridge
- Bennett, J., Home Close, Little Eversden, Cambridge
- Bennett, Mr and Mrs W. A., Arncliffe, 20 Haslingfield Road, Harlton, Cambridge
- Bishop, Mrs P. E. H., Gamlingay Village College, Gamlingay, Sandy, Beds.
- Blacker, Miss C., 62 Grange Road, Cambridge
- Bland, Miss P., Grange Farm, Huntingdon Road, Cambridge
- Bomford, R., William IV House, Middle Street, Great Gransden, Cambs.
- Boston, M. E., 13 Trumpington Road, Cambridge
- Brammar, Mr and Mrs E., Arcadia, Highfields, Caldecote, Cambridge
- Brenchley, G. H., Stapleford House, 55 London Road, Stapleford, Cambridge
- Bridewell, Miss M. R., 51 School Road, Kedington, Haverhill, Suffolk
- Brittain, R., 29 Spring Close, Histon, Cambridge
- Brookes, Miss R. I., 27 Sherlock Close, Cambridge
- Bruce, Dr and Mrs D. J., 20 Kinnaird Way, Cambridge
- Burwell County Infants School, Parsonage Close, Burwell, Cambridge
- Butler, Sir James, Trinity College, Cambridge
- Butler, J. W., 85 Queens Way, Soham, Ely
- Campbell, Dr and Mrs R. C., and Miss R., 64 Windsor Road, Cambridge
- Carr, Dr M., 5 Greater Foxes, Fulbourn, Cambridge
- Cawdry, Dr and Mrs N. G. I., 10 de Freville Avenue, Cambridge
- Chalkley, Miss A. K., 7 North End, Meldreth, Royston
- Clark, G. Kitson, Trinity College, Cambridge
- Clifton, R. A., 38 Chatsworth Avenue, Cambridge

- Coaker, T. H., Dept of Applied
Biology, Downing Street, Cambridge
- Cole, Miss M. A., Lyndhurst,
4 Ironbridge Path, Fordham, Ely
- Collings, Miss M., Oaklea, Eltisley,
Huntingdon
- Coni, Dr N. K., 29 Barrow Road,
Cambridge
- Cooke, A., Scott Polar Research
Institute, Cambridge
- Corlett, Mr and Mrs J., 2 Pleasant
Row, Fen Road, Watlington, King's
Lynn
- Cornford, Mrs J., 364 Cherryhinton
Road, Cambridge
- Corston, Dr P. B., 23 Newmarket
Road, Cambridge
- Coulson, Mrs A., 16 Roman Hill,
Barton, Cambridge
- Coulter, Dr and Mrs M. D. and John,
3 West Road, Gamlingay, Sandy,
Beds.
- Cowley, J. J., 5 Selwyn Road,
Cambridge
- Cowley, Master S., 5 Selwyn Road,
Cambridge
- Cox, Mr and Mrs B. W., 64 Fen Road,
Cambridge
- Cranfield, Miss B., 70 Rock Road,
Cambridge
- Croft, A. G., 148 Hinton Way, Great
Shelford, Cambridge
- Cross, P. E., Hill House, Church Street,
Wimblington, March
- Cubberley, N., c/o 12 Springhead Lane,
Ely
- Cuthbert, Mrs S., 11 Brookfield Road,
Papworth Everard, Cambridge
- Dale, P. F., 14 Pound Way, Swaffham
Bulbeck, Cambridge
- Darvall, Miss A. R., 16 Pound Way,
Swaffham Bulbeck, Cambridge
- Dasgupta, Dr and Mrs C. M.,
45 Mulberry Close, Cambridge
- Davenport, Mrs M. E. and Mrs M.,
New Farm, Tetworth, Sandy, Beds.
- Davey, Mr and Mrs F. W., King's
Cottage, 43 High Street, Little
Shelford, Cambridge
- Davies, Mrs A. C., 68 Wynnstay
Gardens, Allen Street, London W.8
- Dawson, Mr and Mrs J. K. N., 2 The
Old House, Ickwell Green,
Nr Biggleswade, Beds.
- Day, Mrs M. J. B., 30 Topcliffe Way,
Cambridge
- Dick, Dr G. A., 10 Barton Road,
Cambridge
- Dixon, H. B. F., 21 Trumpington
Road, Cambridge
- Dodd, R. P., 82 Arbury Road,
Cambridge
- Donaldson, Miss M. E., Lower
Wintringham, St Neots,
Huntingdon
- Douglas, Miss S., 90 Mawson Road,
Cambridge
- Duffett, G. H., 21 Thorn Close,
Soham, Ely
- Edwards, Mrs J., 10 Milford Street,
Cambridge
- Edwards, J. R., 19 School Lane, Toft,
Cambridge
- Ellison, Mr and Mrs H. J.,
75 Glisson Road, Cambridge
- Engledow, Sir Frank, Hadleigh,
Huntingdon Road, Cambridge
- Evans, Dr R. C., 55 Boxworth Road,
Elsworth, Cambridge
- Everson, N. W., 16 Greenlands,
Red Cross Lane, Cambridge
- Feakes, Miss D. W., 8 Victoria Park,
Cambridge
- Finch, R. A., 4 Chesterton Hall
Crescent, Cambridge
- Fish, Miss J. C., The Annexe,
60 Grange Road, Cambridge
- Fisher, G. G., 52 Station Road,
Fulbourn, Cambridge
- Forbes, Mrs E. M., Milton House,
28 Fen Road, Milton, Cambridge
- Fordham, Mrs A., 18 High Street,
Grantchester, Cambridge
- Forrester, D., 11 Cheyney Street,
Steeple Morden, Royston
- Forster, Professor and Mrs L. W.,
51 Maid's Causeway, Cambridge
- Foster, Miss M., 6 Chesterton Towers,
Chapel Street, Cambridge
- Fox, R., 79 Downs Crescent, Haverhill,
Suffolk
- Fox, R. E., 87 St Vincent's Close,
Girton, Cambridge
- Friday, Mr and Mrs A. E., Flat 1,
35 Madingley Road, Cambridge
- Frost, P., 8 Gibside Avenue, Chatteris,
Cambs.
- Garton, Miss K. A., Dells Cottage,
Tetworth Hall, Nr Sandy, Beds.
- Ginger, J., Homerton College,
Cambridge
- Gonville & Caius College, Cambridge
- Gooder, R. D., 1 Brookside Lane,
Cambridge
- Goodwin, Dr and Mrs R. M.,
1 Belvoir Terrace, Cambridge

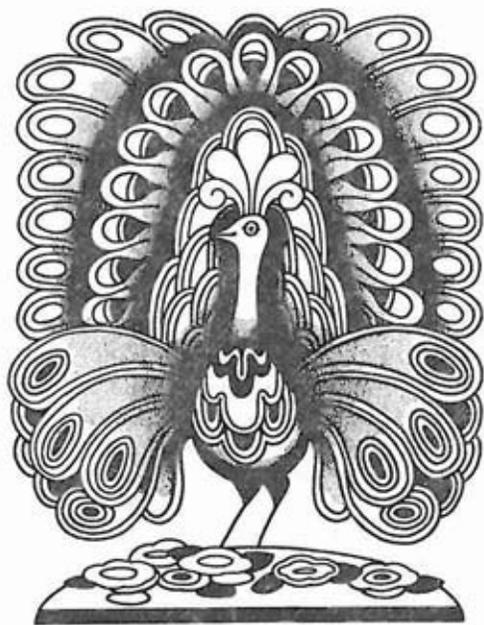
- Gorse, Miss B. M., 8 Cambridge Road,
 Coton, Cambridge
 Gothard, P., 3 Ely Road, Stretham,
 Ely
 Green, Dr H. L. H. H., 10 Summerfield,
 Newnham, Cambridge
 Green, J. C., Quanea, Ely
 Gregory, Dr R. W., 81 Hinton Way,
 Great Shelford, Cambridge
 Gresham, Dr G. M., 18 Rutherford
 Road, Cambridge
 Grierson, Professor P., Gonville &
 Caius College, Cambridge
 Grimshaw, Miss M. E., 44 Thornton
 Court, Girton, Cambridge
 Grimstone, Dr and Mrs A. V.,
 44 Highsett, Hills Road, Cambridge
 Ground, M., 161 Creek Road, March
 Gurbutt, Mr and Mrs P. A.,
 47 Glenmere Close, Cambridge
 Gurdon, Dr J. B., 19 Hids Copse Road,
 Cumnor Hill, Oxford
 Gutteridge, Miss J. A. C.,
 8 Westberry Court, Grange Road,
 Cambridge
 Hammerton, H. C. and Paul,
 73B London Road, Chatteris,
 Cambs.
 Hammond, Miss N. D. C., 13 North
 Cottages, Trumpington Road,
 Cambridge
 Harding, Dr Ann, White Lodge,
 West End, Whittlesford, Cambridge
 Harding, Mr and Mrs P., 1 Long Row,
 Boxworth, Cambridge
 Harrison, Professor R. J.,
 8 Woodlands Road, Great Shelford,
 Cambridge
 Harvey, Mr and Mrs W. H.,
 36 St Mary's Street, Ely
 Hastings, W. J., 13 Brierley Walk,
 Cambridge
 Hazel, Dr and Mrs P., 35 Fen Road,
 Chesterton, Cambridge
 Heathcote, Miss B., 51 Cambridge
 Road, Oakington, Cambridge
 Hepple, B. A., 49 Almoners Avenue,
 Cambridge
 Herbert, Mrs D. M., 27 High Street,
 Teversham, Cambridge
 Higgs, Mrs E. S., 35 Panton Street,
 Cambridge
 Hill, Miss S. A., 12 Hills Lane, Ely
 Hollman, Mrs M., 6 Haggis Gap,
 Fulbourn, Cambridge
 Holmes, Mr and Mrs F. N.,
 37 Metcalfe Road, Cambridge
 Horder, A., 35 Caslon Way,
 Letchworth, Herts.
 House, D., 27 Whitwell Way, Coton,
 Cambridge
 Howat, Mr and Mrs D. S., 14 St Paul's
 Close, Gorefield, Wisbech, Cambs.
 Howes, Miss J., The Cedars,
 Bassingbourn, Royston
 Hugall, Miss M. E., 174 Gilbert Road,
 Cambridge
 Huggins, Mrs V. and Miss R.,
 6 Grange Court, Pinehurst, Grange
 Road, Cambridge
 Humphrey, Dr and Mrs W. G.,
 14 Wingate Way, Trumpington,
 Cambridge
 Humphreys, K. W., 1 Flambards Close,
 Meldreth, Royston
 Hunter-Blair, P., 62 Highsett, Hills
 Road, Cambridge
 Hurst, Miss D. M. and Miss M.,
 15 Marlowe Road, Cambridge
 Hutcherson, S. W., Park Cottage,
 Bassingbourn, Royston
 Hutchinson, Sir Joseph and Lady,
 Huntingfield, Huntingdon Road,
 Cambridge
 Hyde-Smith, Mrs B. C., Wilbraham
 Temple, Great Wilbraham,
 Cambridge
 Ing, B., Chester College, Chester
 Isaac, Mrs G., Flat 5, Churchill
 College, Cambridge
 Isitt, The Rev. D., 41 Fulbrooke Road,
 Cambridge
 Iversen, S. D., 246 Hills Road,
 Cambridge
 Jacobson, Dr W., 53A Bateman Street,
 Cambridge
 James, Miss C. M., University Botanic
 Garden, Cambridge
 James, Mrs P., New Hall, Huntingdon
 Road, Cambridge
 Jerrard, Mr and Mrs R., 30 Porson
 Road, Cambridge
 Johnson, K. L., 13 Park Terrace,
 Cambridge
 Jondorf, Mr and Mrs W. R., 3 Gough
 Way, Cambridge
 Jones, Mr and Mrs C. I. R., 26 St
 Peter's Avenue, Moulton,
 Newmarket
 Jones, T. E., Physiotherapy Dept.,
 Fulbourn Hospital, Cambridge
 Jones, Dr W. R. B., Tudor House,
 Sawston, Cambridge
 Kendrew, J. C., 4 Church Lane,
 Linton, Cambridge
 Kerridge, D., 5 Edendale Close,
 Cambridge

- Kestin, Miss J., 9 Portley Lane,
 Caterham, Surrey
 Keynes, W. M., 3 Brunswick Walk,
 Cambridge
 Killen, Mrs E. A., 13 King's Grove,
 Barton, Cambridge
 Kimberley, Miss D. M., 4 Hills
 Avenue, Cambridge
 Kinns, Mr and Mrs R., 35 High Street,
 Over, Cambridge
 Knights, Mrs M. D., 34 Almoners
 Avenue, Cambridge
 Knott, Dr J. F., 40 Beechwood Avenue,
 Bottisham, Cambridge
 Lainson, Mrs M. M. and Miss E. A.,
 24 Panton Street, Cambridge
 Lakin, Mrs P. K., 22 Almond Grove,
 Bar Hill, Cambridge
 Lamb, Miss A. V., 35 Coles Road,
 Milton, Cambridge
 Lancaster, I., Dovecote, Ramsey Road,
 St Ives, Huntingdon
 Larmouth, Dr J., 5 Cambanks,
 Union Lane, Cambridge
 Larwood, L. G., 26 Fendon Road,
 Cambridge
 Lawn, Dr L., 22 Brookside, Cambridge
 Lawrence, Mr and Mrs P. R.,
 6 Lansdowne Close, Ely
 Lawson, Mrs T. J., Bourn Lodge,
 Bourn, Cambridge
 Lea, Mr and Mrs S. E. G.,
 20 Gladeside, Bar Hill, Cambridge
 Leach, Dr E. R., Provost's Lodge,
 King's College, Cambridge
 Lennox Cook, J. M., 75 Barton Road,
 Cambridge
 Linfoot, Mrs J. J., 7 Sherlock Road,
 Cambridge
 Lowe, Mrs A. B., 9 The Cobbles,
 Wingate Way, Cambridge
 Lukies, Mr and Mrs R. L.,
 20 St Margaret's Road, Girton,
 Cambridge
 Lyster, Mrs G. B., Little Chishill
 Manor, Royston
 McCance, Professor R. A., 4 Kent
 House, Sussex Street, Cambridge
 McLachlan, Dr A. D., 25 High Street,
 Great Shelford, Cambridge
 MacPherson, Dr W. J., 18 Lantree
 Crescent, Trumpington, Cambridge
 Marks, Mr and Mrs R. H., Phoenix
 Thatch, Dullingham, Newmarket
 Marshall, Miss B., 12 Coppice Avenue,
 Great Shelford, Cambridge
 Marshall, H. C., 4 Clare Road,
 Cambridge
 Mellor, J. R., 10 Ravens Court, Ely
 Miller, R. J., 103 Glebe Road,
 Cambridge
 Moore, Mrs D. M., 86 Chesterton
 Road, Cambridge
 Morgan, N., 33 Wingate Way,
 Trumpington, Cambridge
 Mountford, P. A., Wesley House,
 7 Scaldgate, Whittlesey,
 Peterborough
 Murton, Dr R. K., The Farmhouse,
 Green End, Comberton, Cambridge
 Newbery, D. H. G., 71 Thornton Road,
 Girton, Cambridge
 Newdick, M., 11 Long Road,
 Comberton, Cambridge
 News, Sir Foley and Lady, Cedar
 House, Caxton Lane, Foxton,
 Royston
 Newton, Mr and Mrs J. M.,
 2 Summerfield, Cambridge
 Nicholls, Mrs F., 23 Greater Foxes,
 Fulbourn, Cambridge
 Norman, K., 8 Gilbert Road, Littleport
 Ely
 Northcott, Mrs J., 34 Millington Road,
 Cambridge
 Osborne, Mr and Mrs A. F., 1A Hall
 Farm Road, Cambridge
 Palmer, Dr and Mrs A. C.,
 34 Causewayside, Fen Causeway,
 Cambridge
 Pape, L. H., 78 Burrowmoor Road,
 March
 Parkes, Miss C. and Master
 Christopher, 7 Bulstrode Gardens,
 Cambridge
 Parkes, Professor and Mrs E. W.,
 7 Bulstrode Gardens, Cambridge
 Parkes, Lady Ruth, 11 Adams Road,
 Cambridge
 Paul, Mrs V. M., 22 Haslingfield Road,
 Barton, Cambridge
 Pearce, Mr and Mrs G., 11 Mill Croft,
 Soham, Ely
 Pease, Miss N. J., 1 High Street,
 Girton, Cambridge
 Peglar, Mrs S. M., 33 Wolsey Way,
 Cambridge
 Pelloc, Rev. Canon J. P., 14 Lynn
 Road, Ely
 Penistan, Mr and Mrs M. J.,
 7 Gilmerton Court, Cambridge
 Phelps, Mr and Mrs A. S.,
 Miss C. R. and Miss W. R.,
 27 Gilbert Road, Cambridge
 Phillips, C. K., 37 London Road,
 Harston, Cambridge

Pigott, Mrs M. H., 16 Highworth Avenue, Cambridge
 Polack, Mr and Mrs K., 224 Hills Road, Cambridge
 Pollard, Mr and Mrs M. B., 13 Rogers Close, Elsworth, Cambridge
 Potter, Mrs J. G., 141 Waterbeach Road, Landbeach, Cambridge
 Pratt, Miss V. B., 56 Broad Lane, Haslingfield, Cambridge
 Priestley, Miss A. E., 76 Hinton Way, Great Shelford, Cambridge
 Prior, C. D., Darwin College, Cambridge
 Pye, D., Teal Spring Main Street, Coveney, Ely
 Rawson, Miss E., New Hall, Cambridge
 Reynolds, Miss L., 120 Newmarket Road, Cambridge
 Richards, M. P. M., 57 Selwyn Road, Cambridge
 Richens, Miss J., 11 Barton Close, Cambridge
 Ridgeon, C. E., Latham House, Trumpington Road, Cambridge
 Ries, P., 2 Eltisley Avenue, Cambridge
 Ripplingall, Major J. F., Elmdon Bury, Saffron Walden, Essex
 Robinson, Mr and Mrs D., 17 Millers Road, Toft, Cambridge
 Robinson, Mr and Mrs D., 17 Courtyards, Little Shelford, Cambridge
 Robinson, E. D., Gableden, Hilton Road, Fenstanton, Huntingdon
 Roskill, Capt. S. W., Frostlake Cottage, Malting Lane, Cambridge
 Ruel, Dr and Mrs M. J., 14 Church Street, Histon, Cambridge
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 Saltmarsh, Dr J., King's College, Cambridge
 Sanders, Miss G. M., 35A Station Road, March
 Schnapper, Miss E. B., 67 Holbrook Road, Cambridge
 Scott, Dr and Mrs H. C. L., 61 Storey's Way, Cambridge
 Sell, R. P., 1 Station Road, Fulbourn, Cambridge
 Shand, J. A. O., 82 High Street, Cottenham, Cambridge
 Sharpe, D. F., 2 Manor Farm Cottages, Snailwell, Newmarket
 Shearcroft, Miss A. E. F., 14 Kimberley Road, Cambridge
 Sheldrake, Dr A. R., Clare College, Cambridge
 Shute, C. C. D., Eversden House, Great Eversden, Cambridge
 Sims, Mr and Mrs D. M., 11A High Street, Foxton, Cambridge
 Skelly, Miss S., 22 Long Furlong, Over, Cambridge
 Slough, Mr and Mrs R., The Brangehill, Mepal, Ely
 Smith, Miss M. A., Rossall Junior School, Fleetwood, Lancs.
 Smith, Miss P. R. P., 94 Windsor Road, Cambridge
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 Stebbings, A., 2 Wort's Causeway, Cambridge
 Stein, Professor and Mrs P. G., 29 Millington Road, Cambridge
 Steiner, G., 32 Barrow Road, Cambridge
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 Stone, Mrs S., 66 Station Road, Fulbourn, Cambridge
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 Straker, G. E., 111 Grantchester Meadows, Cambridge
 Stubbs, Miss Mary, 104 Sturton Street, Cambridge
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 Swan, Dr and Mrs G. F. W., 144 Chesterton Road, Cambridge
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 Taylor, Mr and Mrs C. T., Reeds Cottage, 11 West End, Whittlesford, Cambridge
 Tebbutt, Mrs R. C., 49 St Barnabas Road, Cambridge
 Till, M. S., 195 Chesterton Road, Cambridge
 Tomkins, R., 19 Woodlands Avenue, March
 Tomkins, S. P., 20 Sand Street, Soham, Ely

- Tooke, R. H., 19 Ridgeway, Papworth
Everard, Cambridge
- Tuck, Mrs M. G., 1 Park Lodge, Park
Terrace, Cambridge
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Street, Cambridge
- Turner, E. R., 52 Metcalfe Road,
Cambridge
- Vlasto, Dr A., 7 Adams Road,
Cambridge
- Wakelin, Mrs J., Upperfield, Church
Lane, Elsworth, Cambridge
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Trumpington, Cambridge
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Foxton, Royston
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Huntingdon
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Grantchester, Cambridge
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Great Shelford, Cambridge
- Warner, W. J. N., 191 Hills Road,
Cambridge
- Warren, D. A., Post Office, Over,
Cambridge
- Warren, Miss E. B. A., 26 Tenison
Road, Cambridge
- Webb, P., 57 Norwood Road, March
- Weller, Mrs J. D., 17 Clarkson Road,
Cambridge
- Wells, M. J., Bury House, Home End,
Fulbourn, Cambridge
- Wendon, Miss M. B., 39 New Road,
Barton, Cambridge
- Whalley Taylor, M., 47 Thornton
Close, Girtton, Cambridge
- Wheatley, T. F., 63 Highsett, Hills
Road, Cambridge
- White, Mrs M. A., 28 Royston Road,
Whittlesford, Cambridge
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Burwell, Cambridge
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Trumpington Road, Cambridge
- Wilson, N. J., 150 Blinco Grove,
Cambridge
- Wisbey, Professor R. A.,
49 Nightingale Avenue, Cambridge
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Cherry Hinton, Cambridge
- Woodsford, P. A., 20 Anglers Way,
Cambridge
- Woolhouse, Mr and Mrs J. D.,
Estover, Elm Road, March
- Wormell, Dr T. W., 1 de Freville
Avenue, Cambridge
- Wright, G. R. W., Rectory Farm,
Madingley Road, Cambridge
- Yates, Mr and Mrs G. G.,
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Why the Trust has been formed

The countryside is changing rapidly before our eyes. Some change is, of course, inevitable; but nearly all the alteration is tending towards a loss of variety, interest and beauty, and the destruction of areas still in a natural or semi-natural state. County Naturalists' Trusts are now active in practically all parts of Great Britain. Our own Trust, which has played a valuable part in the growth of the voluntary conservation movement, has many urgent tasks to perform in Cambridgeshire and the Isle of Ely.

Aims of the Trust

1. To conserve the wildlife interest of Cambridgeshire and the Isle of Ely.
2. To set up Nature Reserves by acquisition or agreement in order to manage and protect their wildlife.
3. To promote in the public an interest in and understanding of conservation and natural history by publicity and education.
4. To co-operate with all local and national organisations concerned with the conservation of the countryside.

Privileges of Membership

Members are entitled to visit the 1000 acres of Nature Reserves owned or managed by the Trust. They can also attend summer field excursions arranged by the Trust, and all receive a copy of *Nature in Cambridgeshire* and two newsletters each year.

Membership

Minimum subscriptions: Ordinary £2 p.a., Life £50, Family Membership (husband, wife and any children under 12) £3, Corporate Membership Schools, etc. £2 p.a., Students 50p p.a. Full particulars from the Secretary, 1 Brookside, Cambridge, CB2 1JF.

LEGACIES

Some members may have considered the possibility of leaving money to the Trust in the form of a legacy. We are therefore including a suggested form of bequest, worded as a codicil to an existing will, which might prove useful. The testator should, of course, consult his or her legal adviser in making this alteration.

This is a codicil to the last Will of me.....(name)
of.....
..... (address)

I give a legacy of.....pounds (£.....) free of all duty to the Cambridgeshire and Isle of Ely Naturalists' Trust, and I declare that the receipt of the Treasurer or Secretary for the time being or proper Officer of the Society shall be a sufficient discharge to my Trustees for the said legacy.

In all other respects I confirm my said Will.

Signed, dated and witnessed.