Hayley Wood

NATURE
IN
CAMBRIDGESHIRE

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Cambridgeshire and Isle of Ely Naturalists' Trust Ltd.

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The drawings were specially done for this number by Mr. B. Golding

EDITORIAL

Members of the Naturalists' Trust are sometimes asked 'What exactly does the Trust do?' in tones varying from incredulity to scorn. The answer has not always in the past been easy. Such things as the surveying of roadside verges and village ponds may impress some people, but signally fail to impress others. Much of the Trust's activity, too, is carried on without a blaze of publicity in friendly arrangements with local Powers. Moreover, some people expect that now that we have a Naturalists' Trust no more wild animals or birds will be destroyed, no rare or beautiful flowers will be ruthlessly picked, and no more ugly buildings will go up in places where there is at present corn, grass, or any other desirable kind of vegetation.

However, if all goes well, we shall shortly be able to reply to our questioners, 'Among other things, we have bought a wood and are keeping it as a nature reserve. We have saved it from the fate that has befallen so many woods all over the country and are ensuring the continuance, in at least one place, of several interesting kinds of wild life.' We have, optimistically, shown our new nature reserve on the cover, and hope that all our readers will seize the opportunity of becoming Friends of Hayley Wood.

In the meantime the ordinary work of the Trust continues, not the least important part of which is to encourage the growth among the general public of the wish to conserve Nature in this county of Cambridgeshire, where, even if coypu turn up occasionally,

> At rabidae tigres absunt et saeva leonum
> Semina, nec miseros fallunt aconita legentis.

Black Tern.

CAMBRIDGESHIRE AND ISLE OF ELY NATURALISTS' TRUST LIMITED

FIFTH ANNUAL REPORT, 1961

The year has seen a steady growth in the activities of the Trust, and the increase in membership which we were able to report in 1960 has continued throughout 1961 at a very satisfactory rate. By December there were 250 members representing an expansion of one quarter during the year. The burden of the increasing clerical and administrative work has been very efficiently shared by a larger number of members than before, and the Council would like to record in particular their thanks to Miss K. B. Gingell and Mrs. G. Crompton who have given unstinting assistance throughout the year.

Nature Reserves

The most important decision taken in 1961 was to negotiate an option to purchase Hayley Wood for £5,000. The public appeal to raise this money is planned for January 1962, and by the time this report is adopted, we shall know how successful this appeal has been. The Appeal Committee for Hayley was set up in December with our Patron, Lord Fairhaven, and President, Mr. Gilmour, at the head. It has the following members:- Rev. E. A Armstrong, Mr. Miles Burkitt, Professor H. Godwin, Councillor A. Halcrow, Professor Sir Joseph Hutchinson, Professor C. F. A. Pantin and Professor J. A. Steers.

A working sub-committee was constituted to plan the details of the appeal and the draft of a four-page leaflet was prepared.

The option to buy Hayley Wood presents the Trust with a unique opportunity. The wood is, by general consent, the best of the remaining unmodified Oxlip woods in the county, and its size (over 120 acres) and compact shape make it ideal as a woodland nature reserve. Preliminary plans of management are being prepared by the Technical Committee and the appeal is planned to raise a further £2,500 for the necessary maintenance of the property once it is acquired. The Council is most grateful to Mr. Christopher Cadbury who has promised a substantial donation to the Trust towards the purchase of its first reserve, and also to the Society for the Promotion of Nature Reserves for an interest-free loan of £2,500 for five years.

The Thriplow Meadows reserve, leased from Lord Walston at a nominal rent for seven years, was the subject of a successful application to the Nature Conservancy for a

grant towards the cost of setting up an experiment in grazing and cutting management. (A report on this experiment is published as a separate article on page 20). The Council would like to take the opportunity of thanking the Nature Conservancy for their generous support, Mrs. Crompton for undertaking the recording, and Mr. C. W. Rowell for technical help with setting up the experiment.

Negotiations over sites

Negotiations are still not completed about the pits owned by the Ouse River Board, but an agreement has been reached over the important 13-acre site near Manea by which the Trust could have access to the pits here for conservation and management.

Useful discussions have also been held during the year with several Parish Councils including those of Gamlingay and Fulbourn, concerning the preservation or management of sites of natural history interest.

Roadside Verges

During the year measures have been taken to protect the natural history interest of roadside verges in the county, and experiments have been started which will, we hope, lead to their even greater interest in the future. In this work we have had the full co-operation of the Cambridge City and Cambridgeshire County Surveyors and their departments. Our requests and suggestions have always been treated sympathetically and we are most fortunate that this reasonable attitude prevails.

Excess of zeal on the part of workmen of the City Surveyor's department led to the use of weed-killers on roadside banks along Lime Kiln Road. No permanent damage was done but as a result an agreement was reached that no herbicides would be used on a number of country roadsides within the city limits. As a further attempt to maintain the value of Lime Kiln Road as a nature reserve the Trust, in conjunction with the Coleridge Boys School, spent some time during the bush-clearing expedition to Lime Kiln Close in removing rubbish from the hedgerows on both sides of the road. The City Surveyor kindly supplied a lorry to remove the debris.

A number of rare plants known from only one or two localities in the county have localities on roadsides. There is always the fear that the dumping of road material or road widening schemes will eliminate these habitats. As a precaution the co-operation of the County Surveyor was sought and he agreed that the sites in question should be marked on his maps if we would locate the areas precisely on the ground. To this suggestion we readily agreed and a

party was organised which marked the areas with stakes in such a way that they could be found by the authorities, but would not attract attention from the casual passer-by.

The Trust is anxious that the cutting of roadside verges in the county should not be any more vigorous than is necessary for the safety of the motoring public. We feel that the ideal should not be a uniform grassy sward except where taller vegetation would dangerously interfere with visibility. A compromise is surely possible between naturalists and motorists. Yet little information is available on times and frequencies of cutting which would give the desired result. In consequence we sought the assistance of the County Surveyor and he generously agreed to co-operate in some cutting experiments on three sections of roadside near Cambridge. These sections have now been selected and the experiments started. Photographic records are being kept and we hope to be able to discover when and how often the cutting of roadside verges should take place to give the best display of hedgerow flowers whilst complying with the needs of the road-user. Some photographs were shown by Mr. Palmer at the members' meeting in December.

Work Parties for Scrub-clearing

Small work-parties of members have done valuable service during the year at Barrington in April and Cherry Hinton in October. At Cherry Hinton a party of boys from Coleridge School organised by Mr. W. Kingdon did an excellent job of clearing a track round the back of the Lime Kiln Close nature reserve. We are most grateful to Mr. Kingdon for organising this, and hope to repeat such occasions in future seasons.

In December the Trust was offered, and accepted, a very useful grant of £50 from the Conservation Corps of the Council for Nature towards the purchase of tools and equipment necessary for the work-parties in future years. This grant will enable us to expand this valuable activity in local 'do-it-yourself' conservation.

'Paradise' Public Enquiry

At a Public Enquiry held in the Guildhall, Cambridge in May the Trust supported the City Council and the Cambridge Preservation Society in upholding the Planning decision to retain the land by the River Cam known as 'Paradise' as a Public Open Space on the development plan. The Minister's decision, which was given in July, was in favour of the City Council, who will therefore go ahead with their plans for acquiring the area.

Meetings

The programme of joint excursions with the Cambridge Natural History Society was enlarged this year, and was carried through very successfully. (Details of these excursions are given on page 14). At the Annual General Meeting held in Cambridge on Saturday, 22 April, a programme of films was shown after the business meeting. This included film taken during the Duke of Edinburgh's visit to the Conservation Corps Work Party at Wicken Fen in 1960. The usual Members' Meeting was held in Clare College, Cambridge on Tuesday, 5 December; although this was a pleasant and valuable occasion the number of people present (28) was rather disappointingly low, and the weather, though cold, was hardly responsible for the poor attendance.

Publications and information

During the year the production of the Journal and the six-monthly news-letters have continued as before, and members have contributed to the 'Nature Notes' series in the Cambridge Daily News. This series has been somewhat enlarged, with occasional photographs and longer illustrated articles. Miss Gingell has been responsible for co-ordinating and submitting the Nature Notes. 'News for Naturalists' has been distributed to members with the Trust's own literature.

Conservation on National and International Levels

During the year most of the remaining English Counties showed progress towards the formation of Trusts, and the Society for the Promotion of Nature Reserves, through its County Trusts Committee, was very active in co-ordinating the development of the movement. The Suffolk Trust was formally inaugurated in May, and already we have co-operated on negotiations over sites near the Cambridgeshire-Suffolk border. In September the new World Wild-Life Fund was very successfully launched, and had collected by the end of the year a very considerable sum of money to be devoted to nature conservation on an international scale. Under the constitution of the Fund, one-third of the money raised in Britain will be available for schemes inside Britain, and plans are being laid by the Trusts Committee to co-ordinate applications for grants. In this and other ways there are signs that more money may be available for well-planned conservation projects in the future; this is an encouraging sign, and should act as a further stimulus to our work.

Report of the Technical Committee

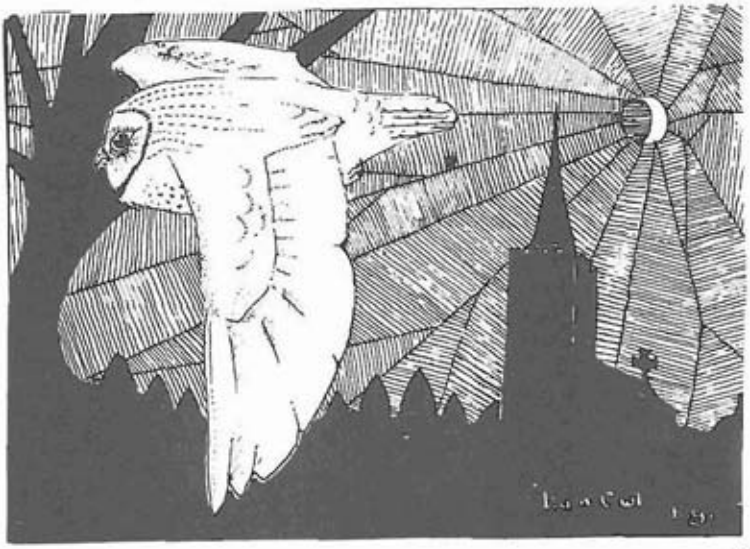
Dr. Perring reports as follows:-

The Technical Committee met once during the year in August. It considered the future of the Mare Way following notification from the County Surveyor that his department proposed to clear bushes on the Mare Way, including the length where Cirsium tuberosum occurs, and to use arboricides on the stumps. It was agreed that, though we were not against the use of arboricides, if these were the most effective way of checking the redevelopment of scrub, we should ask that they should not be used in the vicinity of the Thistle unless solely for the painting of stumps.

The situation at Fulbourn Pond was considered and it was agreed to recommend to the Council that a sluice should be constructed at the outlet to raise the water level in winter.

A long discussion on the potential of Hayley Wood as a nature reserve took place. No decisions were taken but, if the Trust acquires the wood in 1962, the Committee will have a longer report to present next year.

The Field Sub-Committee met early in the year and allocated tasks for its members during the year. A number of useful reports have been made which have led to the improvement of relations with owners and tenants. It is hoped that the sub-committee will meet regularly twice per year in future, once to plan work and a second time to report progress, though the most important work is done in the field by reporting on sites as and when problems arise.



TREASURER'S REPORT

The healthy increase in membership continues. Larger numbers of members are now paying more than the minimum annual subscription of 10/-: this is particularly welcome because we find we are seriously hampered in our activities by shortage of funds. Covenanted subscriptions are especially helpful. Information or guidance as to the covenanting of subscriptions will gladly be given.

Since the end of the year under review our Hayley Wood Appeal has resulted in further increase in membership of the Trust. Without doubt increased membership is our greatest need: again existing members are asked to introduce at least one new member in the coming year.

The past year has produced an excess of income over expenditure. We are grateful for donations which have enabled us, among other things, to achieve some conservation. There is much work waiting to be done and it is hoped that a worthwhile increase in membership during 1962 will enable us to do it.

Collared Dove - see p.36

THE CAMBRIDGESHIRE AND ISLE OF ELY NATURALISTS' TRUST LTD.

(Limited by Guarantee)

Income and Expenditure Account for the year ended 31st December, 1961

1960		To/						1960		By/					
43		Printing, Stationery and Telephone	14	8	4					Subscriptions:-					
10		Publicity	1	1	0			117		203 Ordinary Members	136	14	6		
18		Postages	21	4	3			1	118	4 Undergraduate and Junior Members	1	0	0	137	14 6
12		Secretarial Assistance	7	2	6				9	Transfer from Life Membership Subscriptions				12	10 0
8		Delegates' Expenses attending Conference	-	-	-				12	Donations				126	10 0
1		Grant to the Council for Nature	2	2	0				1	Profit on Sale of Publications					15 9
1		Conservation Expenses	95	10	4				5	Bank Interest				5	19 5
8	101	Audit Fee	5	5	0	146	13 5		10	Income Tax repayable on Subscriptions under Deeds of Covenant to 5th April, 1961				19	19 7
76		Printing Annual Report for 1960	81	10	0				12	Excess of Expenditure over Income for year				-	- -
10	66	Less: Sales and Contribution from Cambridge Natural History Society	6	14	6	74	15 6								
	-	Excess of Income over Expenditure for year				82	0 4								
	£167					£303	9 3	£167						£303	9 3

Balance Sheet 31st December, 1961

31/12/60						31.12.60				
		Accumulated Fund:					3	Stock of Publications		1 13 3
82		Balance at 1st January, 1961	70 5 10					Sundry Debtors:		
		Excess of Income over Expenditure				14		Miscellaneous	8 18 0	
12	70	for year	82 0 4	152 6 2		10	24	Income Tax repayable	30 4 6	39 2 6
		Life Membership Subscriptions:						Cash at Bankers:		
145		Balance at 1st January, 1961	166 0 0			63		Current Account	167 18 5	
30		Received during year	60 0 0			161	224	Deposit Account	167 9 0	335 7 5
175			226 0 0							
9	166	Less: Transfer to Income and Expenditure Account	12 10 0	213 10 0						
		Current Liabilities:								
8		Sundry Creditors	7 7 0							
7	15	Subscriptions received in advance	3 0 0	10 7 0						
	£251			£376 3 2		£251				£376 3 2

Signed: J. S. L. Gilmour, Franklyn Perring } Council Members
S. Max Walters Honorary Secretary

Auditors Certificate

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Company so far as appears from our examination of those books. We have examined the above Balance Sheet and annexed Income and Expenditure Account which are in agreement with the books of account. In our opinion and to the best of our information and according to the explanations given us the said accounts give the information required by the Companies Act, 1948 in the manner so required and the Balance Sheet gives a true and fair view of the state of the Company's affairs as at 31st December, 1961 and the Income and Expenditure Account gives a true and fair view of the Excess of Income over Expenditure for the year ended on that date.

Norwich Union Buildings,
Downing Street,
Cambridge.
5th March, 1962.

PETERS, ELWORTHY & MOORE
Chartered Accountants

CAMBRIDGE NATURAL HISTORY SOCIETY

President: Rev. E A. Armstrong

Report for 1961

During 1961 the Society welcomed, as our new President, Rev. E A. Armstrong who will be well known to many as author of the New Naturalist books 'The Folklore of Birds' and 'The *Wren*'. We should also like to express our gratitude to the retiring President, Dr. R. W. Hey, for all he has done for the Society during the past two years.

Membership of the Society, both City and University, has continued to rise as in recent years. 'The Geology and Soils of Cambridgeshire' by R. W. Hey and R. M. S. Perrin, which we published last year, has become a standard work already ... and the Secretary has even had requests for it from Germany, the United States and New Zealand!

Six general meetings were held in the Lent and Michaelmas terms at which the following talks were given:

Prof. W. I. B. Beveridge	'The Natural History of Viruses'
Prof. D. H. Valentine	'A Botanist in Czechoslovakia'
Mr. F. J. Bingley	'Constable's Country'
Dr. D. P. Wilson	'Keeping marine animals in captivity from ancient to modern times'
Dr. W. T. Stearn	'The University of Leyden and Botany in the 17th and 18th centuries'
Dr. H. B. Cott	'Big Game in Equatorial Africa'

The Botanical, Entomological, Geological and Zoological sections held a wide and interesting range of more informal meetings during the year.

The Annual Conversazione and Exhibition, most competently organised by Mr. David Aidley, was held on Wednesday May 3rd. There were many intriguing exhibits but we would like to see more, of course, both from organisations like schools, and from individuals with bright ideas.

A number of summer field excursions were held jointly with members of the Naturalists' Trust.

C. Turner, Senior Secretary

Life membership 30/-. A three-year membership for undergraduates, 12/6. Annual subscription for members of training colleges and schools in Cambridge, 5/-.
Applications for membership can be made as follows:-
City: Mr. W. H. Palmer, Homerton College, Cambridge.
University: Mr. J. S. Beckett, Jesus College, Cambridge.

NATIONAL TRUST

WICKEN FEN LOCAL COMMITTEE

Extracts from the Report for 1960/1961

The general upkeep of the droves and the cutting of the sedge areas was satisfactory, although extra bush clearing was not possible. The area on Milner-White's piece cleared by the Conservation Corps makes a useful extension to the 'mixed fen' at the Fen Entrance, and Peucedanum palustre and Lathyrus palustris are both (1961) locally frequent here.

Unfortunately the very mild winter and the high water-level on Adventurers' Fen made the harvesting of reed impossible there, so that the reed sales for 1961 will be less than 1960. The demand for both sedge and reed is, however, much greater than the present supply, and it seems likely that the sedge crop will make an increasing contribution in the future.

The clearing of the area adjacent to Professor Godwin's experimental plots (set up near Drainer's Dyke in 1929), which was carried out early in 1960, has now made the plots much more useful for ecological teaching purposes. The fencing and labelling of the area has been arranged with the University Botany School, the Committee to bear the cost of materials and to supply the labour. There were no visiting work-parties in the period under review (August 1960 - July 1961); but a young people's camp, arranged through the Conservation Corps, will work on the Fen in August 1961.

The Swallow-tail Butterflies seem to have had a bad winter. There have been no positive indications that any did, in fact, over-winter successfully on the Fen. The laboratory stock of the colony began to emerge in late May and, since it would have been difficult to hold them back much longer, the opportunity was taken to release this stock at the Fen on Sunday 4 June when Cambridgeshire Natural History Society, the Cambridgeshire Naturalists' Trust and the Hertfordshire Natural History Society were holding a joint excursion visit to the Fen under Mr. Palmer's leadership. It will be remembered that in previous years positive evidence of over-wintering by at least one butterfly has been obtained before releasing the laboratory-reared imagines.

The Bearded Tits, Panurus biarmicus, recorded round the Mere in the winter of 1959-60 unfortunately did not breed, although the extensive reed-beds on East and West Adventurers' Fen would now seem to be eminently suitable. Nightingales, Luscinia megarhynchos, seem to have increased in abundance, particularly in the area round the

entrance to the Main Drove. During recent months, Professor D. R. Griffin of Harvard University and Dr. Thorpe have visited the Fen on several occasions to study the inaudible ultrasonic components in the song of the Grasshopper Warbler, Locustella naevia, and other species of birds. The study involved the transport of heavy recording apparatus, together with a 200 v. A.C. generator, to the Fen; and Henry Barnes gave very willing assistance in this work.

Small additions and improvements were made to the Museum in 1960, which was open as usual from May to September. There is increasing evidence that it and the small garden are valuable to visiting school parties in particular.

A start was made during the summer of 1960 to survey the vegetation of the Mere. The island was visited, and a list of species and rough sketch of the boundaries of communities were made. Mr. Lane took a number of valuable photographs for the record. Some detailed notes were made of a very striking association of nitrophilous marsh plants characteristic of the edges of reed-swamp where wild-fowl 'pressure' is high. This community, containing the very local Docks, Rumex maritimus and R. palustris, seems to be a natural development in such highly specialised habitats, and very similar communities are described in the European literature.

During the year Miss K.E. Luck of the University Botany School, Cambridge, has extended her research on the Fen on the ecology of the grasses Calamagrostis epigeios and C. canescens. In connection with these studies she has dug a number of pits to record fluctuations in the water-table over the Fen. An understanding of the behaviour of these two grasses under different conditions is of direct importance to the management of Fenland reserves, and of Wicken in particular. Other research uses of the Fen during the past year include work carried out by Mr. D.S. Streeter of University College, London on the moss Acrocladium cuspidatum, and the provision of peat for use in the experimental area of the University Botanic Garden, Cambridge.

In 1960, the number of visitors to the Fen again made a record. 3494 people were registered in the book kept at the Keeper's House: this includes 2514 individual signatures, and 37 organised parties varying in size from five to 52.

Lt. Col. C.E. Mitchell began work as Warden-Naturalist at Wicken on May 1st., 1961.

FIELD MEETINGS IN 1961

Nine field meetings were held jointly with the Cambridge Natural History Society. (Approximate numbers attending each meeting are given in brackets).

Saturday, April 15th. Peakirk Water Fowl Gardens (40)

The collection at Peakirk is complementary to that at Slimbridge, Gloucestershire, and provides an important safeguard against epidemics or other disasters.

The ducks and geese, now in their spring plumage, were seen to their best advantage because of the fine weather.

Members found it interesting to see how completely at home they were, showing none of the wildness that is normally associated with wildfowl.

The leader, Mr. A. E. Vine, attempted to name each species that was seen, but the identification of so many foreign wildfowl proved to be no easy task.

It would be invidious to mention the names of even a few of the species seen in this remarkable collection, but one might be forgiven for noting the pair of rare Ne-Ne or Hawaiian Geese, of which only just over 100 birds are known to exist in the world, about a third being in captivity.

Saturday, May 6th. Madingley Hall (46)

Under a very grey sky the large party, with good representation of both sexes and age classes, met on the terrace of Madingley Hall. Rain did not stop play but hampered style! One party, led by Dr. Watt, visited the meadow and saw some of the species associated with the kind of pasture once common on the plateau west of Cambridge; (notably still abundant was the Adder's Tongue Fern, Ophioglossum vulgatum). They also noted the ridge and furrow system of cultivation and land tenure.

The second party, led by Dr. Smart, proceeded to a clump of trees with much hawthorn and a favourite resort of cattle - there to collect insects, particularly beetles.

After tea a small party visited Madingley Wood under Dr. Watt's guidance, where experiments of various kinds on birds and plants are being conducted.

Saturday, May 27th. Isleham Plantation (40)

Although the skies opened and hail fell as members met for an excursion at Chippenham, the storm soon passed. About 40 members and friends explored two sandy areas in the Cambridgeshire 'Breckland'.

The afternoon was noteworthy for the rediscovery of

two plants which were feared to be extinct in the county. In the unploughed corner of an arable field several fine plants of the Striated Catchfly, Silene conica, were found.

Later, in a large sand pit, a number of plants of the rare Rupturewort, Herniaria glabra, were discovered in an area which had been flooded until recently. This is an annual or biennial species and its seeds had doubtless lain dormant in the soil beneath the water for several years without being harmed.

The Naturalists were also interested to see a stretch of roadside which it was hoped might be preserved in co-operation with the County Surveyor. Here is the last known refuge in the county of another Catchfly, Silene otites, much rarer even than the Striated Catchfly, and known only from a few localities in Cambridgeshire, Norfolk and Suffolk.

Many other sand-loving plants were seen during the afternoon - particularly species of the clover family including the Soft Trefoil, the Rough Trefoil, the Small Medick and Birdsfoot.

Sunday, June 4th. Wicken Fen

This was a joint excursion with the Hertfordshire Natural History Society and Field Club, and there was an attendance of between seventy and eighty including a coach load of about thirty-five Hertfordshire naturalists.

The whole party met in bright sunshine at 11.15 a.m. near the entrance to the Fen, and divided into several groups each under the leadership of a Cambridgeshire naturalist with special interest in birds, plants or insects. One group visited the tower hide and observed birds, another looked for insects, and the rest confined their attention chiefly to the vegetation.

The comparatively large number of flowering species in the 'litter', cut annually, was contrasted with the almost pure 'sedge', Cladium mariscus, cut only every fourth year. The bush growth of Sallow, Buckthorn, and Guelder Rose was seen to be covering an ever larger area of the Fen and to be killing off most of the herbaceous plants in the process. Noble work had been done the previous summer by members of the Conservation Corps in clearing part of this 'Fen Carr' in an attempt to stem the encroachment. In the old brick pits we found aquatic plants and an interesting fringe vegetation of reeds and similar plants: Typha angustifolia and T. latifolia, Phragmites communis, Calamagrostis epigeios, and several species of Carex. Among these the visitors were pleased to see the Greater Spearwort, Ranunculus lingua and the beautiful little Marsh Pea, Lathyrus palustris.

After lunch, which was taken on the banks of Wicken

Lode just outside the Fen, we were joined by a few more members and then everyone saw the event of the day, the release of a hundred and fifty Swallow-Tail butterflies. The original Wicken stock of the insect became extinct about 1950, and an effort is being made to re-establish it by the release of bred specimens each summer. For half an hour the air seemed filled with these magnificent butterflies as they dispersed over the Fen, settling from time to time on the flowers of wild roses and thistles, a sight never to be forgotten.

Saturday, June 17th. Reach and Swaffham Prior

The morning excursion to Reach Lode, led by the Rev. C. E. Tottenham, was sparsely attended, and few items of interest to entomologists were recorded, apart from a weevil, Drupenatus nasturtii Germar and a few specimens of the beetles Plateumaris sericea L. and Donacia semicuprea Panzer. At Swaffham Prior, beetles not hitherto recorded in the neighbourhood included Lesteva heeri Fauvel, Hypnoidus riparius Fauvel and Eledonia agaricola Herbst. A plant bug taken, for which no Cambs. record has been published, was Ischnodemus sabuleti Fallen.

A good company of botanists, led by Mr. J. W. Clarke, spent a most rewarding afternoon in two of his meadows. After explaining the main features of the site, the restricted drainage, and unusual depth of peat, he pin-pointed a remarkable number of interesting plant species. Ten different sedges included Carex nigra which is seldom seen in the county; among the twelve 'rushes' seen were Juncus compressus, Blysmus compressus and Triglochin palustris, whilst the most interesting of the grasses was Catabrosa aquatica. Some very fine spikes of Ophrys apifera were much admired and other plants among the eighty or more species noted included Valeriana dioica, Sium erectum, Lysimachia vulgaris, Lysimachia nummularia, Ranunculus flammula, Lotus uliginosus and Ophioglossum vulgatum.

For bird-watchers the range of interest was limited, but Snipe was seen, Blackcap and Sedge Warbler heard, and Reed Buntings' and Willow Warblers' nests found.

Saturday, July 1st. Wet Meadows at Thriplow (35)

In brilliant sunshine and the hottest day of the year, the large party which included a distinguished visitor, Professor Mayer from Yugoslavia, met at Thriplow Farm and then walked down to the meadows - where there is still one of the largest populations of the Marsh Orchid, Dactylorchis praetermissa, in England. The Orchids were indeed a splendid sight - some nearly two feet high, and in an in-

finite variety of shades of purple; one notable exception was a pure white form. Also present were the fruiting spikes of the early Marsh Orchid, Dactylorchis strictifolia.

The meadows are rich in marsh and fen species and particularly remarkable was the Bog Pimpernel, flowering and in abundance in two of the meadows. To the already large number of plants known in the area, members added three new species, a grass, a sedge and a rush.

Still before tea, the party crossed the brook into the field leased by the Naturalists' Trust. Dr. Walters gave a short talk describing the experiments the Trust hoped to carry out in order to learn something of the effect of different types of grazing on the Marsh Orchid.

Also in the field is Blysmus compressus, which members had been shown in the only other Cambridgeshire locality, on the preceding excursion to Swaffham. The Blysmus was very noticeable where the plants got regularly trampled on, on a footpath - (the field has not been grazed for 2 years). Near by, members were also able to see how Carex acutiformis had invaded a small experimental plot by over 3 feet in 2 years. This is a sedge that appears to be sweeping over two of the meadows in a great wave.

Tea was taken in the very welcome shade by the brook and there was a lovely smell of crushed Water Mint as the party thankfully sat down out of the sun. A Reed Bunting sang in the hedge close by and also heard was the Sedge Warbler. Indeed the large variety of bird song heard was remarkable for such a very hot afternoon.

After tea the party walked through an osier and poplar wood and by much diligent searching, found nine plants of the unusual Isle of Wight Helleborine, Epipactis phyllanthes var. vectensis.

Then members slowly wandered back through a long field where mares and foals were grazing. Yet more Marsh Orchids were seen, this time with the Spotted Orchid, Dactylorchis fuchsii, and the hybrids between them.

The members appreciated the kind help of Mr. Baker, Lord Walston's gamekeeper, on the excursion.

Saturday, July 29th. Wandlebury (30)

After an account of the history of this Iron Age fort by Mr. W.H. Palmer the 30 members and friends made a circuit of the earth work to look at it in greater detail and also to list the plants and birds to be found. This is not the best time of the year to see the most attractive plants of the area for it is in February that the ground is carpeted with the Winter Aconite, Eranthis hyemalis. Instead the party concentrated on grasses and saw over 20 different species during the afternoon.

Another attraction was the Giant Hogweed Heracleum mantegazzianum, surely one of the fastest growing plants in the world, for though it dies down each winter it reaches a height of 9 - 12 feet during the summer. The Hemlock, Conium maculatum was also growing very strongly and some plants of this species seemed to be competing with the Hogweed for height. The Hemlock is of course a poisonous plant and another to beware of was also seen after tea during a walk to the Roman Road. This was the Deadly Nightshade, Atropa belladonna, a strong colony of which is established beneath the beeches. Often only a casual plant it appears to be truly native in scrubby places on the chalk in the south of the county.

An unexpected find was quantities of the Wall Lettuce, Mycelis muralis. Sometimes a wall plant, but more generally occurring in woodlands, it is surprisingly rare in Cambridgeshire and has been considered as only a recent introduction. Nevertheless at Wandlebury it seems to be well established and has even attracted the attentions of a parasite, as growing with it were several fine plants of the Lesser Broomrape, Orobanche minor, which generally selects a composite, of which Mycelis was the only one in the vicinity, as its host.

Birds were almost silent at this time of the year and it was a touching experience at the end of the afternoon to see a leading local ornithologist, who had had a very lean time, watching with delight the thousands of ducks penned in the fields near by.

Saturday, September 9th. Over (20)

In perfect weather members visited the washes of the River Ouse at Brownhill Staunch, near Over, where an excellent show of marsh and water plants was enjoyed. In a small pond on the Huntingdonshire side of the lock gates the botanists admired the Fringed Water-lily, Nymphoides peltatum, perhaps the most characteristic plant of the slow-flowing rivers of the Fens. An attempt was made - not altogether successful! - to identify the several different kinds of Knotgrass (Polygonum) growing in abundance by the pond, after which the party admired the fine growth of the Black Spleenwort Asplenium adiantum-nigrum, a rare fern in Cambridgeshire, on the brickwork of the lock. A search was then made of the ditches along the osier beds, which proved very productive. The osier here was the Almond Willow, Salix triandra, which was flowering a second time, as it so often does in the late summer.

A picnic tea followed the afternoon's botanising, enlivened by a visit from two hungry and inquisitive horses. After tea some members stayed on to sample the drain on the outside of the bank, which produced a very good variety

of water plants. The view from the bank was most beautiful as the party dispersed in the early evening.

Saturday, October 7th. Fungus Foray at Barton Mills (20)

This proved to be one of the best fungus forays for many years, and by the end of the all too short, but fine, autumn afternoon, members felt quite overwhelmed by the numbers of species seen. The party, led by Dr. Barrett, first went to a predominantly oak wood to see and carefully note the characteristics of the lethal Death Cap - Amanita phalloides. Here also a few members were lucky enough to collect one of the largest good edible mushrooms, The Parasol, Lepiota procera. From there the party moved to a mixed oak and birch wood and saw species of mushrooms with a milky juice - genus Lactarius; here also was The Blusher, Amanita rubescens, and much admired and photographed, was a large patch of the Fly Agaric, Amanita muscaria. This brilliant red and white toadstool some intrepid members wanted to taste for its supposedly intoxicating effect, but were discouraged by Dr. Barrett. Here also were collected three of the best edible mushrooms, the Cep, Boletus edulis, the Rough stemmed Boletus, B. scaber, and the Orange Cap Boletus, B. versipellis. Dr. Barrett also demonstrated how some species of Boletus turn a bluish green on being touched. The meeting ended in a pine wood where characteristic species of the genus Russula were noted. On the way home some members stopped at the Nursery near Barton Mills to see the splendid show of Michaelmas Daisies.

DR. A. M. BARRETT - AN OBITUARY

Max Barrett was one of the few men who really knew mushrooms and toadstools in the field, and he was always ready to help the beginner in this difficult subject.

Only a few weeks before his death he was leading, with his customary thoroughness and energy, the annual fungus foray of the Trust and the Natural History Society. Near Barton Mills, he was able to demonstrate the finest stands of the Fly Agaric (Amanita muscaria) and of the Parasol Mushroom Lepiota procera most members had ever seen.

Many of his friends and acquaintances have been grateful for his assistance on field excursions; they will long remember his cheerful enthusiasm, his almost uncanny knack of finding interesting and striking specimens, and his facility in establishing and explaining the identity of any of the larger fungi.

W. H. P.

THRIPLOW MEADOWS GRAZING EXPERIMENT

Preliminary Report

G. Crompton

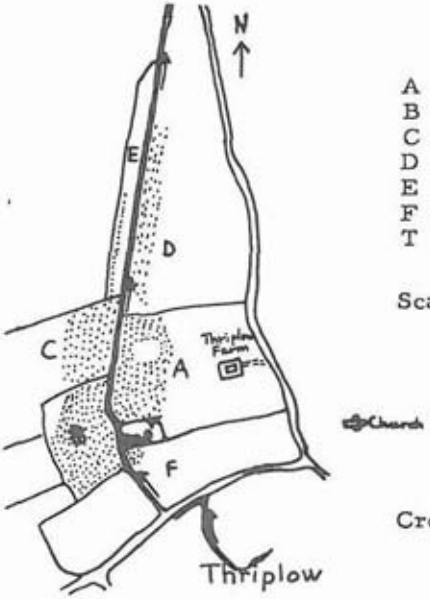
The shaded part of the map (fig. 1) shows the area in which the Marsh Orchids Dactylorchis praetermissa and D.strictifolia are abundant. The meadows and woods lie to either side of a small stream that rises from springs in the village of Thriplow and joins Hoffer's Brook at Newton. There is a gentle slope from both sides towards the stream, and the ground is usually wet between October and May. The shaded area has apparently never been ploughed, and the meadows are used for rough grazing by cows and horses. With the Orchids there is a rich marsh-fen flora. This includes Blysmus compressus and Anagallis tenella, two species which are becoming rare in Britain but here are increasing.

Meadows A, B, C, have been scheduled as a Site of Special Scientific Interest, and the Trust has obtained a seven year lease on meadow B (O.S. 52) from Lord Walston. With a grant from the Nature Conservancy it has been possible to set up an experiment on the effect of different types of management on the orchid population.

The meadow is 5.2 acres in extent. The ground rises towards the north-west corner, where Dactylis glomerata is abundant and where there are half a dozen large apple trees. There is a small hut on the south-west edge, and two drainage ditches run across the south end from west to east. The north hedge is almost entirely of Salix purpurea (female only) with some large trees of Salix alba. Along the north end of the west side there are some very tall Elm trees (Ulmus sp.) which have suckered extensively into the meadow. There is a very large Ash, Fraxinus excelsior, in the south-east corner, a fine Field Maple, Acer campestre, in the south-west and a handsome fruiting specimen of the Spindle tree, Euonymus europaeus, in the south. The hedges are a mixture of Hawthorn, Bramble, Rose, Privet, Willow, Elder and Ash, and on the west side there is the rare Honeysuckle Lonicera caprifolium.

Until ten years ago, the meadow was regularly grazed by cows. After this, cattle were let in only for six weeks at the end of each year; and for the last two years there has been no grazing at all. With this diminution of grazing Carex acutiformis has increased considerably, and the present extent of it can be seen on fig. 2. (p. 23)

It was decided to divide the meadow into four roughly equal areas, Strip I to be grazed by horses, Strip II to be



Key

A	O.S. 32	meadow
B	52	"
C	35	"
D	9	"
E	34	osiers
F	57	meadow
T	53	derelict woodland

Scale 6" = 1 mile

Fig. 1

cut yearly, Strip III to be the control and Strip IV to be grazed by cows. The necessary fencing work was carried out during the summer and a culvert and gate were made in the north end for the horses to have access from the adjoining field. To provide access for the cows into the south end, a bridge and gate were constructed. This work was completed in the middle of September 1961.

During the summer, and before the strips were cut, a rough sketch plan of the dominant vegetation was made (fig. 2). The location of all the shrubs in the meadow was noted on a preliminary plan, but only those surviving after cutting are shown on this plan. There are twelve wet hollows in the meadow and their position was also noted on the preliminary plan; a list has been made for each hollow of the interesting and dominant plants present. A preliminary list of 145 species has been recorded for the meadow. It is hoped eventually to get this list extended to include all types of fauna. Dr. Whitehouse has kindly determined twenty-two species of bryophytes found in the meadow, and Miss Meade generously gave her time to visiting the meadow during July and was able to compile a large list of birds present.

It was obviously necessary to cut the strips before the programme of grazing could commence. Strips I, II and IV were cut by a tractor-driven rotary cutter during August. This proved to be a slow job as the vegetation was densely matted with dead matter; also it was difficult for the cutter

to get underneath the sedge which had been partly flattened by rain. Later in August the hay was raked and carted away; from Strips I and II to under the apple trees and from Strip IV into the south-east corner. The herdsman and groom, who had agreed to allow the cows and horses in their charge to graze the Strips, decided that Strip I should be further 'cut' by cows before it would be possible for the horses to commence grazing there. The following grazing has been carried out:-
(It should be noted that all grazing times given below include grazing in the fields adjacent to Strips I and IV, since the animals cannot be shut into the Strips as there are no water troughs present.)

Strip I			Strip IV	
17 Sept.	5½ hours	42 milking cows.	24 Sept. - 8 Nov.	14 heifers.
24 "	5½ "	43 " "		
20 Oct. - 1 Nov.		18 dry cows.		
1 Nov. - 7 Dec.		4 horses		

This small amount of grazing has had a very marked effect. The animals have appeared to graze very evenly and the two Strips are reduced to a uniform height all over. Furthermore the cows have eaten down all the Carex acutiformis etc. that had not been cut.

As soon as the necessary fencing posts were in position, but before the strips were cut, the Orchid population was counted. The results are given:-

	Spikes of Dactyl-orchis	Estimated % area of Dactyl-orchis in Strip
July 1 Strip I, counted by 35 people	1,047	48%
" 15 " II, " " 20 "	486	86%
" 15 " III, " " 20 "	693	37%
" - " IV, estimated	250	28%

The numbers from Strips II - IV are probably underestimated by 20% as by this time most of the Orchids were in fruit, and therefore difficult to see.

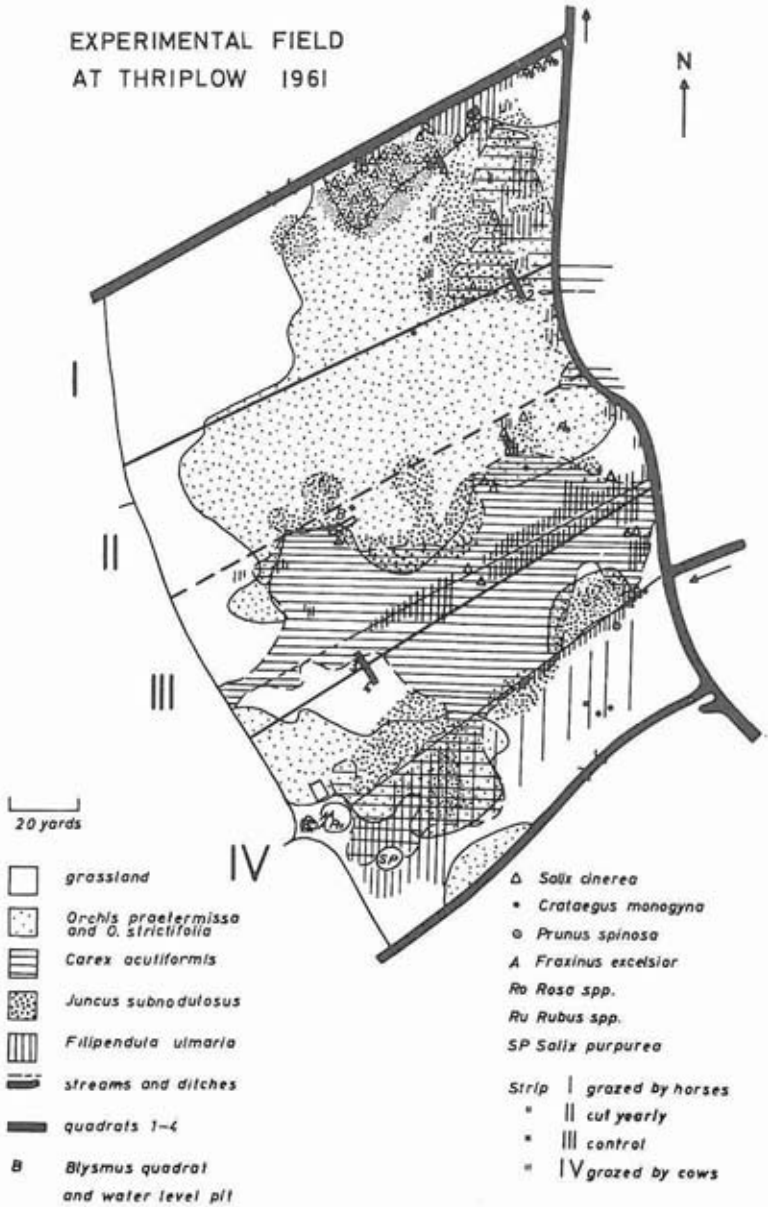

EXPERIMENTAL FIELD
AT THRIPLOW 1961
N
I
II
III
IV
20 yards
grassland
Orchis praetermissa and O. strictifolia
Carex acutiformis
Juncus subnodulosus
Filipendula ulmaria
streams and ditches
quadrats 1–4
B Blysmus quadrat and water level pit
Δ Salix cinerea
• Crataegus monogyna
⊙ Prunus spinosa
A Fraxinus excelsior
Ro Rosa spp.
Ru Rubus spp.
SP Salix purpurea
Strip I grazed by horses
II cut yearly
III control
IV grazed by cows

Fig. 2

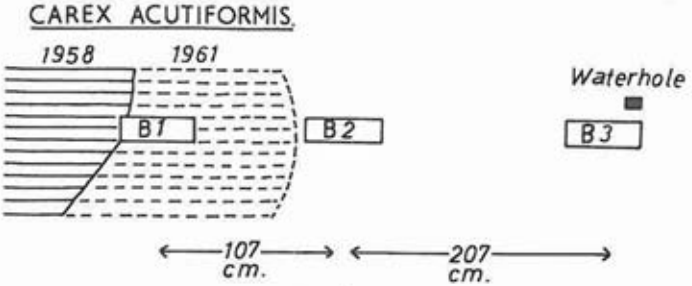


Fig. 3

Recording of quadrats

Before cutting commenced on 10th August, four permanent quadrats were set up and the species present were recorded. Quadrats measuring 20 x 150 cm. were positioned in pairs to lie at right angles across the boundaries between Strips I and II, and Strips III and IV, with a 23 cm. gap between them under the fences. Recording was done on graph paper for each 10 cm. square, but the vegetation was too trampled from fencing work to be able to give precise positions for each plant within the 10 cm. sq. In quadrats I and II large flowering spike of Dactylorchis were present but in quadrats III and IV only seedling plants were found.

Species present in Quadrats

I and II	III and IV
Dactylorchis praetermissa	Dactylorchis spp.
Carex acutiformis	Carex acutiformis
C. hirta	C. hirta
Carex spp. ?	Juncus inflexus
Juncus subnodulosus	Succisa pratensis
Succisa pratensis	Pulicaria dysenterica
Pulicaria dysenterica	Galium uliginosum
Galium uliginosum	Vicia cracca
Vicia cracca	Lathyrus pratensis
Lathyrus pratensis	Lotus uliginosus
Lotus uliginosus	Holcus lanatus
Holcus lanatus	Festuca rubra
Festuca rubra	Plantago lanceolata
Cirsium palustre	Centaurea nigra
Mentha aquatica	Rumex acetosa
Valeriana dioica	Prunella vulgaris?
Triglochin palustre	Ranunculus spp.
Phleum spp.	Festuca arundinacea
	Deschampsia caespitosa

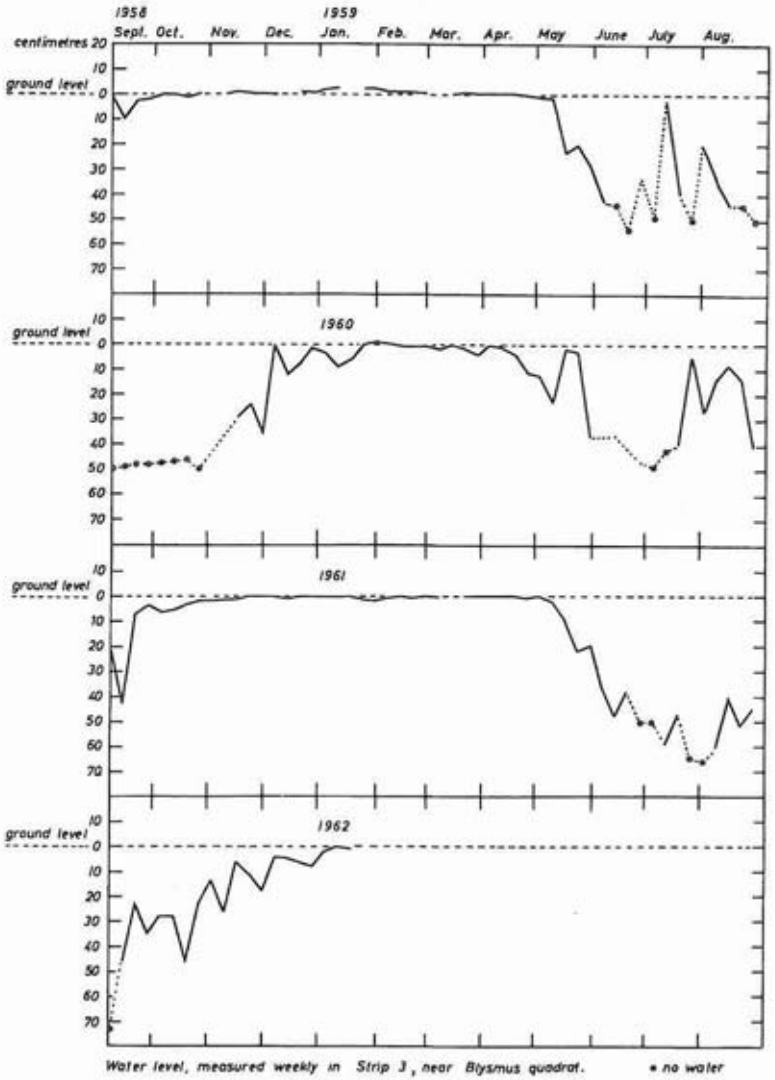


Fig. 4

Figs. 2 & 4 were drawn by Miss C. A. Lambert

Permanent Quadrat in Strip III

Since 1958, yearly recordings have been made in three quadrats set up in a straight line through the area in Strip III in which Blysmus compressus was abundant. Fig. 2 shows their position and it also shows the position of the water hole beside quadrat B3. Water level readings have been made here at weekly intervals since 1958. As can be seen from the sketch (fig. 3) B1 was at the edge of the Carex acutiformis area. This is the wettest of the three quadrats, the ground sloping up considerably towards B3, in which Festuca rubra is dominant. Each quadrat measures 20 x 50 cm. and the sketch shows that Carex acutiformis has extended 150 cms. in three years. Furthermore, with the dominance of the large Carex acutiformis plants now, four species have disappeared (including Blysmus) and there has been a reduction in the number of the other species present.

Quadrat B1	1958	1961
Blysmus compressus	11	0
Mentha aquatica	43	11
Equisetum palustre	9	7
Juncus articulatus	9	0
Carex otrubae	35	20
Triglochin palustris	13	0
Lotus uliginosus	11	6
Ranunculus repens	4	3
Holcus lanatus	6	5
Carex hirta	3	0
Pulicaria dysenterica	1	5
Carex acutiformis	1	11
Carex distans tufts	3	0
" "	0	17

In quadrat B3 there were in 1958 72 plants of Blysmus; in 1961 only 27, but the Blysmus had noticeably increased along the footpath to the waterhole.

The readings at the water hole are shown in the graph (fig. 4). As can be seen there is considerable variation from year to year. Unfortunately the hole was not always dug deeply enough, so that readings which had no water at the bottom are indicated. In 1958 a similar hole was made in the adjoining field A in the middle of the main area in which Anagallis tenella grows. Here the rise and fall in the water level has been much more gradual.

In September 1958 a soil analysis was made by Mr. J. Jones of the National Agricultural Advisory Service, for both fields near to the two water holes, and the marked

difference in the two adjoining fields probably helps to explain the different rates of rise and fall in the water level. Also field A is not separated from the nearby Townsend springs by the stream.

Field B

Depth	Texture	Free $CaCO_3$ %	pH	P ppm	P class	K ppm	K class	% O.M.
0-4"	Calc PT	31.0	8.0	0.4	EL	14	VL	21.9
4-8	Calc PT	31.0	8.1	0.4	EL	7	EL	16.5
8-13	Calc Zyl	35.0	8.2	0.3	EL	4	EL	7.7
13-20½	Calc Zyl	41.5	8.4	0.2	EL	3	EL	7.2

Field A

0-3"	L. Pt.	12.5	7.7	2.8	MH	29	L	34.8
3-11	L. Pt.	11.5	7.8	1.0	L	12	VL	38.1
11-20	L. Pt.	4.0	7.6	0.6	VL	6	EL	54.0

A further report will be presented after the 1962 season, when some results of the cutting and grazing may be apparent.

STIGMELLA ULMICOLA (HERING) IN CAMBRIDGESHIRE

R. H. Richens

A recent note in this journal drew attention to the occurrence in the county of the elm leaf miner S. fulvomacula (Skala). Further study of the local elm leaf miners has brought to light a second species, S. ulmicola, hitherto unrecorded for this country. S. ulmicola is very similar to S. ulmivora (Fologne), but whereas in the latter the mine takes an erratic course, in the former, the mine characteristically pursues a straight course down the secondary nerve on which the egg is laid, then along the midrib till the next secondary nerve, and then back along this nerve, till near the end of its course, when it normally turns into the intervenal area bounded by the rest of the mine. Professor Hering has kindly confirmed the identify of one of the Cambridgeshire specimens.

S. ulmicola was first described in 1932 and has been recorded from Austria, Bessarabia, Corsica, Czechoslovakia, France, Germany and Poland. The species mined include Ulmus carpinifolia Gled., U. glabra Huds., U. procera Salisb. and introduced U. pumila L. in Cambridge. Mines of S. ulmicola have been found in Cambridgeshire and Essex, the local collections being from Cambridge and Tydd St. Giles.

BROMUS INTERRUPTUS (HACK.) DRUCE
A BOTANICAL DODO?

F. H. Perring

The rare annual grass Bromus interruptus was first collected in Britain in 1849 by Miss A. M. Barnard, a relative of Sir J. E Smith, from a field at Odsey where it was growing with Bromus commutatus Schrad (Watson, 1850). The specimens were seen by H. C. Watson and there are sheets in his herbarium at Kew and in the Cambridge University Herbarium. These sheets were originally labelled 'Bromus pseudo-velutinus' and Watson regarded the specimens simply as unusual forms of B. mollis. There the matter rested until July 1888, when Druce (1897) records that he discovered what he thought to be a peculiar variety of B. mollis (hordeaceus), in a fallow field in which a crop of barley had been growing the previous year, on the lower chalk between Unwell Wood and Blewburton Camp, Berkshire. In the same year he found the form again in a clover field on the same geological formation on the Oxfordshire side of the R. Thames between Goring and Gatehampton.

Some of the Berkshire material collected by Druce was sent to Professor Hackel who considered it to be a new variety, B. mollis L. var. interrupta Hackel. Later, Druce (1895) gave the plant specific rank because, whereas all the other varieties of B. mollis which he investigated had the upper pale entire, B. interruptus was unique in having the upper pale split to the base. Although the split pale is a valuable diagnostic character, the most striking features of the plant in the field are the inflorescence, with its short stiff pedicels each bearing terminally 3 to 5 sessile or short-stalked spikelets, and the pedicels which are arranged alternately on the main rachis. This combination of characters reminiscent of wheat gives to the inflorescence the interrupted appearance for which Hackel chose the epithet.

The origin of Bromus interruptus still remains a mystery. For some time after it was first found in Britain in arable fields it was assumed that it must have been introduced with imported seed (Druce, 1897), but though Druce searched widely through material from Europe and elsewhere he found no specimens: nor have subsequent workers been more successful, except that the species has recently been found in Holland, where it is regarded as an introduction (Hubbard, 1954).

Its spread (or recognition) in Britain was fairly rapid, and seems to have reached its maximum extent in the first two decades of this century. By 1920 it had been recorded from the following vice-counties: 6 N. Somerset, 7 N. Wilts.,

8 S. Wilts., 9 Dorset, 11 S. Hants., 12 N. Hants., 14 E. Sussex, 15 E. Kent, 16 W. Kent, 17 Surrey, 19 N. Essex, 20 Herts., 21 Middlesex, 22 Berks., 23 Oxford, 24 Bucks., 25 E. Suffolk, 26 W. Suffolk, 28 W. Norfolk, 29 Cambridge, 30 Bedford, 32 Northampton, 33 E. Gloucester, 34 W. Gloucester, 37 Worcester, 53 S. Lincoln, 61 E. Yorkshire. No localised records are known from v.cs. 30, 53 or 61.

Since about 1930 the decline has been dramatic, and only 6 records have been traced during the last 25 years:

Upper Halling, W. Kent v.c. 16 14.6.1936 J.P.M. Brenan and J.E. Lousley

Beckenham, W. Kent, v.c. 16 23.5.1942 W. Howell

Headley, Surrey, v.c. 17 11.7.1936 N.D. Simpson

Anmer, W. Norfolk, v.c. 28 4.8.1946 C.E. Hubbard

Lt. Abington, Cambridgeshire, 52/539494, v.c. 29 8.6.1953 R. Parker

Pampisford, Cambridgeshire, 52/518492, v.c. 29 11.6.1943 W.H Mills, 17.7.1952 D.E. Coombe, 15.6.1953 P.D. Sell.

It will be seen that two of these six records were in Cambridgeshire, and that the last occasions on which the species was known to have been seen growing wild were both near Abington in 1953. Thus both the first and last records of Bromus interruptus in Britain, and perhaps in the world, occurred within the present-day boundaries of our county. (In 1849 the Odsey record was claimed for Hertfordshire). Unless the plant can be refound it may unwittingly have been allowed to become extinct to science before the problem of its origin has been investigated cytologically. We must hope that somewhere in the Abington area there is still viable seed, and that the plant will appear again when the conditions are right. As a guide to suitable localities Dr. Coombe has provided the following notes based on his observations in 1952: 'abundant in a Sainfoin field immediately west of the old railway, immediately south of the Bourne Brook, near Bourne Bridge between Pampisford Hall and Abington. Bromus commutatus very abundant. Not many other abundant associates except Cirsium arvense and Poterium polygamum'. B.commutatus is an almost constant associate of the species in the county. It occurred with B.interruptus at Odsey in 1849, at Dullingham in 1904, and in both localities near Abington in 1953 (fide P.D. Sell).

It is imperative that this and other similar localities in the county should be carefully searched during the coming summer. It is to be hoped that members of the Trust will play a leading part in the search. This call to help save a species which is in danger of becoming completely extinct is surely one of the strongest which can be made to a Naturalists' Trust.

Druce (1927) records that Bromus interruptus is carved in stone on a corbel on the north side of the court of the University Museum in Oxford. Let us hope this is not to be its tombstone, and that in Cambridge we shall soon be able to celebrate its rebirth with living material growing in the Botanic Garden!

References

Druce, G. C., 1895, A new Bromus. Bromus interruptus. J. Bot. Lond., 33, 344.
Druce, G. C., 1897, The Flora of Berkshire. Oxford.
Druce, G. C., 1927, The Flora of Oxfordshire. Ed. ii. Oxford.
Hubbard, G. E , 1954, Grasses. Penguin Books.
Watson, H. C., 1850, British plants for distribution by the Botanical Society of London, in 1850. Phytologist, 3, 807.

MOTTLED ROOKS IN CAMBRIDGESHIRE

W. H. Fordham

'Fundamental bars furnish the starting point for all evolutionary studies of the colour character of birds.'

Dr. Riddle quoted by W. E. Glegg (1945)

Rooks, usually juveniles, of which a noticeable proportion of the feathers have a terminal or sub-terminal bar of grey, are referred to as 'mottled rooks'.

Jenyns, Vicar of Swaffham Bulbeck, in his book 'Observations in Natural History etc. writes: "In the spring of 1823 we picked up two young birds, alive under the nests, just fledged, in which each of the feathers was tipped with dirty white, giving the whole plumage a speckled appearance.'

Yarrell's rook, to be described later, is the first mottled rook to be mentioned in England, and Jenyns' two rooks are the second in England and the first in Cambridgeshire.

Mottled rooks were next recorded in the county at Odsey on the Hertfordshire and Cambridgeshire border in 1946, when four were obtained. It was later recalled that a very grey young rook had been shot soon after the first World War and that a well-marked specimen had been shot by the Home Guard in 1944 or 1945.

The Handbook made no mention of 'mottled rooks' and it turned out quite difficult to find out about them. A photograph of one of the rooks was taken and prints sent to various ornithologists, and a wing was sent to the Natural History Museum, South Kensington; it was acknowledged as 'an unusual wing of a young rook', without other information. Another wing was exhibited at a Field Meeting of the Hertfordshire Natural History Society and was much admired, though no-one was familiar with such birds.

Two mottled rooks were shot in 1947, and a print of the 1946 photograph was sent to 'Country Life' with a letter asking for information. These were published on 27th June but nothing transpired.

One of the rooks was kept in cold storage and exhibited at a Field Meeting of the Hertfordshire Natural History Society, and it was learnt shortly after that Dr. J. M. Harrison of Sevenoaks was interested in variations of the plumage of young birds and would be glad to receive specimens for examination and dissection.

No mottled rooks were seen in 1948. In 1949 however a strongly marked young bird was shot at Ashwell and forwarded to Dr. Harrison.

This rook was exhibited at the November meeting of the Ornithologists Club of London with particulars of the Odsey birds. By this time Dr. Harrison had learnt that mottled rooks occurred at long intervals at Penshurst and that one from Preston in 1946 was in the Maidstone Museum. The next two meetings of the Club brought news of the occasional occurrence of mottled rooks on the Continent, and of the plate of a young mottled rook in Hancock (1874).

A letter was written to the Curator of the Hancock Museum at Newcastle-on-Tyne and a most helpful reply was received that there were three mottled rooks in the Museum, one strongly marked labelled Surrey, and extracts were enclosed from Hancock's catalogue and from Bolam (1912). Copies of these books were obtained. Hancock's rook was found to be one of the speckled variety; Bolam mentions brown mutants, and tells of an outbreak of mottled rooks in 1896 in a small rookery near Wooler in Northumberland when thirty-six were shot. He also refers to Yarrell's 'light ash-coloured rook most beautifully mottled all over with black' and suggests that it was an extreme example of the mottled variety. Yarrell's remarks on mutants are suggestive:- 'White, pied and cream-coloured varieties of the rook sometimes occur.' Mr. Hunt, of Norwich, says 'A gentleman of his acquaintance had in 1816 a young rook of a light ash colour, most beautifully mottled all over with black, and the quill and tail-feathers elegantly barred. This curiosity he was naturally anxious to keep; when upon the bird moulting, all the mottled plumage vanished entirely - it became a jet black rook, and in this state was suffered to join its sable tribe, as a fit companion, in the fields. This agrees with my own observations. Accidental varieties will more often be found to be smaller and weaker birds than those which are truly characteristic of the species. As these young birds increase in age and gain constitutional power, the secretions become perfect, and the plumage assumes its natural colours.

About 1951 mottled rooks were discussed with the County Pests Officer, Mr. Andrew Wylie, and he mentioned that a number of these rooks had lately been shot at Shepreth, and a number of brown mutants at Westley Waterless. He suggested that the cause of the Shepreth birds was the use of a noxious spray near the rookery.

In 1950 all the young rooks shot at Odsey and a large number from Ashwell were examined. No typical mottled rooks were found, but it soon became clear that variations in plumage were not uncommon; thus one rook had a grey bar three sixteenths of an inch wide across the tail feathers about half an inch from the ends and a similar bar across the secondaries, one inch from the ends, and across the greater wing coverts rather more than an inch from the ends, with some sub-terminal grey on the neck feathers.

Two other rooks with similar markings, not quite so well defined, were obtained. This type of mottling is referred to as 'wing barred'.

A number of rooks mottled with brown were noticed, and some brownish rooks marked with black. Since 1949 nearly four thousand rooks have been examined. In 1951 there were two mottled rooks, one wing barred type, three birds with grey bodies, and three brown mutants. In 1952 there was one brown mutant, and one bird speckled partly with grey and partly with brown. In 1953 no unusual rooks were recorded. In 1954 there were five mottled rooks and one brown mutant. In 1955 there was one mottled rook, and in 1956 six mottled rooks. Since 1956 the only year with mottled rooks was 1959, when two well marked and one with pale markings were obtained.

The writer's attention was called in 1953 to the late W. E. Glegg's work on growth bars, and these bars were found to be very pronounced in the feathers of quite a large proportion of young rooks. It was later realised that mottling was due to discoloured growth bars.

Growth bars occur in pairs, each pair representing a total of 24 hours growth, a narrow bar developed by night called by Dr. Riddle (opus cit.) a fault-bar and a wider bar developed by day called a fundamental bar. In the larger feathers the pair of bars may be more than three sixteenths of an inch wide.

In normal mottled rooks two or more bars, usually subterminal on the wings and terminal on the tail feathers, are grey. In the speckled type only one bar is grey. In the grey-headed type the grey is confined to the head and back, and in the wing-barred type the grey occurs after several days growth of the wing and tail feathers and may be several bars wide. In brown mutants the patterns are the same but mottling is greyish-brown or brown.

In 1950 mottled rooks were only known to have occurred in six counties in England. Now owing to Bryan L. Sage's investigations (Sage, 1958) this number has been doubled, but nothing similar to the rooks at Odsey and Ashwell over a period of years has come to light. It seems possible that local conditions may be partly responsible for these rooks. Sixty years ago both rookeries were small with fewer than 100 nests. Between the wars much land was laid down to grass and the number of nests increased. In the census of 1945 there were rather over 350 nests at Odsey and a slightly larger number at Ashwell. At Ashwell the nests increased for a few more years and then got gradually less. At Odsey owing to an influx of rooks nests reached 550 in 1954. Since then the decrease has been rapid and the number in 1961 was only 250.

Ploughing up the grass land in the war years must have

reduced the animal food available in the early spring, and modern methods of farming, with corn sown early and rapidly, may not help the rooks. Anyway the number of young rooks leaving the nests has been low for many years, averaging little more than one bird per nest.

The suggestion now put forward is that mottling is due to pigment deficiency at the critical time that feathers are starting to appear, and that mottled rooks have occurred in this district from 1944 to 1959 more particularly in years of abnormal weather when food might have been difficult to collect with so large a rook population.

If this account of the mutants of the district throws any light on the evolution of the colour character of birds, it looks as if rooks must have tried various types of mottling before becoming black.

As this contribution is headed 'Mottled Rooks in Cambridgeshire', it should be pointed out that parts of the Odsey rookeries are in the parish of Kelshall in Hertfordshire, and parts of the Ashwell rookeries in the parish of Guilden Morden in Cambridgeshire. Probably rather more than three fifths of the rooks mentioned were actually hatched in Cambridgeshire.

References

Bolam, G. (1912). Birds of Northumberland and the Eastern Borders.

Glegg, W.E. (1945). Barred Feathers in Birds. Ibis, 87, 471-473.

Hancock, J. (1874). Birds of Northumberland.

Jenyns, L. (1846). Observations on Natural History.

Sage, B.L. (1958). B.O.C. Bulletin. 74, 78.

WING OF MOTTLED ROOK

COYPU COME TO CAMBRIDGESHIRE

C. W. Rowell

In its issue of 3rd February 1961 the Cambridge Daily News warned that coypu were making their way up the rivers and streams in our direction. That forecast has proved accurate: five have already been destroyed in various parts of the county. These animals are semi-nocturnal and timid; on the approach of danger they disappear into the nearest ditch or stream, usually before they are seen, and can stay under water without discomfort for half an hour or more. It is a reasonable guess therefore that there are many more than those that have been accounted for. Fortunately large breeding colonies are unlikely, as they need swampy land, which is uncommon in Cambridgeshire. Owners of watercress beds, however, had better beware.

It all began in 1939 when fur farmers, keeping these animals for their fur (Nutria), liberated their stock in the Broads, for the war had put them out of business. No more was heard of the creatures for ten years, during which time their numbers had been slowly and silently building up from their small beginnings. Since then however they have increased very rapidly and no fewer than 60,000 have been killed this year, out of an estimated population of a quarter of a million. Thus from small beginnings - a factory has been set up to handle the pelts!

It may be remembered that the more disreputable menageries used to exhibit a 'Giant rat, caught in the sewers of London.' This was usually a coypu, an animal about the size of a terrier, and looking very like an enormous rat.

The Cambridgeshire and Isle of Ely Naturalists' Trust would like to hear of any coypu in their area, especially of breeding colonies. Please write to the Trust at 1 Brookside, Cambridge, and notify the Divisional Pests Officer of the Ministry of Agriculture at Castle Hill, Huntingdon, or High Street, March.

FIRST COUNTY NESTING OF COLLARED DOVE

A. E. Vine

Originally an Asiatic species, the Collared Dove, Streptopelia decaocto has spread from Turkey right across Europe in 50 years. The first certain arrival in the British Isles was on the Norfolk coast in the Cromer area in 1955 and from then onwards several pairs have bred there annually at a number of sites. Each pair has up to five broods yearly, so it is not surprising that they have spread rapidly and colonised new sites all over the country, although more especially in seaside towns along the east coast. It is resident where it breeds, unlike the migratory Turtle Dove (S. turtur), and the only movement appears to be a dispersal to colonise new breeding sites.

In the county the first birds were seen actually in Cambridge at Adams Road in November 1960, in which year they nested at Hunstanton, and birds were seen in October not far from the Isle of Ely border in Hilgay Fen. However in July 1961 G. M. S. Easy discovered one (later found to be a pair) at Littleport, and the finding of an injured juvenile in early August proved that they had in fact nested. Subsequently young birds were seen in September and again in October, so it is evident that three broods were hatched. The site, typical for the species, is a large garden with several pine trees, and some nearby chicken runs! The birds can be expected to appear all over the county with increasing frequency, and in fact one was seen at Odsey in August.

The species is of Turtle Dove type, but slightly larger and generally greyish-fawn all over, with a small black collar mark on the sides of the neck, black primaries and inner part of tail, and a lot of white on the outer part of the tail when seen from below. It should not be confused with the rather similar Barbary Dove, S. risoria, which often escapes from captivity, but has creamy-buff plumage and grey-brown, not black, primaries.

VASCULAR PLANT RECORDS FOR 1960 AND 1961

F. H. Perring

Polypodium vulgare agg.
Roof on north side of Chancel, Milton Church. F. G. Perring. April, 1961. This is probably the largest colony of this species in the county. A specimen has been determined as the hexaploid, P. vulgare L. subsp. prionodes Rothm. (P. interjectum Shivas).

Herniaria glabra L.
Chippenham Gravel Pit. Trust Excursion. 27th May, 1961. It was feared that this species had become extinct in the county, but it was found in some quantity where a recent lowering of the water had exposed bare sand.

Carum carvi L.
Middlemoor, Whittlesford. G. Crompton. 12th May, 1961. The status of this species in the county is uncertain. It is usually regarded as an introduction, but the regularity with which it is found in base-rich meadows makes one suspect it may be native.

Centaurea calcitrapa L.
Rough-grazing, Duxford Round Plantation. G. Crompton. 3rd September, 1961. Although this species is occasionally recorded near Cambridge and has long persisted in some localities in the fens (e.g. Doddington 1919-53), this is the first record south of the city.

Crepis setosa Haller f.
Single plant as weed in sown grassland, backs of St. John's College, Cambridge. S. M. Walters. 6th September, 1961. A rare alien species, not previously recorded in the county.

Spiranthes spiralis (L.) Chevall
In grazed turf on banks, Tydd Gote. Lincolnshire Natural History Society. 2nd September, 1961. Part of a colony which extended along the same bank into Lincolnshire. This is the first record for the county since it was seen on the banks of the River Nene near Wisbech, about 4 miles south of Tydd, in 1944.

Eriophorum angustifolium Honck.
Cement Works Pit, Barrington. C. Turner, May 1960. This species is usually found in bogs and fens, yet it occurs at Barrington in marshy ground in the wet bottom of a worked-out portion of the pits on almost pure chalk.

BRYOPHYTES ADDED TO THE COUNTY LIST DURING 1961

H. L. K. Whitehouse

Several unexpected additions to the bryophyte flora of Cambridgeshire were established during 1961, and all raise problems of plant dispersal.

On 11th February, S. J. P. Waters discovered three species of Rhacomitrium (R. heterostichum (Hedw.) Brid., R. canescens (Hedw.) Brid. and R. lanuginosum (Hedw.) Brid.) growing on the outside wall of the filter bed at the Madingley Hall sewage works. This sewage works was constructed about ten years ago and the clinker on which the plants occur came from the London area. These mosses are of very local occurrence in S. E. England, and are only widespread and abundant in areas of Palaeozoic rocks. One is forced to conclude that wind-borne spores were responsible for their presence at Madingley, even though the nearest appreciable source of spores is probably at least a hundred miles away. Other mosses present include Atrichum undulatum (Hedw.) P. Beauv., Polytrichum formosum Hedw., Pohlia nutans (Hedw.)Lindb. and Mnium hornum Hedw., of which fruiting plants are not known within several miles of Madingley. These also presumably arrived by spores from some distance.

On 4th March, J. M. Lock found Scorpiurium circinatum (Brid.) Fleisch. & Loeske on rockery stones at Hildersham Hall. This is a Mediterranean species which in Britain is sterile and confined to the south and west. The rockery stones in question are of limestone and are known to have come from Killarney about 1936. Scorpiurium circinatum occurs on Carboniferous limestone at Killarney, and it appears almost certain that the moss arrived with the stones. It is of some interest that the plant has survived for so long appreciably outside its range as a native plant. Its nearest natural station is at Dorking, Surrey.

On 29th October, on the occasion of a meeting of the British Bryological Society, Dr. E. F. Warburg found Tortella inflexa (Bruch)Broth. on lumps of chalk on the Devil's Dyke. A subsequent visit has shown the plant to be abundant over a distance of at least half a mile. This moss was first found in the British Isles on the South Downs in 1951. It appears to be spreading rapidly, and indeed is now widespread in S. E England. The Devil's Dyke represents the most northerly point in Britain which it is known to have reached. Its method of spread is unknown. Two questions are involved here: first, how it is dispersed over distances of miles to new areas, its nearest known station to the Devil's Dyke being near Luton, where it was found in 1957;

secondly, how it spreads from one chalk lump to another, for it is absent from the intervening areas of soil. Capsules are very rare in this country, so spores seem unlikely to be responsible. Presumably wind or animals disperse the shoot apices, which are readily detached.

ERIOPHYID MITES ON CAMBRIDGESHIRE ELMS

R. H. Richens

Eriophyid mites are amongst the most host-specific of plant-feeding organisms and it is somewhat surprising that, apart from economic pests, they have been so little studied in this country. A number of species appear to be confined to elms, and a recent search brought to light four species in Cambridgeshire, three hitherto not recorded from Great Britain, and one not recorded from Europe.

Eriophyid mites are readily distinguishable from other mites by their worm-like externally-segmented bodies and the presence of only four legs, at the anterior end of the body, instead of the usual eight.

The species fall into three biological groups, gall producers, rust mites, and leaf vagrants.

Of the gall formers, Eriophyes (Aceria) ulmicola Nal. has been known for many years. It forms pimple-like galls on elm leaves, often, as in 1961, in very great numbers. It is interesting to note that in Cambridgeshire, as in most parts of England, this species is normally confined to Ulmus procera Salisb. In Cambridge, where cases occurred of heavily-infested foliage of U. procera Salisb. brushing against branches of U. carpinifolia Gled., the latter was found to be quite devoid of galls. In coastal Essex, however, E. ulfnicola attacks the local stands of U. carpinifolia; possibly the Essex population of E. ulmicola has differentiated into a distinct strain. One other gall former, Eriophyes (Aceria) filiformis Nal., has been recorded once from elm in Sussex; the galls of this species occur as numerous flattened pastules.

No rust mites, which cause browning and shrivelling of the leaf margin, have been reported yet on elm in this country, though their presence is to be expected.

The vagrant mites are unobtrusive and are not likely to be noted without search, since they cause no visible alteration in the appearance of the leaves infested. Moreover, they do not appear on the leaves till the latter half of June and disappear early in August. The time for search is therefore July, when they are easily discernible with a good lens on the underside of the leaves as small, slowly moving whitish or latterly pinkish dots. They are liable to be absent if other types of presumably predaceous mites are much in evidence.

The three vagrant species found in Cambridgeshire appear not to have been recorded before from Great Britain. The commonest species, Rhyncaphytoptus ulmivagrans Keifer, occurs throughout the county on both U. carpinifolia and U. procera. The genus Rhyncaphytoptus is distinguished by the large rostrum bent forwards at right angles to the rest of the body; the species Rh. ulmivagrans has short bristle-like setae on the dorsal shield. Rh. ulmivagrans was first described from California where elm is not native. It is recorded from Finland, Hungary and Sweden, the host species being U. carpinifolia, U. glabra Huds. and U. laevis Pall. A second Rhyncaphytoptus, Rh. ulmivora Farkas, with longer dorsal setae, is to be expected in Cambridgeshire since it has been collected from Bedfordshire and Suffolk.

The second Cambridgeshire vagrant is Phyllocoptes (Aculus) calulmi Keifer, the most conspicuous feature of which is the possession of long dorsal setae, about two-thirds as long as the entire mite; these are held out sideways when the mite moves, creating a lobster-like impression. This species has hitherto only been reported from America, where it occurs on U. americana L. In Cambridgeshire, it has been found on U. carpinifolia in Cambridge and Great Wilbraham.

The last vagrant species is Oxypleurites ulmi Farkas. The distinguishing characteristic of Oxypleurites is the series of lateral abdominal projections. Only a single specimen of this species has been found; it occurred on U. procera at Bourn. It was first described in 1960 in Hungary on U. carpinifolia; it has also been found in the U.S.A.

The above species were all kindly identified by Mr. H. H. Keifer of the Department of Agriculture, California, and there is every reason to suppose that further search would bring to light other species. The wide geographical range of some of these mites and their close attachment to their hosts suggests that a detailed knowledge of their distribution might throw some light both on the general evolutionary history of the genus Ulmus and on the detailed history of particular clones.

CAMBRIDGE MYXOMYCETES

A Preliminary Account

Bruce Ing

Few counties are better known botanically than Cambridgeshire. No fewer than six 'Floras' have been published since John Ray's renowned work of 1660. The only published reference to the myxomycetes, or slime-fungi, of the district, however, is in Richard Relhan's Flora Cantabrigiensis of 1820, in which thirteen species are mentioned. Since then very few botanists have paid attention to the group, and the object of this paper is to summarise existing records in the hope that interest will be revived.

At the beginning of this century J.J. Lister was studying the physiology of these organisms and collected in Cambridge. His interest was understandable as his father, Arthur Lister, was the world authority on the group, and his sister, Gulielma, carried on the great family tradition until her death in 1949. At the same time Miss E.R. Saunders made a few collections in the county. I understand that she was related to the Bedfordshire naturalist, James Saunders, who was an active myxomycologist. Most of Relhan's species are represented in the British Museum collection, as are those of J. Lister and Miss Saunders. The early records, many of which have not been repeated, have therefore been confirmed. Of recent years a number of small collections have been made near Cambridge and have added many species to the county list. Voucher specimens will be deposited in the University Herbarium.

The life-history of the Myxomycetes was imperfectly known until the work of Wilson and Cadman (1928), which demonstrated the sexual nature of plasmodium formation. The cycle is otherwise well described by Lister (1925), and Bonner (1959) gives a useful comparison with superficially similar groups such as the Acrasieae and Labyrinthuleae.

The spore has a sculptured wall, the pattern of warts, spines or ridges being of diagnostic value in many cases. On germination of the spore one to four swarmers or zoospores are liberated. These are haploid, and possess two unequal flagella. After they have swum about for a while, the flagella are withdrawn and the amoeboid condition returns. This is now the myxamoeba stage. Myxamoebae feed by engulfing bacteria, small organic particles or occasionally other amoebae; they also act as gametes, with or without further division. The zygote divides mitotically and a plasmodium is formed. This consists of a mass of naked protoplasm with numerous nuclei which divide synchronously.

The plasmodium is the feeding stage and in some

species is the most conspicuous part of the cycle. In Badhamia utricularis the plasmodium, which is bright yellow, may cover the trunk of a fallen tree, particularly if it already bears the sporophores of Stereum and other fungi, on which the plasmodium will feed. Rotten wood is the habitat for most species but dead leaves, sticks, straw, dung, and the stems of plants are also suitable substrates. When the period of feeding is over the plasmodium will develop into fruiting bodies. If conditions become unfavourable before this, being too cold or too dry, a resting stage ensues in which the plasmodium breaks down into bundles of encysted myxamoebae within a horny envelope, this being called the sclerotium. On return of warmer, moister conditions the sclerotium revives and the plasmodium is reconstituted.

Sporangium formation is a well-organised process. Small blobs of protoplasm separate and the nuclei become surrounded with cytoplasm. The blobs are raised on the surface of the substrate and in the case of sessile forms simply secrete a peridium or wall which may be of one or more layers and is often impregnated with crystals or plates of lime. Within the cavity of the sporangium the spores are formed (except in Ceratiomyxa where they are borne externally on short stalks) and the material left over hardens and becomes the threads of the capillitium. These may be simple and limey, or tubular-branched and much decorated. They are of great taxonomic importance. The stalked forms lay down a non-living stalk and this may be filled with spore-like cells that did not reach the sporangium during development. The stalks are often continued into the sporangia and form the columella from which the capillitium radiates. Meiosis occurs during spore-formation, occasionally at plasmodium formation or spore germination.

Another type of development occurs in colonial forms. Numerous sporangial blocks arise together and fuse, with no internal walls and a discrete capillitium. Developments of this sort are often massive and specimens of Fuligo septica up to a foot across are not uncommon. A variation on this theme is found in the Reticulariaceae and related genera in which the internal sporangium walls are closely appressed and form the tubes of a pseudocapillitium. The genus Amaurochaete is the extreme colonial state of Stemonitis, and species in the latter genus produce confluent forms.

The typical shape of the fruit body, such as a Physarum, is that of a miniature drumstick; pins, reedmace heads, mushrooms and puffballs are all simulated. The sporangia are frequently objects of great beauty, especially those with iridescent walls, and may be looked for among all kinds of decomposing plant matter, particularly wood,

leaves and moss. Leaves under holly and bramble bushes are very fruitful, although uncomfortable to collect. Damp conditions are necessary for the development of the plasmodium and few sporangia are found during dry or very cold spells. I have seen but one example of sporangia developing from a sclerotium. There is some indication that species are seasonal but very many are to be found all the year round. Prolonged rain washes sporangia away and also results in plasmodial disintegration.

The study of slime-fungi has suffered much from their indeterminate position between the animal and plant kingdom. The mode of feeding suggests affinities with the amoeboid Protozoa whereas the mechanisms of spore dispersal, aided by the capillitium (which may have free elaters analogous to those of liverworts) are distinctive features of the plant world, although not necessarily fungoid.

Myxomycetes are attacked by a variety of other organisms. The plasmodium is often covered by the common pin-mould, Mucor mucedo, and is apparently relished by woodlice and millipedes. The fruit bodies are overgrown by several species of imperfect fungi, the commonest being Stilbum tomentosum Schrad. This is found on Trichia spp. in great numbers but is recorded for other genera. The large colonial forms (aethalia) are frequently tunnelled by beetles. Of these the most familiar species is Anisotoma humeralis (L.)

East Anglia as a whole is rich in habitats and therefore rich in species, but individual vice-counties have not been dealt with uniformly, as the table shows.

V. c. No.	V. c. Name	No. spp. to date	Main source
25	E. Suffolk	103	Mayfield, 1943.
26	W. Suffolk	37	" "
27	E. Norfolk	146	Howard, 1928.
28	W. Norfolk	45	" "
29	Cambridge	49	----------
30	Bedford	124	Dony, 1953.
31	Huntingdon	24	Herb. Kew; BM, etc.

The northern fenlands of the Isle of Ely have not been searched and are less likely to be productive than the woodlands on boulder-clay, chalk and greensand which should be thoroughly investigated, as should Wicken, Chippenham and Dernford Fens. At present only Buff Wood, Madingley Wood and Wandlebury have yielded more than a handful of species. As in many other groups these records are a reflection on the energy of the collectors rather than

the distribution of the collected.

The nomenclature and classification used here is modified from Martin (1949) - representatives of five of the six known orders being found in the county. An interesting point is made by Alexopoulos (1960) who shows how the classification by plasmodial morphology fits quite well the classical arrangement based on the details of the sporangia, spores and capillitium.

In the following list names in brackets are those used in Lister (1925) and the numbers under each species refer to the ten-kilometre squares from which they have been recorded. Figures in brackets refer to records made before 1930; the species involved are not likely to be extinct in the county.

CERATIOMYXALES

Ceratiomyxaceae

Ceratiomyxa fruticulosa (Muell.)Macbr.
The only exosporous species in this country, very variable, with many described forms and varieties of little taxonomic value. Found in summer and autumn on newly-dead wood, particularly coniferous logs.
45.

PHYSARALES

Physaraceae

Fuligo septica (L.)Web. Flowers of Tan
The only myxomycete with an accepted popular name. Found in many colour forms, associated with anatomical differences. The commonest form is var. flava Pers., and this is the state in which it is found in Cambridgeshire.
45, (25.)

Badhamia utricularis (Bull.)Berk.
Generally common in Britain. The chrome-yellow plasmodium is often very extensive, feeding on leathery fungi such as Stereum spp., as well as rotten logs.
45.

Badhamia affinis Rost.
On rotten wood, not common.
45.

Badhamia macrocarpa (Ces.)Rost.
Not common, on dead wood.
(45.)

Badhamia panicea (Fr.)Rost.
Frequent on bark and dead wood.
45.

Physarum cinereum (Batsch)Pers.
On leaves, straw, etc. Recorded by Relhan, the specimens are in the BM.
(36, 45.)

Physarum leucophaeum Fr. (P. nutans var. leucophaeum Lister)
On wood, rarely on leaves. Generally common.
45.

Physarum compressum Alb. & Schw.
On leaves, mostly oak and hawthorn.
45.

Physarum gyrosum Rost.
In Britain confined to greenhouses and cucumber frames, where it is rarely recorded.
45.

Physarum nutans Pers.
An abundant species on bark and decorticated wood of all kinds, seldom on leaves. Often develops in very large numbers of sporangia, covering several square feet.
25, 45.

Craterium leucocephalum (Pers.)Ditm.
On leaves of holly, oak, beech, etc.
45.

Craterium minutum (Leers)Fr.
On various leaves, rarely on dead wood.
45, (36.)

Leocarpus fragilis (Dicks.)Rost.
On living stems; a remarkably active plasmodium. Colonies large, like bunches of chestnut grapes.
45.

Didymiaceae

Mucilago spongiosa (Leyss.)Morg.
Usually develops on grass tufts and sometimes disfigures a whole pasture. Not recorded in Cambridgeshire since Relhan.
(36, 45, 65.)

Didymium squamulosum (Alb. & Schw.)Fr.
A common winter species, mostly on leaves but also found on bark. A plasmodiocarpous (with a large amorphous fruit-body) form is also common and in the field may be mistaken for Physarum spp.
35, 45, 46.

Didymium nigripes (Link)Fr. sensu lato
Usually on rotting herbage and twigs, rarely on logs.
45.

Diderma floriforme (Bull.)Pers.
Not a common species; on stumps, logs, twigs.
(36.)

Diderma radiatum (L.)Morg. var. umbilicatum (Pers.) Maylan
The typical form is rare in Britain but the variety is found on twigs and leaves quite commonly. Relhan's specimen in BM is unlocalised.
57.

STEMONITALES

Collodermataceae

Colloderma oculatum (Lipp.)G. Lister
This unusual species has the outer wall of the sporangium a gelatinous mass when wet. The inner wall is iridescent blue and when mature peeps through like an eye - hence 'oculatum'. Found on moss on living trees. The only specimen for Cambridge was on Thamnium in Madingley Wood, on the ground.
45.

Stemonitaceae

Brefeldia maxima (Fr.)Rost.
Aethalia, often of large size, are found on fir stumps. This is not a common species.
45.

Stemonitis fusca Roth
A common and conspicuous species, found on stumps and logs of all kinds. Very variable, especially as to size. Developments in cold weather are often much distorted. Var. flaccida Lister may be such an abnormality; it has been found at Wandlebury, with the typical form.
45.

Stemonitis herbatica Peck
As its name implies this species is found on herbs and leaves. An unusual habitat (in Epping Forest) is the living stem of Chamaenerion. Frequent.
(45.)

Comatricha flaccida (List.)Morg. (Stemonitis splendens var. flaccida Lister)
On dry logs, usually coniferous.
(45.)

Comatricha nigra (Pers.)Schroet.
Our commonest species. Very abundant on sticks and dead wood, rarely on leaves.
25, 45, 57, 76.

Comatricha elegans (Racib.)Lister
A minute species, related to the last. Found on twigs, with a preference for pine.
25, 76.

Comatricha typhoides (Bull.)Rost.
Characterised by the sporangium wall being more persistent than is usual in this genus, and the conspicuously warted spores. Has a preference for soggy, rotten logs and is consequently often mildewed.
45.

Lamproderma scintillans (Berk. & Br.)Morg.
A very beautiful, iridescent species, found among moss on sticks; also on leaves.
45.

LICEALES

Cribrariaceae

Cribraria rufa (Roth)Rost.
Predominantly a species of coniferous stumps, but occasionally found on oak or chestnut.
45.

Tubiferaceae

Tubifera ferruginosa (Batsch)Gmel.
The aethalia develop from a salmon-pink plasmodium and the sporangium walls glisten like mother-of-pearl. Found on logs, often in large numbers.
45, 66.

Reticulariaceae

Reticularia lycoperdon Bull.
Not recorded since Relhan (no locality) but must occur commonly. It is a very common and conspicuous species, and has not been looked for. On logs and standing trunks.

Reticularia jurana Meylan emend. N.E.N.-B. (R. lycoperdon var. jurana G. Lister)
Only recently (Nannenga-Bremekamp, 1958) redescribed as a species and in view of the remarks under R. lycoperdon it may be more common than the one record for Wandlebury.
45.

Lycogalaceae

Lycogala epidendrum (L.)Fr.
A common species on logs and stumps. The plasmodium is deep pink and the aethalia may be clustered and up to two inches in diameter. It is not surprising that Linnaeus called it Lycoperdon epidendrum as it greatly resembles the puff-balls.
25, 45.

TRICHIALES

Perichaenaceae

Perichaena corticalis (Batsch)Rost.
Found among moss on bark; some sporangia have lime deposits reminiscent of the Physarales and giving a greyish tint to an otherwise ochraceous wall.
45.

Arcyriaceae

Arcyria oerstedtii Rost
A beautiful species which has long drooping sporangia of a scarlet colour. On bark and dead wood, including pine.
45, 55.

Arcyria incarnata (Pers.)Pers.
On rotten wood generally. Common.
45.

Arcyria cinerea (Bull.)Pers.
On logs and sticks. Not common.
45.

Arcyria carnea (List.)G. Lister
A rare flesh-coloured species, found once in Hardwick Wood.
35.

Arcyria denudata (L.)Wettst.
An abundant and very variable species. At times it is only distinguishable from A. incarnata by its persistent and well-attached capillitium. Brownish weathered forms may approach A. stipata (Schw.)Lister, which is sometimes considered to be a Hemitrichia. The Cambridgeshire specimens are all typical denudata from rotten wood.
45, 46, 56.

Trichiaceae

Trichia contorta (Ditm.)Rost.
Not common, on wood.
25, 45.

Trichia varia (Pers.)Pers.
A common and variable species, with minutely spinulose and bordered spores. Found on wood and moss. When stalked the stalk is black.
35, 45, 46, 57.

Trichia scabra Rost.
A bright yellow species, contrasting with the pale colour of the last. Found in large developments on wet logs; the colony is bound together by a tough, horny hypothallus.
45.

Trichia affinis de Bary
Abundant on mosses, particularly Mnium hornum. Also on wood and leaves.
25, 35, 43, 45, 66.

Trichia persimilis Karst
Similar to the last but the reticulations on the spores are much finer and the elaters are less spiny. Common on rotten wood, often in large colonies.
45, 46.

Trichia pusilla (Hedw.)G. W. Martin (T. decipiens (Pers.) Macbr.)

Common on dead wood.
25, 35, 45, 46.

Trichia botrytis (Gmel.)Pers.
A winter species on sticks and logs. Often with purple blotches on the yellow sporangia, creating a beautiful effect. The var. munda Lister has been found once.
35, 45.

Trichia floriformis (Schw.)G. Lister
Differs from the preceding species by having orange rather than yellow spores and elaters. The sporangia are shining black and dehisce in petal-like valves. Until recently this was a rare species but during the last ten years it has become very common throughout southern England. Found on damp wood and tree-bases. 45.

Hemitrichia vesparium (Batsch)Macbr.
On rotten logs, particularly elm. Small clusters of sporangia rather than large colonies are the rule in this species, which is unusual in having a black plasmodium.
45, (65.)

Hemitrichia clavata (Pers.)Rost.
On rotten wood, especially pine. Not common. 25, 45.

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References:

Alexopoulos, C.J. (1960) Gross morphology of the plasmodium and its possible significance in the relationships among the myxomycetes. Mycologia, 52: 1-20.

Bonner, J.T. (1959) The Cellular Slime Molds. Princeton.

Dony, J.G. (1953) Flora of Bedfordshire. Luton.

Howard, H.J. (1928) Presidential Address. Trans. Norf. Norw. Nat. Soc., 12: 383-413. (and many later papers.)

Lister, F. (1925) A Monograph of the Mycetozoa. (3rd. ed. revised.) London.

Martin, G.W. (1949) North American Flora, Vol. I., Pt. I. - Myxomycetes. New York.

Mayfield, A. (1943) The Mycetozoa of Suffolk. Trans. Norf. Norw. Nat. Soc., 15: 365-370.

Nannenga-Bremekamp, N.E. (1958) Notes on Myxomycetes. I. Some remarks on the genus Reticularia Bull. emend. Rost. Acta bot. Neerl. 7: 769-779.

Ray, J. (1660) Catalogus Plantarum Circa Cantabrigiam Nascentium. Cambridge.

Relhan, R. (1820) Flora Cantabrigiensis. (3rd. ed.) Cambridge.

Wilson, M. & Cadman, E.J. (1928) The life-history and cytology of Reticularia lycoperdon Bull. Trans. Roy. Soc. Edin. 60: 555-608.

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WEATHER NOTES FOR CAMBRIDGESHIRE 1961

J. W. Clarke

The first three months of 1961 were noteworthy for the almost complete absence of frost and the abnormally high temperatures of February and March—mean maximum temperatures were 7°F. above normal for both months. A heatwave developed during the last week of June and culminated in a temperature of 91°F. at Swaffham Prior on the 1st July. December gave the coldest spell of the year. From the 15th to the end of the month, frost occurred every night and on many days the thermometer did not rise above freezing point—on the 28th there were 5°F. of frost all day. Night minima of 14°F. were recorded on the 25th, 26th and 29th. Only 7 days exceeded 80°F. during the summer but 59 days exceeded 75°F. Fifty-three screen frosts were recorded—a much smaller number than usual for Cambridgeshire.

Total rainfall (20.69 ins.) at Swaffham Prior was only very slightly below average, but at Boxworth a deficit of 4 ins. was reported. The driest month was March with only 0.19 ins. on 5 raindays. December was the wettest with 3.06 ins. on 18 raindays. Much of this precipitation fell as snow during the last three days of the month.

One period of absolute drought was recorded from March 1st to March 29th and a partial drought from May 5th to May 26th.

On the whole 1961 showed a continuation of a tendency, apparent in 1960, for the spring months to be warmer than usual and for July and August to be cooler than usual.

I am grateful to Rev. W. Francis Hicks for the records below.

Weather Records at Swaffham Prior 1961

Month	Temperature		Highest	Lowest	Total Rainfall	No. of days on which rain fell	Approx. Sunshine hours
	Mean Max.	Mean Min.					
January	42 (+1)	33	53	25	2.07	18	50
February	50 (+7)	38 (+5)	57	31	1.83	16	71
March	55 (+7)	37 (+2)	67	27	0.19	5	166
April	59 (+5)	43 (+5)	65	35	1.54	16	116
May	61 (−1)	43 (−1)	73	30	0.97	9	194
June	70 (+2)	50 (−1)	84	40	1.48	10	218
July	70 (−1)	52 (−1)	91	43	1.17	11	196
August	69 (−1)	53 ( )	83	45	2.21	18	152
September	67 (+2)	53 (+4)	79	46	2.53	14	136
October	58 (+2)	44 ( )	70	35	1.96	17	161
November	49 (+1)	36 (−1)	57	25	1.68	15	75
December	41 (−2)	29 (−6)	58	14	3.06	18	71
Ann. Means and Totals	57.5 (+2)	42.5			20.69 (−0.67)	167	1606
1960	56	42			28.61	184	1399

W. Francis Hicks, Observer, Swaffham Prior Vicarage, Cambs.

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 and semi-natural state. There is a very urgent need for a local organisation to take action, before it is too late, to safeguard what remains, and to encourage the intelligent conservation of nature.

Aims of the Trust

To record and study the chief places of natural history interest in Cambridgeshire and the Isle of Ely. This interest is not confined to botany and zoology, but should include geology, archaeology and local history.

To protect these places if they are threatened.

To acquire and administer any such place as a Local Nature Reserve, if this action is the most appropriate method for conservation.

To co-operate with other local and national bodies with interests in natural history and nature conservation.

To encourage interest and understanding for an intelligent policy of nature conservation, which should not run counter to the best interests of agriculture, forestry, sport, and other rural industries and occupations.

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