

Natural History Society

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Editor:

M. C. CLARK, F.L.S.

EDITORIAL

In our preceding editorial, we invited notes from members, of a more informal character than our usual papers. Though perhaps not quite on the lines we envisaged, we welcome this time two reports on projects undertaken by inexperienced amateurs. In one case this was a survey by a University Extra-mural class and therefore, of course, under expert guidance; in the other case a less sophisticated effort involving close-range observation of an apparently commonplace site. We feel justified in allocating space to these two reports in the hope that those who took part will be encouraged to continue their interests and eventually become involved in more specialised aspects, having experienced the possibilities.

On a rather sombre note, we have to comment on the further falling-off of interest in the Society's activities, judging by the very poor attendances at many meetings. We seem to be in a vicious circle. Efforts are made to provide meetings intended to get more of the members together and when these prove unsuccessful, the organisers are discouraged so that it becomes more and more difficult to find interesting speakers for indoor meetings and leaders for outdoor events. It is difficult to see how we can get out of this situation unless the ordinary members, not up to now much involved in the Society's affairs will come forward with specific suggestions of the sort of activities they would like to see in the Society and with offers of help and support in such activities.

Activities which are flourishing are the fungus forays, the botanical section's week-ends and certain entomological meetings, though in all these cases additional support would be welcomed. Beginners and non-committed members are encouraged to come along and see what is going on even though they have no intention of becoming deeply involved. Unfortunately the section devoted to geology and geography, after struggling for many years has had to discontinue as a separate section. However, it is intended that there should be lectures from time to time with relevance to these subjects and the same also applies to zoology, another former field of our activities which we hope will revive in time.

A Collection of Ostracodes from the Wren's Nest Hill

By JOHN H. BALL
Church Stretton, Salop.

(continued from page 64)

The remaining slides, nos 19 to 29, are of the species illustrated in Fig. 5; these differ from those represented on slides 1 to 18 in the absence of a velum or velate ridge.

DESCRIPTIVE NOTES ON THE SLIDES

SLIDE NO. 19 comprises specimens with the presumed right and left valves respectively uppermost of the unidentified species illustrated in DRAWING a.

Shape. Ovoid, with dorsal and ventral edges almost straight and nearly parallel; one edge (probably the hinge) quite straight for about half the over-all length; one end (probably the anterior) a little wider than the other which tends to be rather more pointed. On the above assumption regarding the orientation, the right valve overlaps the left at both ends and ventral edge.

Lobation. None.

Velar structure. No velum or velate ridge.

Crumina. None.

Surface. Smooth.

Size. Up to approximately 2.0 mm in length, 1.2 mm in height.

Occurrence. Found in both Wenlock Shale and the Nodular Beds. Plentiful in Site I and occurs in sites II, III, IV, and V.

SLIDE NO. 20 shows specimens with right and left valves respectively uppermost of the unidentified species illustrated in DRAWING b.

Shape. Sub-triangular with straight base-line (presumably the hinge-line) but with curved sides and rounded corners. There is some variety in the triangularity, the trend being towards a broad-based isosceles form. There is a tendency for one end of the hinge-line to be more obtuse than the other and this may indicate orientation, the more obtuse probably being anterior.

Lobation. None.

Velar structure. No velum or velate ridge. One valve (probably the left) overlaps the other all round in the smaller tecomorphs, but in the mature form the overlap tends to be confined to the dorsal edge (i.e. the hinge).

OSTRACODES FROM WREN'S NEST HILL

Crumina. None.

Surface. Slightly granular, occasionally with small tubercles widely spaced in no appreciable pattern.

Size. Up to approximately 2.0 mm in length, 1.2 mm in height.

Occurrence. Plentiful in the Wenlock Shale (Sites V and VII), fairly common in the Nodular Beds (Site I).

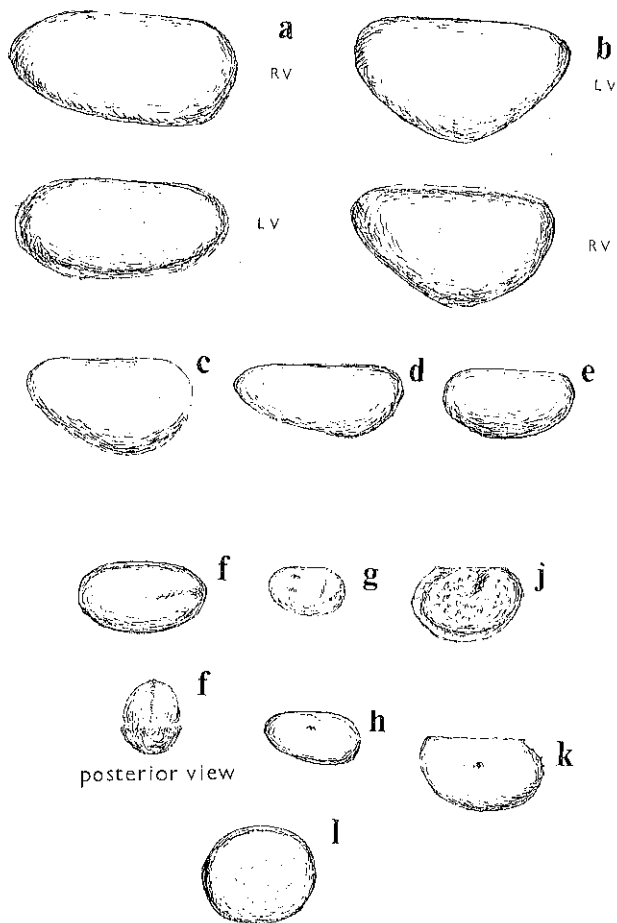


Fig. 5. Drawings from specimens x 15 approx. (See descriptive notes concerning the slides)

SLIDE NO. 21 shows specimens with right and left valves respectively uppermost and the one specimen from Site VI showing portions of shell. Unidentified. DRAWING c.

Shape. Sub-triangular, with one angle at the "base" more acute than the other, and presumed to be the posterior; one side longer than the other; rounded "corners"; ventral edge more rounded than in type "b" (slide no. 20). Straight hinge-line nearly as long as the over-all length.

Lobation. In the better preserved specimens a lobal pattern can be traced, with a large, rounded posterior lobe barely separated from a small, flatter, anterior lobe. Dorsal and ventral marginal depressions between lobes.

Velar structure. No velum or velate ridge. Overlap indeterminate.

Crumina. None.

Surface. Internal casts have small tubercles dotted over the surface irregularly, but portions of the original shell in one specimen show a smooth surface.

Size. Approximately 1.5 mm in length, 1.0 mm in height.

Occurrence. Uncommon, but found in both Nodular Beds and the Shale. Mainly at Site I; one specimen at Site VI.

SLIDE NO. 22 shows specimens with right or left valves respectively uppermost and ventral view of internal cast. Unidentified. DRAWING d.

Shape. Long ovoid, slightly tapering; dorsal and ventral edges nearly straight.

Lobation. Simple valve lacking lobes and sulci externally, but internal casts show a tri-lobal formation.

Velar structure. No velum or velate ridge. The left valve overlaps the right all round.

Crumina. None.

Surface. Smooth or granulose, or sometimes punctate.

Size. Approximately 1.5 mm in length, 0.75 mm in height.

Occurrence. Fairly common in the Wenlock Shale (Sites V, VI, and VII), rare in the Nodular Beds (only one specimen found — in IV).

SLIDE NO. 23 is of six specimens of uncertain orientation, of the unidentified species of which DRAWING e is a presumed left valve.

Shape. Kidney-bean shaped, with straight dorsal edge and curved ventral edge, and well-rounded ends. More or less symmetrical about the vertical axis so that it is difficult to differentiate anterior and posterior ends, but one is usually more roundly curved — presumably the anterior.

Lobation. The whole valve is one continuous lobe.

Velar structure. No velum or velate ridge. No apparent overlap.

Surface. Smooth.

Size. Up to approximately 1.2 mm in length, 0.7 mm in height.

Occurrence. Uncommon — found only in Site IV.

OSTRACODES FROM WREN'S NEST HILL

SLIDE NO. 24 shows specimens with left and right valves respectively uppermost, single valves and imperfect specimens, and dorsal and ventral views of carapace of the unidentified species in DRAWING f.

Shape. Nearly oval; hinge-line short and straight; well-rounded ends with broadly curved ventral side; one end, presumably the posterior, very slightly more pointed than the other.

Lobation. A short, mediumly deep sulcus in the posterior portion inclines downwards from the near-middle of the posterior edge; below this sulcus a ridge or narrow lobe runs parallel to it, sharply defined at its posterior end. (Seen in ventral or posterior view, these ridges give the impression of ship's stabilisers). There is some variety in the acuteness of the ends and in the declination of the sulcus.

Marginal structure. No velum or velate ridge. The right valve overlaps at the hinge and in varying degrees round the ventral edges.

Surface. Smooth

Size. Approximately 1.0 mm in length, 0.7 mm in height.

Occurrence. Common in both the Wenlock Shale and the Nodular Beds (Sites I, IV, V and VI).

SLIDE NO. 25 comprises specimens with left and right valves respectively uppermost and also single valves, together with specimens from the Shale showing how they are more worn than those in the Limestone. Unidentified species illustrated in DRAWING g.

Shape. Nearly oval, with straight hinge-line about half the over-all length.

Lobation. In what is presumably the anterior portion is an almost vertical sulcus-like depression, while posteriorly are two shorter depressions nearly parallel to each other and roughly perpendicular to the anterior one.

Marginal structure. No velum or velate ridge. Right valve overlaps left.

Surface. Smooth.

Size. Approximately 0.75 mm in length, 0.5 mm in height.

Occurrence. Fairly common in the Wenlock Shale (Site V), uncommon in the Nodular Beds — a few found at Sites I, II and IV.

SLIDE NO. 26 comprises specimens with right and left valves respectively uppermost, and left valve in matrix, also uncertain specimens having the general shape of the species but lacking the well-defined "eye" referred to below. There is considerable variety in outline, varying from the more straight-sided to the nearly circular. Unidentified species, of which a right valve is shown in DRAWING h.

Shape. Nearly oval, but one end, presumably the anterior, slightly larger than the other; short, straight hinge-line posteriorly positioned.

Lobation. A short, very shallow sulcus reaches from the hinge-line to a deep pit or "eye" a little behind and above the mid-point of the valve. Anterior and posterior lobes continuous ventrally; the former thickens towards the front.

Marginal structure. No velum or velate ridge. The left valve overlaps the right all round.

Surface. Smooth.

Size. Up to approximately 0.8 mm in length, 0.6 mm in height.

Occurrence. Uncommon, but found in both the Shale and the Limestone. (Sites I, IV and V; most common in IV).

SLIDE NO. 27 is of specimens with left and right valves respectively uppermost, all appearing to be more or less imperfect from distortion. Illustrated in DRAWING j and unidentified.

Shape. Preplete, with well-rounded ventral edge and straight hinge-line, shorter than the over-all length.

Lobation. A short sulcus reaches from the hinge-line to about a third of the distance towards the ventral edge. Anterior and posterior lobes form one continuous lobe, the ventral edges of which rise sharply from the marginal level. A low ridge encloses the whole lobe. In small tecnomorphs this ridge also encloses the sulcus which then appears as a small pit or "eye".

Marginal structure. The ventral margin extends into a ledge reaching from end to end of the hinge-line.

Surface. The ridge enclosing the lobe and sulcus is smooth, but the surface of the lobe itself is finely reticulated.

Size. Up to approximately 1.0 mm in length, 0.8 mm in height.

Occurrence. Uncommon. The smallest specimen was found at Site III, the remainder all in the Shale at Site V.

SLIDE NO. 28 is of specimens with right and left valves respectively uppermost, and a specimen on matrix. Some specimens are much worn so that the pit referred to below is hardly observable. Illustrated in DRAWING k and unidentified.

Shape. Preplete, with straight hinge-line shorter than the over-all length.

Lobation. No separate lobes. A small round pit lies in approximately the centre of the valve.

Marginal structure. No velum, but the lobe rises sharply from the contact margin and at the bend (where a velum might be expected) there are remains of spines anteriorly and posteriorly.

Surface. Finely reticulate or granulose, with a few scattered shallow punctations. One specimen — in appearance the fully-grown stage — has a horn in the postero-ventral region.

Size. Up to approximately 1.0 mm in length, 0.7 mm in height.

Occurrence. Uncommon. Found only in the Nodular Beds at Site III.

SLIDE NO. 29 is of various specimens with possibly overlapping valves uppermost, of the species in DRAWING 1 (orientation uncertain), identified as belonging to the genus *Amygdalella*.

Shape. Oval, approaching circular. The shape varies considerably, some specimens being much more oval than others. Hinge-line not apparent.

Marginal structure. No velum or velate ridge. There appears to be a small overlap of varying extent all round but it is difficult to distinguish from the colouration of the margin, and in some cases there are marginal remains of the original valves around internal casts that could be mistaken for overlap.

Surface. Granulose. In some specimens there are small irregular depressions.

Size. Up to approximately 1.0 mm in length.

Occurrence. Common in the Wenlock Shale (Sites V, VI and VII), uncommon in the Nodular Beds (a few found in Sites I and III).

Additions to the Flora of Warwickshire

By J. T. WILLIAMS

Dept. of Botany, University of Birmingham

In addition to new records for the county and new major squares, this account includes some notes on hybrids in Warwickshire. Some species mapped in the Flora showed a rather sparse distribution and recent data are provided for a number of them, even though these are not new major square records; these are interesting in amplifying our knowledge of these species in the county.

NEW COUNTY RECORDS

Medicago falcata L. (Sickle Medick)

Collected by G. A. and M. A. Arnold from colliery spoil-heaps, at Pooley Fields, in the Alvecote Pools area (square 2503) and confirmed by Prof. J. G. Hawkes. It has been recorded from all surrounding vice-counties.

Tolmiea menziesii (Pursh) Torr. and Gray

A large colony of this plant has become naturalised in Sutton Park, near Blackroot Pool (1097). Mr. J. H. Field formally recorded it in 1975, although Mr. H. H. Fowkes informs us that members of the Sutton Coldfield Natural History Society knew of its existence. This is a plant which is becoming naturalised in several damp, shady places in Britain. See further note by Mr. Field on p. 94.

Rosa canina L. var. *andegavensis*

This variety was collected by G. A. and M. A. Arnold from Hurley (2495) growing on waste ground. It was confirmed by Dr. Melville at Kew. It approximates to f. *surculosa* (Woods) Hook., but lacks the prickles which are usually present on the petioles. It is almost certainly of hybrid origin according to Dr. Melville.

NEW MAJOR SQUARE RECORDS

Atropa belladonna L. (Deadly Nightshade)

A colony of this plant was observed, in fruit, by M. C. Clark, in Wootton Wawen churchyard (1563) in early October. The colony surrounded a Cypress tree and had an abundance of the large, black, poisonous berries.

Cardaria draba (L.) Desv. (Hoary Pepperwort)

Recorded by J. L. Presland on waste ground adjoining Water Orton railway station (1690).

Dactylorhiza fuchsii (Druce) Soó x *D. praetermissa* (Druce) Soó

An addition by J. L. Presland to the Flora of Sutton Park. Intermediate forms occur with the two parents in marshy areas in squares 0998 and 1096.

Festuca heterophylla Lam.

Found by Prof. J. Fremlin growing as a garden weed in Edgbaston (0484).

Hordeum jubatum L.

This has established adjacent to the M6 Motorway between Castle Bromwich and Coleshill, especially in patches in the central reservation (1888). Dr. J. T. Williams obtained specimens from workmen. This may well persist for many years like a colony on the M1 just south of Watford Gap Services known to the author for the last five years.

Juglans regia L. (Walnut)

Recorded by J. L. Presland as naturalised in woodland east of Rectory Park, Sutton Coldfield (1296), probably originally planted, like many of the records in the Flora.

Lathyrus nissolia L. (Grass Vetchling)

Found by Mrs. K. Blackburn on the old railway line 2 miles south of Rugby (5172). This is a reserve area administered by Rugby School and Rugby Natural History Society.

Lepidium campestre (L.) R. Br. (Pepperwort)

Found on gravel by the roadside at Alvecote Pools Nature Reserve (2504) by G. A. and M. A. Arnold.

Lepidium ruderales L. (Narrow-leaved Pepperwort)

Along the roadside by Wrights Farm (2089). Observed by A. J. and M. Gregory and confirmed by Dr. J. T. Williams.

Ranunculus circinatus Sibth.

Recorded by D. Astley from the Edgbaston Park Nature Reserve (0584). See p. 117 for further details.

Sorbus torminalis (L.) Crantz (Wild Service Tree)

Found by A. G. Menzies-Kitchin in a hedgerow near Sutton-under-Brailes (2938) and confirmed by Mr. Roper of the national survey of *S. torminalis*.

FLORA OF WARWICKSHIRE

HYBRIDS IN WARWICKSHIRE

The Botanical Society of the British Isles has sponsored a gathering together of all information on hybrids in the British Isles. This is now available as a book, *Hybridization and the Flora of the British Isles*, (edited by C. A. Stace) with contributions from 86 experts. Hybrids recorded from the British Isles number 975 of which three are shown as having been found only in Warwickshire, viz. *Potamogeton* x *cadburyae* Dandy and Taylor, *Anagallis* x *doerferi* Ronn. and *Verbascum* x *lemaitrei* Boreau. Of these, I am told that the *Anagallis* hybrid is still flourishing and I have verified a specimen sent to the University by J. M. Price in 1975. The other two may well be extinct in sites where they were recorded. The parental species of the *Potamogeton* hybrid still persist. One of the parent *Verbascum* species, *V. virgatum* was found in only one site in the Flora survey although the other, *V. thapsus* is more widespread.

As well as many of the commoner hybrids, Warwickshire possesses two other hybrids rare in the British Isles: *Ranunculus peltatus* Schrank x *R. trichophyllus* Chaix is only convincingly present in v.c. 38 (although recorded in the past from v.c. 17 and v.c. 34), and *Myosotis caespitosa* K. F. Schultz x *M. scorpioides* L. is known only in v.cs. 20, 38 and 48.

The following four hybrids have been recorded from Warwickshire, although they were not included in the recent Flora:

1. *Cirsium arvense* (L.) Scop. x *C. palustre* (L.) Scop.
(*C.* x *celakovskianum* Knaf) — intermediate.
2. *Rosa arvensis* Huds. x *R. rubiginosa* L. (*R. arvensis* var. *gallicoides* (Desegle) Crep. — similar to *R. arvensis* but possesses acicles on the pedicels and branches and leaves intermediate in shape.
3. *Rosa pimpinellifolia* L. x *R. tomentosa* Sm. — leaves have seven leaflets which are acutely biserrate, a pubescent rachis with small glands and hips 7 mm diameter.
The hybrid between *R. pimpinellifolia* and microspecies of *R. villosa* s. lat. has *R. sherardii* as the *villosa* type parent. *R. tomentosa* is another *villosa* microspecies and its hybrid with *R. pimpinellifolia* is *R. x wilsonii* Borrer *pro parte*.
4. *Salix cinerea* L. x *S. phylicifolia* L. (*S.* x *laurina* Sm.) — at one time this was thought to be a variant of *S. caprea* x *S. viminalis* (scattered in Warwickshire — see Flora p. 186). It is an erect shrub with thinly pubescent twigs becoming glabrous and lustrous. Leaves are oblong, acute, lustrous dark green, at first pubescent but tending to become glabrous, turning black on drying.

OTHER INTERESTING RECORDS

The following have provided data : Mrs. M. Gregory, J. L. Presland, J. Roberts and E. Webster.

Square 1296 (J.L.P.)

Alchemilla vestitia recorded in unimproved pasture east of Rectory Park Road, Sutton Coldfield; *Epilobium tetragonum* ssp. *tetragonum*, *Populus alba* and *Vinca minor* in hedgerows east of Rectory Park Road.

Square 1496 (J.L.P.)

Lysimachia vulgaris at the edge of the pool off Lindridge Road, Sutton.

Square 1690 (J.L.P., J.R.)

Echium vulgare, *Geranium pratense*, *Papaver somniferum*, *Silene vulgaris*, *Tanacetum vulgare* and *Verbascum thapsus* on waste ground adjoining Water Orton railway station.

Square 1888 (M.G., J.L.P.)

Lycium barbarum in a hedgerow in the centre of Coleshill and around the car park west of High Street.

Square 1994 (J.T.W.)

Ranunculus aquatilis in a pond by Black Greaves Lane.

Square 3379 (E.W.)

Rapistrum rugosum on waste ground adjacent to the Lanchester Polytechnic.

Further notes on the colony of *Tolmiea menziesii* referred to above

The large colony of *Tolmiea menziesii*, the Pick-a-back Plant, near Blackroot Pool, Sutton Park covers an area of approximately eighteen square metres. When observed in May 1975 the plants were flowering and attaining a height of 70-80 cm. Healthy growth was noted in all parts of the colony and the plants were propagating by the production of small new plants from the upper ends of the petioles of the older leaves at ground level. Propagation was established by the subsequent decay of the petioles of these older leaves. The plant is noted for this peculiar method of reproduction; hence its common name.

The colony was in the shade of trees of *Quercus robur* (Oak) and *Ilex aquifolium* (Holly) and mixed with it were some plants of *Urtica dioica* (Nettle), *Rumex obtusifolius* (Broad-leaved Dock) and *Rubus fruticosus* agg. (Bramble).

J. H. FIELD.

Record of a Hedge Survey

Upton Warren, Worcestershire, 1974

INTRODUCTION

The members of the Bromsgrove branch of the World Wildlife Fund agreed, towards the end of 1973, to undertake a survey of a suitable hedge for a period of one year. The idea came about after some members had read the leaflet produced by the Council for the Preservation of Rural England. Further information on the method of the survey was obtained from the Cambridge and Ely Naturalists' Club.

The hedge selected was a boundary hedge at the Upton Warren Nature Reserve about $2\frac{1}{2}$ miles south-west of Bromsgrove, Worcestershire (see Fig. 1). Permission for access throughout the year was granted by the Worcestershire Nature Conservation Trust.

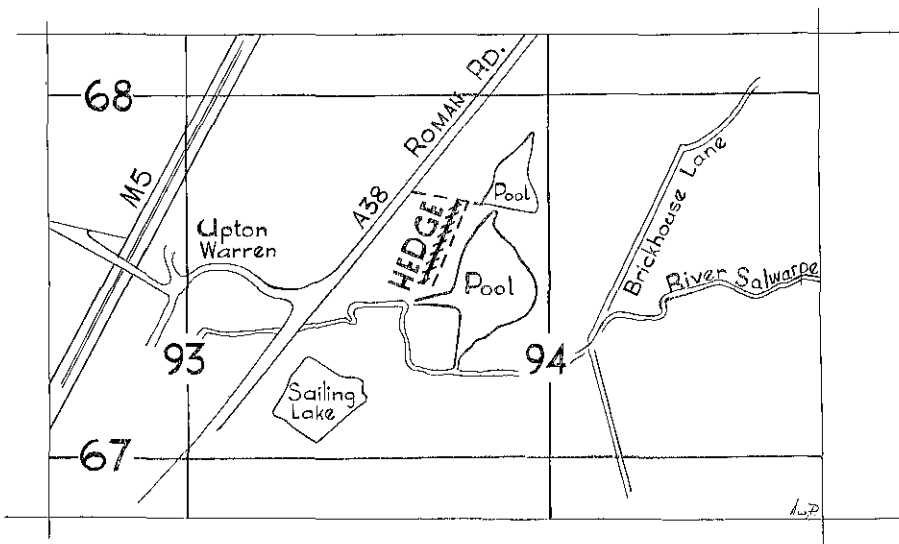


Fig. 1. The location of the hedge in relation to the A38 road, with national grid lines shown (in the 100 km square SO).

Preliminary inspection indicated that it would be necessary to divide the whole length of the hedge, including those parts where trees and shrubs were largely absent, into sections, to facilitate

HEDGE SURVEY

ease of recording. A typical hedge section is shown in Fig. 2.

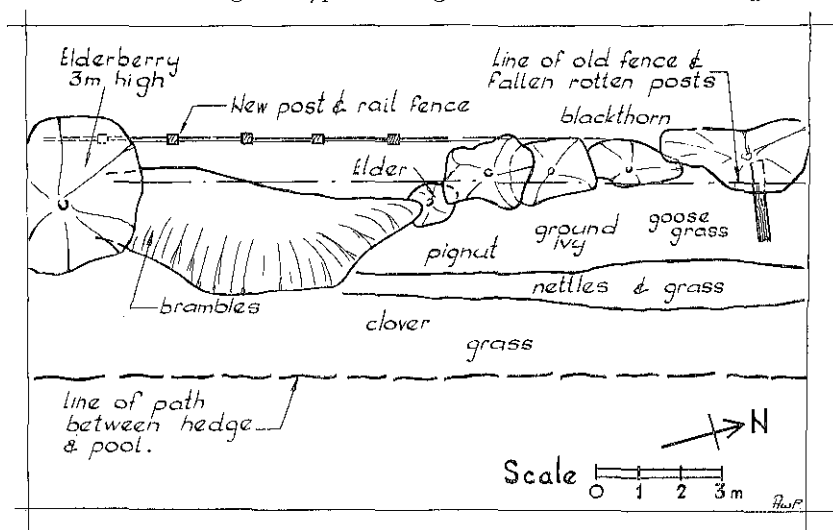


Fig. 2. A typical hedge section.

Small stakes were used which, when marked by reference letters, were adequate for members' use and did not draw attention or in any way cause any disfigurement to the area. Members each selected one or two sections and were responsible for recording the wildlife in these for the whole of the year. It should be emphasised that the survey was carried out by amateur naturalists keen to study animals and plants of the hedge in more detail than is possible on a walk.

It was agreed that regular monthly visits should be made on the last Sunday of each month. Each visit was of two to three hours duration. Members were also able to visit the reserve more frequently if they wished and at differing times during the day.

Identification of most species was made on the spot but a small number of specimens were collected, by arrangement with the Trust, and subsequently identified by Mr. F. Fincher.

THE HEDGE

The hedge runs almost parallel with the A38 road between Bromsgrove and Droitwich, being separated from it by a field used, during 1974, for grazing. At the time of the survey the hedge had not been managed for some considerable time and, on the Reserve side, blackthorn and bramble had extended the width considerably.

UPTON WARREN

The dominant plants were hawthorn and blackthorn with heavy growths of brambles concentrated in certain sections. The line of the hedge is roughly north-east to south-west. The survey was conducted on the south-east side.

GEOLOGY OF THE LOCALITY

The geological solid with drift map shows a patch of third terrace material over the Keuper marl here. This covers an area on both sides of the A38 but does not quite come up to the edge of the pool and so there is some doubt exactly where the boundary between these two formations lies; the hedge may be on this line. The terrace material consists of gravel and has been quarried just to the south of this site. Tusks and bones of mammoth and bones of woolly rhinoceros and other mammals and a lot of remains of various insects were found during the excavation. Another pool now occupies this part. The terrace material was deposited by the Severn during the time when the ice was clearing after the last glaciation period.

There has been considerable subsidence and this accounts for the presence of the pool. This has followed on the removal of brine from the area over a period of over a century but this has now ceased. The most recent of these pools caused by this subsidence are about a mile further to the south-east and two of these are saline but the pool by this hedge is freshwater. Due to the wetness of much of the ground the northern end of the hedge is quite wet and has a luxuriant growth of reed (*Phragmites communis*) beside it and helps to account for some of the birds seen in or around the hedge. These include most of the typical hedgerow birds but also reed bunting, sedge warbler and water rail. The rest of the hedge is fairly normal except for a certain amount of willow and the fact that it has not been cut for many years. It is, therefore, much higher and wider than the average hedge for much of its length.

THE ANNUAL CYCLE

During the winter months of January and February there were many dead stalks of plants visible. These included nettles, thistles, cleavers and grasses, mainly cocksfoot. There were seedlings of cleavers present in January and also new shoots on the nettles. New growth was evident on ground ivy, dead nettle, yarrow and hedge parsley. Celandine leaves appeared in February. Last year's leaves were present on bramble and new leaves were showing on elder. Mosses were present on the base of posts and, also with spore cases, on a brick. Candlesnuff fungus was found in January and a white fungus on dead bark in February. Broken *Cepaea* snail shells were found at the base of the hedge, small beetles under dead bark and centipedes under a brick.

HEDGE SURVEY

By March most of the dead stalks had fallen and partly disappeared. New leaves and shoots were apparent of buttercup, sorrel, pignut, dock, lesser stitchwort and dandelion; clover, plantains and germander speedwell. Ground ivy and lesser celandine were now coming into flower and leaves beginning to appear on hawthorn and dogrose. All last year's leaves on bramble had fallen by April. During the latter part of the Spring, buttercups, dandelion, pignut and lesser stitchwort flowered. The lesser celandine and ground ivy was smothered by the fast growing nettle plants. Hawthorn was now in full leaf and flowering in May; flower buds were visible on bramble and elder. Many insects were seen in the Spring including butterflies, moths, bumble bees, beetles and ants. A nest of spiders was found on grass stalks in May and hundreds of Small Tortoiseshell butterfly caterpillars were present throughout May, June and July.

By June the nettles were 3 ft. or more and in full flower, cleavers had climbed to 6 ft. clinging to the hawthorn and in flower. Also in flower were purple and white clover, plantain, sorrel, speedwell, dogrose, elder and grasses. On hawthorn, green haws were seen and an orange rust was present on some nettle leaves. In July dock, creeping thistle and yarrow flowered. By late summer, in August, some blackberries were ripening, together with hips, haws and elderberries.

Gnats were flying from May to December. During the summer several species of butterflies, moths, hover flies and sawflies were seen. Honey bees and bumble bees were very prolific on bramble flowers. *Cepaea* snails were found on grasses 1 ft. above ground in June and 4 ft. above ground in July and August.

In the Autumn most plants were dying off. The nettles had died back which meant that ground ivy and the base of the hedge was visible again. New shoots had already started on some plants including nettle, lesser stitchwort and speedwell. New seedlings of cleavers had germinated. Most of the grasses had seeded and the stems were turning brown. Some bramble was still in flower but fruit mostly ripe. Elderberries were ripe and mostly eaten whilst the leaves were turning brown. By October all the leaves and fruit had gone from elder. Haws were ripe in September and by December, had virtually disappeared. Leaves started to fall in October.

In November, candlesnuff fungus appeared at the base of the posts. Evidence was seen of a leaf borer on speedwell and bramble in the Autumn and galls observed on nettle and speedwell. Broken *Cepaea* shells found during November and December. By December there were many cleavers seedlings and ground ivy had dense runners up to 1 ft. Old stalks were still standing of yarrow, nettles, cleavers, thistle and cocksfoot grass and new growth on buttercup,

UPTON WARREN

sorrel, nettle, lesser celandine, cow parsley and plantain. One dead-nettle was in flower. The bramble was still covered with green leaves and the dogrose had some half eaten hips on it. Hawthorn was bare. Woodlice and centipedes were seen in leaf litter at base of hedge in December.

A chart recording the life cycle of the more common plants found in three sections of the hedge was prepared.

FLORA OF THE HEDGE

ALGAE

Pleurococcus sp.

Growing on bark of elder.

FUNGI

Clitocybe cyathiformis

A dark agaric, uncommon, mainly in hedge verges.

Dacrymyces sp.

Mainly on dead wood.

Stereum hirsutum

Common; small species of bracket fungus.

BRYOPHYTES

Eurhynchium praelongum

Growing on large stone under hedge.

Hypnum cupressiforme
var. *resupinatum*

do.

ANGIOSPERMAE

List of flowering plants (arranged under families)

RANUNCULACEAE

Ranunculus ficaria

Lesser Celandine

R. repens

Creeping Buttercup

R. acris

Meadow Buttercup

CRUCIFERAE

Capsella bursa-pastoris

Shepherd's Purse

CARYOPHYLLACEAE

Cerastium holosteoides

Common Mouse-ear Chickweed

Stellaria graminea

Lesser Stitchwort

CHENOPODIACEAE

Chenopodium album

Fat Hen

PAPILIONACEAE

Trifolium pratense

Red Clover

T. repens

White Clover

ROSACEAE

Crataegus monogyna

Hawthorn

Rubus fruticosus agg.

Bramble

Prunus spinosa

Blackthorn

Potentilla anserina

Silverweed

P. reptans

Cinquefoil

Rosa canina

Dog Rose

ONAGRACEAE

Epilobium hirsutum

Great Willow-herb

ARALIACEAE

Hedera helix

Ivy

UMBELLIFERAE

Anthriscus sylvestris

Cow Parsley

Pimpinella saxifraga

Burnet Saxifrage

Conopodium majus

Pignut

HEDGE SURVEY

POLYGONACEAE

<i>Polygonum aviculare</i>	Knotgrass
<i>P. persicaria</i>	Redshank
<i>Rumex acetosa</i>	Common Sorrel
<i>R. obtusifolius</i>	Broad-leaved Dock

URTICACEAE

<i>Urtica dioica</i>	Nettle
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FAGACEAE

<i>Fagus sylvatica</i>	Beech
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SALICACEAE

<i>Salix fragilis</i>	Crack Willow
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SCROPHULARIACEAE

<i>Veronica chamaedrys</i>	Germander Speedwell
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LABIATAE

<i>Lamium album</i>	White Dead-nettle
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Glechoma hederacea</i>	Ground Ivy

PLANTAGINACEAE

<i>Plantago lanceolata</i>	Ribwort Plantain
<i>P. major</i>	Greater Plantain

RUBIACEAE

<i>Galium aparine</i>	Cleavers
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CAPRIFOLIACEAE

<i>Sambucus nigra</i>	Elder
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COMPOSITAE

<i>Cirsium arvense</i>	Creeping Thistle
<i>Achillea millefolium</i>	Yarrow
<i>Taraxacum officinale</i>	Dandelion
<i>Matricaria matricarioides</i>	Pineapple Mayweed
<i>M. recutita</i>	Wild Chamomile
<i>Senecio vulgaris</i>	Groundsel
<i>Sonchus asper</i>	Prickly or Rough Sow-thistle
<i>Artemisia vulgaris</i>	Mugwort
<i>Hypochaeris radicata</i>	Common Catsear

ARACEAE

<i>Arum maculatum</i>	Lords and Ladies
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CYPERACEAE

<i>Carex hirta</i>	Hairy Sedge
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GRAMINEAE

<i>Festuca pratensis</i>	Meadow Fescue
<i>Agrostis gigantea</i>	Black Bent
<i>Glyceria fluitans</i>	Flote-grass
<i>Poa trivialis</i>	Rough Meadow-grass
<i>Dactylis glomerata</i>	Cocksfoot
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>A. geniculatus</i>	Marsh Foxtail
<i>Phleum pratense</i>	Timothy
<i>Deschampsia caespitosa</i>	Tufted Hair-grass
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass
<i>Cynosurus cristatus</i>	Crested Dog's-tail
<i>Phragmites communis</i>	Common Reed
<i>Lolium perenne</i>	Ryegrass

UPTON WARREN

FAUNA OF THE HEDGE

ANNELIDA

Oligochaeta

Mesenchytraeus setosus

Pot Worm — found in soil
(January)

ARTHROPODA

Crustacea

Oniscus asellus

Woodlouse

Trichoniscus pusillus

Woodlouse

(*O. asellus* is one of the largest and most common species.

T. pusillus also common, is much smaller)

Insecta

DERMAPTERA

Forficula auricularia

Common Earwig

HEMIPTERA - HOMOPTERA

Neophilaenus campestris

One of the Cuckoo-spit insects

HEMIPTERA - HETEROPTERA

Anthocoris nemorum

A small bug common on foliage
do.

A. confusus

Bug specially associated with
nettles

Heteroroma minioplera

Capsid bug also attached to
nettles

Plagiognathus arbustorum

MEGOPTERA

Panorpa communis

Scorpion Fly

COLEOPTERA

Cidnorphinus quadrimaculatus

Weevil associated with nettle

Psyllobius vigintiquatuor-punctata

22-spot Ladybird

Phyllobius urticae

Another nettle weevil

Atomaria sp.

One specimen of this group
found but not determined below
generic level

Rhagonycha fulva

One of the most abundant of
all beetles, frequent on flowers.

R. limbata

Also found on flowers, but less
common than *R. fulva*.

LEPIDOPTERA

(See details given separately)

ARACHNIDA — Various Spiders were seen but only the following were
definitely identified:

Araneus diadematus

Common Garden Spider

Lycosa lugubris

A common Wolf Spider

Tetragnatha extensa

Usually associated with aquatic
plants

MOLLUSCA

Cepaea hortensis

One of the common banded
snails

Agriolimax reticulatus

An abundant small slug

HEDGE SURVEY

AVES

<i>Rallus aquaticus</i>	Water rail—one only seen on the first day (January) in shelter of hedge
<i>Prunella modularis</i>	Duncock
<i>Sylvia communis</i>	Whitethroat
<i>Turdus merula</i>	Blackbird
<i>Erithacus rubecula</i>	Robin
<i>Saxicola torquata</i>	Stonechat
<i>Acrocephalus schoenobaenus</i>	Sedge warbler
<i>Emberiza schoeniclus</i>	Reed Bunting

Apart from the Water rail, Stonechat and Whitethroat the other species were seen from time to time in and around the hedge and probably all nested in it or in plants associated with it, although the Reed Bunting may have preferred the rough grass on the other side of the path.

MAMMALIA

<i>Microtus agrestis</i>	Field Vole
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The only mammal definitely identified.

NOTE: Other animals noted but not definitely identified, included small Damselflies (*Ischnura elegans* was the commonest species on the adjacent pools) and Greenfly on various plants.

DETAILS OF THE LEPIDOPTERA OBSERVED

Larvae

Vanessa io (Peacock). A small number found on nettles.

Aglais urticae (Small Tortoiseshell). Large numbers were present on nettles but restricted to three sections of the hedge.

Philudoria potatoria (Drinker). Feeding on Tufted Hair-grass and Cocksfoot — seen first in March having emerged from hibernation.

Arctia caja (Garden Tiger). Found feeding on nettles in April.

Euproctis similis (Gold-tail). First noticed on hawthorn in June; most of the specimens seen were on flowers. This is a particularly colourful larva and was found to be quite common in many sections of the hedge. On 30 June one specimen was found on a dog rose feeding on the female parts of the flower.

Episema caeruleocephala (Figure of Eight). Only one specimen found, feeding on hawthorn in June.

Nepticula aurella. Evidence of this micro species was found on a large number of bramble leaves.

UPTON WARREN

Imagines

<i>Pieris napi</i>	Green-veined White
<i>Gonepteryx rhamni</i>	Brimstone
<i>Aglais urticae</i>	Small Tortoiseshell
<i>Maniola jurtina</i>	Meadow Brown
<i>Argades sylvanus</i>	Large Skipper
<i>Opisthograptis luteolata</i>	Brimstone Moth (only one, newly-emerged specimen with wings still crumpled, 3 June)
<i>Epirrhoe alternata</i>	Common Carpet
<i>Xanthoroe montanata</i>	Silver-ground Carpet
<i>Hypania proboscidalis</i>	The Snout
<i>Pyrausta olivialis</i>	—
<i>Mnemonica subpurpurella</i>	Small Primitive Moth

CONCLUSION

This survey was not undertaken in order to add to the large number of reports currently appearing on all aspects of wildlife. indeed, from the observations made, no new records or unusual behaviour were noted *but* we did enjoy and add to our own knowledge something more of the fascination of studying a habitat and watching, regularly, the changing pattern of life and the complete cycle throughout the year.

We hope this brief record will encourage others to look a little closer — to enjoy and learn.

Members of the survey group :

Fred Fincher (Chairman), Derek Spooner (Secretary), Carlina Hubbard, John Hubbard, Walter Parsons, Martyn Amatt, with assistance from other members of the Bromsgrove branch.

The members of the group would wish to place on record their appreciation of the time given by Walter Parsons in preparing the Figures.

Bryophyte Notes

by J. H. FIELD

North Warwickshire College of Technology and Art

(1) **Emended Diagnoses of *Philonotis marchica* (Hedw.) Brid. and *Philonotis capillaris* Lindb.**

For precisely similar reasons to the previous cases (Field, 1974, 1975) I have rediagnosed *Philonotis marchica* and *P. capillaris* as follows:

Philonotis marchica (Hedw.) Brid. emend. J. H. Field

Folia deltoidea acuminata carinata cum dentibus marginalibus singulis. Forma foliorum minusve curvata; apex saepe obtusus; cellulae rectangulares vel lineariter rectangulares; papillae superiores; caulis brunneus. Bractee perigoniales acute acuminatae.

Leaves deltoid-acuminate, carinate, with single marginal teeth. Leaf shape more or less curved; apex often blunt; cells rectangular or linear-rectangular; papillae in the superior angles; stem brown. Perigonal bracts acutely acuminate.

Philonotis capillaris Lindb. emend. J. H. Field

Caulis filiformis, plerumque rubeus; folia parva deltoideo-lanceolata vel ovato-lanceolata, acute et singulatim dentata, aliquantum homomalloso, nonnunquam attenuata in base et aliquantulum decurrentia. Cellulae plus minusve rectangulares; papillae in angulis superioribus; in ordinibus nervo parallelis dispositae. Bractee perigoniales pendentes et saepe squarrosae, vel reflexae.

Stem filiform, usually red; leaves small, deltoid-lanceolate or ovate-lanceolate, sharply and singly toothed, somewhat homomallous, sometimes narrowed at the base and slightly decurrent. Cells more or less rectangular; papillae at the superior angles; arranged in rows parallel to the nerve. Perigonal bracts spreading and often squarrose or reflexed.

I am grateful to Mr. J. J. Rider for the Latin translation and to Mr. A. H. Norkett for literature research.

BRYOPHYTE NOTES

REFERENCES

FIELD, J. H. (1974)

Bryophyte notes (3): An emended diagnosis of *Philonotis caespitosa* Wils. ex Milde. *Proc. Birm. Nat. Hist. Soc.* **22**, 248-249.

FIELD, J. H. (1975)

Bryophyte notes (1): An emended diagnosis of *Philonotis calcarea* (B. & S.) Schp. *Proc. Birm. Nat. Hist. Soc.* **23**, 25.

(2) Hand-lens views of the *Philonotis* species — A Series (iv) *Philonotis caespitosa* Wils. ex Milde.

An uncommon species which sometimes occurs in marshes or ditches and is occasionally found in a stunted form on wet paths.

It is characterised by somewhat translucent ovate-lanceolate leaves with marginal teeth, single in the upper portion of the lamina and paired below. The leaves, often with strongly developed nerves, can be somewhat homomallous. The shoots are brown-stemmed and frequently somewhat curved and sinuose in their upper portions.



Fig. 1. *Philonotis caespitosa*. (Shoots $\times 15$, leaves $\times 20$)

(Drawn by Mrs. A. M. Padfield)

**(3) Piliferous material of *Philonotis marchica* (Hedw.) Brid.,
P. calcarea (B. & S.) Schp. and *P. seriata* Mitt.**

In the type varieties of these species the leaf nerve reaches the apex or is slightly excurrent. I have, however, studied longly piliferous material of :

- (a) *P. marchica*; from Austria, Canada and Germany.
- (b) *P. calcarea*; from North Wales (Field, 1973), Scotland, Greenland, Iceland and Finland.
- (c) *P. seriata*; from Austria and Finland.

All three varieties possess longly excurrent leaf nerves and their stems tend to become markedly radiculose. In these features the plants show a marked parallel relationship with *P. fontana* var. *tomentella* (Mol.) Jaeg. and *P. caespitosa* var. *aristata* Loeske.

I have seen numerous intermediate forms connecting the type material with the piliferous variety in each case.

An aristate variety of *P. marchica* was described by Réchin and Sébille (1897) — *P. marchica* var. *aristata* Ren.

REFERENCES

- FIELD, J. H. (1973)
Bryophyte notes (2): Piliferous varieties of the *Philonotis* species.
Proc. Birm. Nat. Hist. Soc. **22**, 176-177.
- RECHIN, J. & SEBILLE, R. (1897)
Excursions dans la Haute Tarentaise. *J. de Bot.* **II**, 318.

(4) Warwickshire Bryophyte records

Campylopus fragilis (Brid.) B. S. & G.

In the recent Warwickshire Flora, T. Laffin stated that *Campylopus fragilis* was unlikely to occur in v.c. 38 and that the five records by J. E. Bagnall were probably erroneous. However, I collected this species from peaty soil in Sutton Park in July, 1964 and also from heathy ground at Earlswood during the same month. Furthermore, M. A. and G. A. Arnold have twice sent *Campylopus* material to me, from the railway embankment at Alvecote Pools Nature Reserve, which has proved to be *C. fragilis*. An old record by J. E. Bagnall from Plants Wood, Tile Hill has been listed as this species in the vice-county records list of the British Bryological Society for 1970.

BRYOPHYTE NOTES

Philonotis caespitosa Wils. ex Milde var. *aristata* Loeske

In Field (1974) there was a note of the finding of a collection of this taxon in Caernarvonshire, thought to be the first British record of the variety. Subsequently, I have detected some of the same taxon in material of *P. caespitosa* collected from Sutton Park in 1973.

REFERENCE

FIELD, J. H. (1974)

Bryophyte notes (1): British material of various *Philonotis* varieties not mentioned in the Census Catalogue of British Mosses. *Proc. Birm. Nat. Hist. Soc.* 22, 247.

(5) Records from various localities

Philonotis caespitosa Wils. ex Milde

I collected a small sample of this species from wet ground in a park at Strathpeffer, Ross-shire, in August 1974. It has not been recorded previously for either East or West Ross.

Philonotis caespitosa var. *adpressa* Dism.

I received material of *P. caespitosa* collected by F. E. Branson from the vicinity of an old lead mine at Merryfield, v.c. 64, in May 1966. Some of this material is adpressed. In this variety, the leaves are pressed against the stem surface and do not separate outwards from it when material is soaked in water. The leaves tend to be shortly acuminate with rather wide cells. I have previously reported the existence of this variety in the British Isles (Field, 1974) but I am not aware of a previous record for Yorkshire.

Philonotis capillaris Lindb.

I have examined a small *Philonotis* specimen collected by the Rev. G. G. Graham on 29th October, 1968 from wet soil and rocks near the River Tees at High Force, Teesdale, v.c. 65. This proved to be the rare *Philonotis capillaris* Lindb.

Philonotis marchica (Hedw.) Brid.

Since the publication of my note (Field, 1969) on the Warrington Museum specimen of *P. marchica* from Shanklin Chine, Isle of Wight, I have received herbarium material, which I have verified as this species from two further localities: (1) Deepdale, Bowes, Yorkshire, collected by W. Ingham in 1903 (from the herbarium of the Botany Dept., University of Leeds); (2) Jersey, collected by J. Bellaing in 1912 (from the herbarium of the Société Jersiaise).

Plagiothecium curvifolium Schlieph (gemmiferous form)

Gemmiferous material of species of the *Plagiothecium denticulatum* — *sylvaticum* group was not mentioned by H. N. Dixon

in his *Students Handbook of British Mosses*. The *Illustrated Moss Flora of Fennoscandia* by E. Nyholm contains a mention that most species of this genus can reproduce occasionally by means of elongate gemmae. In May 1964, I collected a sample of *P. curvifolium* from a tree base in Brockhampton Woods, near Winchcombe, Gloucestershire (v.c. 33). This specimen was listed in the *Transactions of the British Bryological Society*, 1969 as a new vice-county record. On subsequent microscopic examination of the material I noted occasional small clusters of usually four-celled elongate gemmae. These were seen attached to the veins of the dorsal surfaces of the leaves and they were easily detached.

REFERENCES

- FIELD, J. H. (1969)
A British record of *Philonotis marchica* Brid. *Proc. Birm. Nat. Hist. Soc.* 21, 198.
- FIELD, J. H. (1974)
Bryophyte notes (1): British material of various *Philonotis* varieties not mentioned in the Census Catalogue of British Mosses. *Proc. Birm. Nat. Hist. Soc.* 22, 247.

(6) Two varieties of *Philonotis* new to the British Isles

Philonotis seriata Mitt. var. *adpressa* (Ferg.) Bryhn

I have recently studied a *Philonotis* specimen collected by A. E. Parker in June 1953 from a spring at c. 750 metres in Perthshire (v.c. 88), locality, Sgiath Chuil. This material was labelled *P. fontana* (Hedw.) Brid. var. *adpressa* (Ferg.) Limpr. but I find that it is not *P. fontana* but the addressed variety of *P. seriata*. (Details of *adpressa* varieties of various *Philonotis* species are given by H. N. Dixon in his *Students Handbook of British Mosses*). My thanks are due to Dr. U. K. Duncan for the herbarium specimen.

I am not aware of any previous report of the occurrence of *Philonotis seriata* var. *adpressa* in the British Isles.

Philonotis marchica (Hedw.) Brid. var. *laxa* (Limpr.) Loesk et Warnst.

In the herbarium material of *Philonotis marchica* collected by W. Ingham in 1903 from Deepdale, Bowes, v.c. 65 (sent to me by Mr. G. A. Shaw) I have detected a small quantity of the distant-leaved lax-celled variety.

There is no previous report of *P. marchica* var. *laxa* for the British bryoflora.

A Preliminary Survey of the Distribution of Bryophytes and Lichens, Epiphytic on Oaks, on a Transect from Wolverhampton to the Welsh Border

By L. B. HARVEY and B. RUSSELL

Wolverhampton Teachers' College for Day Students

INTRODUCTION

The aim of this study was to see how the bryophytes and lichens, growing on oak trees, varied from the relatively pure air of the Welsh Border to the industrial area of Wolverhampton. Other workers, e.g. Gilbert (1968) and Duckett (1973), have shown that the distribution of bryophytes is greatly influenced by the sulphur dioxide concentrations in the air. Our intention was to study how far their results would be applicable to oak woods that could easily be reached from the Midlands.

The study formed part of a bryophyte course organised by the Department of Extra-mural Studies, University of Birmingham, with L. B. Harvey as tutor/lecturer. Students of this course collected the data during the winter of 1974-75.

Summary of findings. We did find that there appeared to be a change in bryophyte and lichen epiflora along the transect. There was a decline in the number of species of bryophytes and a change in the proportion of lichen/bryophyte cover as the industrial area was approached.

METHOD OF STUDY

The study involved the investigation of the epiflora of mature oak trees in enclosed woodland. Seven sites were investigated on a transect line running in a west-north-west direction from Wolverhampton (Fig. 1). The sites ranged from 4 to 56 miles from Wolverhampton town centre. All sites, apart from Trewern, were situated upon scarp slopes with a westerly aspect. Trewern had an easterly aspect.

Ten oak trees with diameters greater than 20 cm were sampled at each site. Homology of the sample trees was further ensured by taking trees in the centre of the woods. Marginal trees were excluded, thus eliminating the effects of environmental factors that applied only to trees growing at the margins of woods.

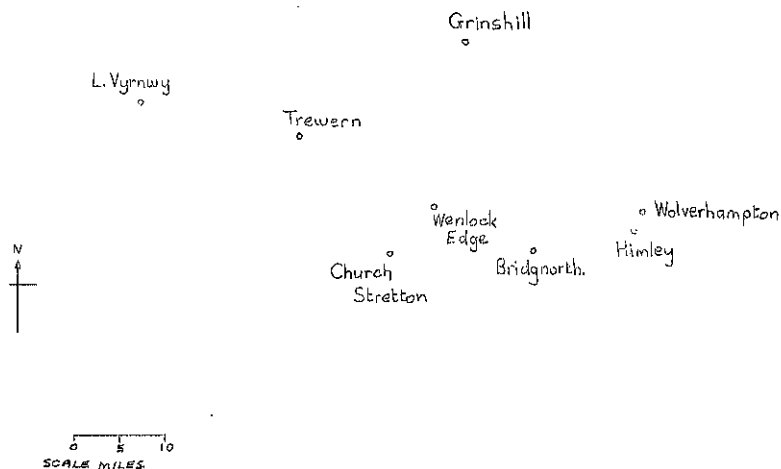


Fig. 1. Sites on transect.

The parameters measured were :

1. Total number of bryophyte species present upon boles of vertical mature oaks. Specimens were included from the whole tree but not from roots, bark wounds or rainwater channels.
2. The proportion of bark at eye-level covered with *Pleurococcus*/crustose lichens, foliose lichens, bare bark and bryophytes. These were estimated upon the north, south, east and west faces separately at the observer's eye level. Thus the measurements were made within the 3-8 ft. area of Gilbert's scale.
3. The maximum height reached by bryophytes on each tree was measured.

IDENTIFICATION AND RECORDING

Identification of bryophyte species was carried out in the field as far as possible. This followed familiarisation with the common species expected, in the laboratory. Samples were also returned to the laboratory to check specimens that could not immediately be identified and to check if any species had been overlooked in the field.

The proportion of bark covered by the various epiphytes was estimated to the nearest 5%. This was done using a 20 sq. cm. wire quadrat. It was found, in preliminary work on bark samples in the laboratory, that consistent estimates could be obtained for all parameters except *Pleurococcus* and crustose lichens. Widely differing

DISTRIBUTION OF BRYOPHYTES AND LICHENS

results were obtained for these by different observers because *Pleurococcus* and crustose lichens could not be readily distinguished in dry situations. Further problems occurred where the two were overlying. It was therefore decided to combine the two by summing the estimates.

Recording was facilitated by the use of prepared sheets. The presence of species was indicated by a cross in the appropriate space and estimates of cover for each aspect could also be entered. Observations were made by students working in pairs. The trees were numbered and each tree was sampled at least twice by different observers.

TREATMENT OF RESULTS

Bryophyte species. The total number of species for each tree were combined and the total for the site taken.

Lichen/Bryophyte Cover. An overall mean of the estimates for each tree was taken. These results appear in Table 1. The individual parameters were plotted against distance in miles from Wolverhampton town centre (Figs. 2, 3, 4, 5). Species lists for each site are given in Table 2.

SITE	DISTANCE FROM W-TOWN (MILES)	O.S. SHEET NO.	GRID REF.	SPECIES TOTAL			LICHEN/BRYOPHYTE COVER %				MAX. HEIGHT OF BRYOPHYTE
				MOSSES	LIVER- WORTS	BRYO- PHYTES	PLURV. TENDR.	FEROSE	BARE BARK	BRYO- PHYTE	
Vyrnwy.	56	117	190.023	9	3	12	20	50	10	20	>1m.
Trewern.	40	118	286.116	4	1	5	50	-	50	-	20cm.
Church Stretton.	28	129	454.927	7	1	8	80	5	15	-	>1m.
Grinshill.	26	118	526.237	8	2	10	65	-	35	-	30cm.
Wenlock Edge.	25	129	597.987	7	2	9	95	-	5	-	1m.
Bridgnorth.	12	130	727.937	4	-	4	55	-	45	-	20cm.
Himley.	4	131	896.927	-	-	-	20	-	80	-	-

Table 1. *Parameters measured*

SITE	MOSSES										LIVER WORTS						
	Hyp. cup.	Hyp. cup. res.	Hyp. cup. fil.	Dicr. cirr.	Mn. horn.	Dicr. scop.	Orth. lin.	Tetra. pell.	Camp. flex.	Atric. und.	Isoet. mys.	Isoet. eleg.	Metz. furc.	Loph. cusps.	Lepid. rept.	Frull. dil.	Micro. sp.
Vyrnwy	X	X	X	X	X	X		X	X		X				X	X	X
Trewern.	X	X		X							X			X			
Church Stretton	X	X		X	X	X				X	X			X			
Grinshill	X	X	X	X	X		X				X	X		X	X		
Wenlock Edge.	X	X	X	X	X						X	X	X	X			
Bridgnorth.	X	X		X	X												
Himley.																	

Table 2. *Species present at sites. (Full names of species abbreviated in the headings, given below — left to right)*

Hypnum cupressiforme
 var. *resupinatum*
 var. *filiforme*
Dicranoweisia cirrata
Mnium hornum
Dicranum scoparium
Orthodontium lineare
Tetraphis pellucida

Campylopus flexuosus
Atrichum undulatum
Isoetecium undulatum
Isopterygium elegans
Metzgeria furcata
Lophocolea cuspidata
Lepidozia reptans
Frullania dilatata
Microlejeunea ulicina

CONCLUSIONS

These must be tentative owing to the small number of sample sites investigated.

Number of bryophyte species

Fig. 2 shows that there is a reduction in the number of species as the distance from Wolverhampton decreases. Of the twelve species recorded at Vyrnwy, none were found at Himley on the

DISTRIBUTION OF BRYOPHYTES AND LICHENS

outskirts of Wolverhampton. A smaller number of species was found at Trewern than might have been expected. The obvious environmental difference at this site was aspect — east as opposed to west for all the other sites. But we have no evidence that this is a significant factor. The sites at approximately the same distance from Wolverhampton, i.e. Church Stretton, Grinshill and Wenlock Edge, showed comparatively consistent results. The fact that the Wenlock Edge site was a limestone scarp did not appear to affect species composition or number significantly. Bridgnorth showed four species. This rather large number of species must be tempered by the fact that they were present in very small amounts compared with the last three sites. This parameter — viz total number of bryophyte species — is likely to be a guide to low and medium pollution levels but its rapid fall-off begins long before high pollution levels are reached.

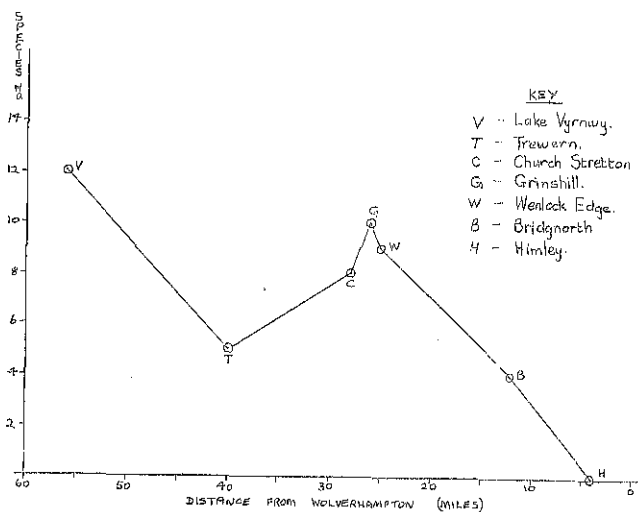


Fig. 2. Number of bryophyte species present at various distances from Wolverhampton.

Proportion of bryophyte cover at eye level

Fig. 3 shows that only high purity air, e.g. Lake Vyrnwy, gives an appreciable bryophyte cover. Other sites, even when holding a high number of bryophyte species, showed no cover at eye level. Hence this parameter is less useful than species numbers.

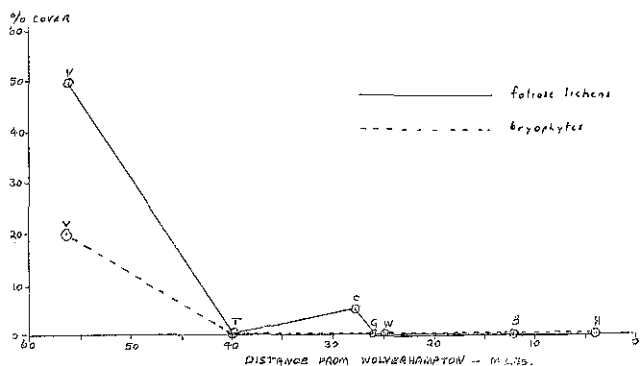


Fig. 3. Percentage cover of bryophytes and of foliose lichens at eye level at various distances from Wolverhampton.

Proportion of foliose lichens at eye level

This parameter too (Fig. 3), is only significant as indicating air of high purity. Its rapid decline from Vyrnwy to Church Stretton makes it of little use in predicting medium and high levels of pollution. Trewern again gave an unexpectedly low figure.

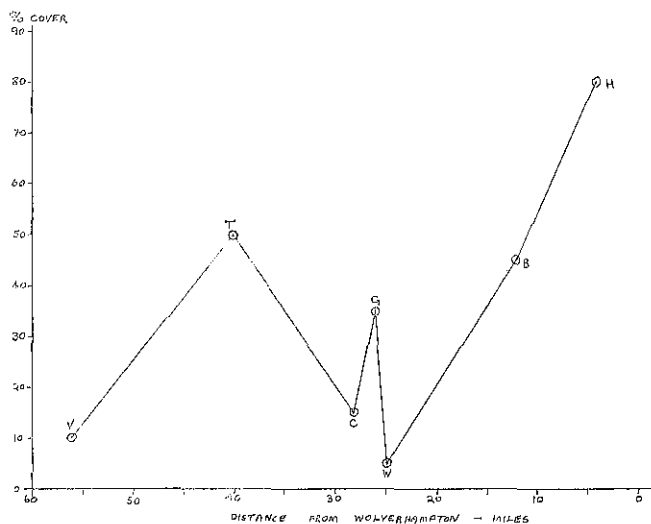


Fig. 4. Percentage of bare bark at various distances from Wolverhampton.

DISTRIBUTION OF BRYOPHYTES AND LICHENS

Proportion of bare bark at eye level

This represents the inverse of epiphyte cover. Its low value at Vyrnwy reflects the high foliose lichen and bryophyte cover. Its low value at Wenlock Edge indicates the high proportion of *Pleurococcus* spp. and crustose lichen cover. Its significance appears to be greatest when pollution levels rise. Here the proportion of bare bark shows an increase, e.g. Himley. The high value at Trewern appears to be due to absence of foliose lichen. This is rather surprising as foliose lichen was found at Church Stretton. (Fig. 4).

Pleurococcus/crustose lichen cover at eye level

Greatest cover is achieved at intermediate pollution levels (Fig. 5). This is in agreement with Gilbert and Duckett. This cover appears to fare better when freed from the competition of mosses and foliose lichens at medium pollution levels. However, higher pollution levels encountered towards the town reduce *Pleurococcus* and crustose lichen cover.

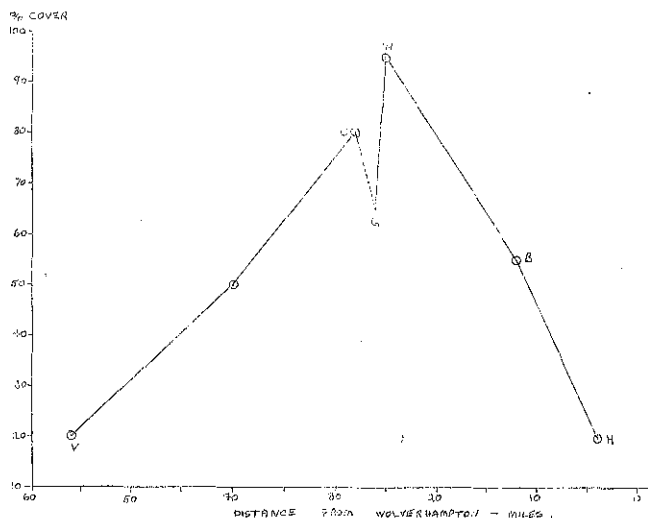


Fig. 5. Percentage cover of *Pleurococcus* and crustose lichens at various distances from Wolverhampton.

Maximum height of bryophytes

This is the distance to which they grow up the oak trunk. Table 1 shows a gradual reduction (apart from Trewern) in maximum height as the town is approached. It is felt that this measurement might have been more useful if actual values had been measured, rather than infinity introduced after one metre.

Bryophyte communities and their relative resistance to pollution gradients

From Table 2, the most characteristic and resistant species appear to be *Hypnum cupressiforme*, *H. cupressiforme* var. *resupinatum*, *Dicranoweisia cirrata* and *Mnium hornum*. Slightly less resistant are *Isoetecium myosuroides*, *H. cupressiforme* var. *filiiforme* and *Lophocolea cuspidata*. Most of the other species are found only in one site and little significance can be attached to them. On the other hand those found at Vyrnwy and not elsewhere may be highly sensitive.

SUGGESTIONS FOR FURTHER STUDY

1. More sites could be investigated, especially round Trewern.
2. A comparison of these results with those obtained from free-standing oaks would be interesting. This would compare the two methods of Gilbert and Duckett.
3. A parallel study of bryophytes on walls and asbestos roofs needs to be undertaken, too. It is claimed that these substrates are more uniform than forest oaks, and it is also suggested that they give more useful information at higher pollution levels.
4. Attempts could be made to correlate the findings with the published sulphur dioxide levels if suitably close sites are listed in the Warren Springs data.

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Notes from the Edgbaston Park Nature Reserve

CETTIA CETTI (THE CETTIS WARBLER)

This bird was present in the nature reserve from 26 May to 21 July 1975. It is a rare British bird, resident since 1960. This record is the most northerly yet known and one of the first records for v.c. 38.

The Warbler was caught, ringed, photographed and released and the record is now being processed by the National Rarities Committee.

As a result of this record, the "Living World" programme of BBC Radio 4 transmitted a small item on the Reserve.

N. J. SPEAK and M. W. COOKE

RANUNCULUS CIRCINATUS

A large floating colony of this plant has spread vegetatively in the lake over the past year to a size of circa half an acre. The plants appear to be sterile, and a hybrid was suspected. Professor C. D. K. Cook looked at the specimens and confirmed the sterility and pointed out that the peduncles do not bend down after pollination. He suggested that it is phenotypically sterile, and we can only suggest that this is due to the high pollution of the water.

D. ASTLEY and J. T. WILLIAMS

A PRELIMINARY CHECK-LIST OF THE SLUGS OF THE RESERVE

This survey of the slugs of the Edgbaston Park Nature Reserve was prompted by the collection, initially from the adjacent University Botanic Gardens, of specimens for an extra-mural class in Natural History at Sutton Coldfield in the autumn of 1974. The Nature Reserve was subsequently surveyed and a total of thirteen species were identified using firstly Janus (1965) and then Quick (1960). Of the thirteen, two belong to the Testacellidae (shelled slugs: *Testacella* spp.), five to the Arionidae (round back slugs: *Arion* spp.) and the other six to the Limacidae (keel back slugs: *Agrioclimax* spp., *Lehmannia* spp., *Limax* spp. and *Milax* spp.) All the thirteen species have, according to Quick, been recorded as occurring in v.c. 37 and v.c. 38.

NOTES FROM EDGBASTON PARK

- Agrioclimax laevis* — Marsh Slug. Frequent along stream banks and in marshy places.
- A. reticulatus* — Netted Slug. Abundant especially around the borders of the wood and on drier sites. Also under dead branches in the wood. Extending into the Golf Course especially.
- Arion ater* ssp. *ater* — Large Black Slug. Specimens darkish brown (not black) without a brightly coloured fringe to the foot. Occasional throughout the Reserve.
- A. ater* ssp. *rufus* — Large Red Slug. Seen once in 1975 by D. Astley.
- A. fasciatus* — Bourguinat's Slug. Frequent especially underneath moss, areas where dead leaves have accumulated, but not in marshy places. Specimens seen were slate grey and thus could not be referred to either of the described varieties, var. *flavescens* which is yellowish or var. *grisea* which is pale grey with dark bands.
- A. hortensis* — Garden Slug. Occasionally found under small branches and also around the higher ground of the University Botanic Garden's water garden.
- A. intermedius* — Hedgehog Slug. Rare among the ground flora of the wood and occasional in rank grassy areas.
- Lehmannia marginata* — Tree Slug. Grey-green with a lighter central stripe down the back and could be referable to var. *glauca*. Rare and only one specimen seen.
- Limax flavus* — Yellow Slug. Specimens seen were orange. Occasional and more frequent bordering the Botanic Gardens.
- L. maximus* — Great Grey Slug. Occasionally seen in a variety of habitats.
- Milax sowerbyi* — Keeled Slug. Only one specimen seen in land adjacent to the Botanic Gardens.
- Testacella haliotide* — Shelled Slug. Rare and only one specimen seen which was a pale dirty yellow colour.
- T. scutulum* — Shield Shelled Slug. Rare and only one specimen seen adjacent to the Golf Course.

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J. T. WILLIAMS and M. S. RODGER.

Microfungi in Chaddesley Woods National Nature Reserve, Worcestershire

By M. C. CLARK

Barnt Green, Worcestershire

INTRODUCTION

When Chaddesley Woods was set up as a National Nature Reserve in 1973 the author decided to apply for a permit to study "microfungi" there. A permit was granted for the year 1974 during which a number of recording visits were made. Since, at that time, the Warwickshire Fungus Survey was actively in progress, with the author as the main contributor of records of similar categories of fungus to that survey, it might have been considered better to concentrate on Warwickshire localities. Several factors influenced him to seek "Fresh woods and pastures new" in this way. Firstly there was, at the time, the threat of a petrol shortage which might have made many suitable collecting areas in Warwickshire relatively inaccessible, whereas Chaddesley was comparatively near to home. Secondly a new area can provide a stimulus by producing quite a different range of relative abundance of species, which may suggest new possibilities in the larger survey; this, in fact did happen, and species first encountered at Chaddesley were looked for in Warwickshire and added to the list for that county. Thirdly, it is the author's belief that knowledge of the distribution of fungi over the British Isles can best, eventually, be attained by concentrated studies of small areas, provided, of course, that there are enough of them and that they are suitably spaced out over the country. Happily the anticipated travel difficulties did not materialise and the author was able to continue his recording in Warwickshire, but he was able to find time as well for visits to Chaddesley. The permit was renewed for 1975 and further visits were made in that year.

The author's main interest is the ascomycetes, particularly those falling into the category of discomycetes, most of which are "micro" though there are some species of quite substantial size, e.g. *Helvella* species. Myxomycetes are also a particular interest. These two groups were the ones mainly looked for at Chaddesley. A few records were made of hyphomycetes, another group requiring the use of lens and microscope for detection. Such of the rust fungi as were noticed growing parasitically on higher plants were listed.

A few of the larger fungi of various groups were also noted but no attempt was made to deal with these critically or exhaustively and only those species of whose identity the author could be sure were listed. It is hoped that others more conversant with these groups will deal with them adequately, in due course.

As regards the discomycetes and other ascomycetes, it was of some interest to find out how many species could be discovered and identified in a limited area typical of the countryside to the south-west of and not far from Birmingham, over a short period, by periodic but not very frequent visits. The impression gained is that Chaddesley Woods are not outstandingly rich in species, owing probably to the mainly acid soils and the rather limited range of habitats and vegetation. An account of what was found will show the sort of range which can be expected in almost any suitable wooded area, without travelling to distant localities known to be rich in fungus species. It is hoped that the brief particulars of the species found and the notes on their habitats will be a means of introducing the subject to those who have not studied this fascinating group.

As might be expected in an area containing large conifer plantations, species particularly associated with conifers contributed materially to the records. As almost invariably happens in any area studied intensively, a few rare or uncommon species turned up.

ASCOMYCETES — GENERAL

In contrast to the position in the case of the agarics (toadstools and mushrooms) which occur mainly, though not entirely, in the late summer and the autumn, ascomycetes are to be found at all times of the year. Different species each have their own seasons, but these are spread over the whole year, including the winter, which is favoured by numerous species. Even in unfavourable conditions, such as times of drought, there will be some particular micro-habitats where species can still be found. Thus a student of this group has the opportunity to work steadily throughout the year. There is a good up-to-date reference book available — Dr. R. W. G. Dennis's *British Ascomycetes*. This, by no means, covers all species of this group, some sections of which are, in fact, very inadequately known, but the great majority of common species are described and illustrated. The beginner who confines himself to species described in this book can go a very long way. As already mentioned, there is a great deal still to be found out about this group. It is by no means unusual to come across a species not previously recorded in Britain, or even one new to science. However, it requires expert help to decide whether a species found comes within either of these categories and the difficulty here is

MICROFUNGI IN CHADDESLEY WOODS

that there are very few people in this country actively working on this group and in a position to give such help. Much of the information in Dennis's book as regards precise habitats, times of appearance, frequency and so on is based on very limited information from the collections which happen to be available at Kew, sometimes very few and mostly from years ago.

There are many odd features in regard to distribution and habitat preferences of fungi in general and this group in particular. For instance, why should a species be abundant at one particular site but absent from what appear to be precisely similar habitats elsewhere? Are species which appear to be very rare really so or is it just that they have not come to the attention of those who would be likely to recognise them? One would imagine that there is a level of rarity below which a species is almost certain to die out. The way in which fungi can colonise fresh sites necessarily requires the production of vast quantities of spores, since there are enormous odds against a spore alighting in the right situation in the right conditions for germination and establishment. Thus one must assume that where a species is apparently persisting precariously in only a few scattered localities, there must be a reservoir of the species, somewhere, from which sufficient spores can be spread to maintain its existence. Local field work may help to elucidate some of these problems and provide valuable additions to knowledge.

The lists, comprising (1) discomycetes, (2) pyrenomycetes and other ascomycetes, are in alphabetical order of species; they give brief particulars for each species of the habitat and substrate where it is to be found and the season of the year when it has been found at Chaddesley together with any other observations of interest.

OTHER GROUPS COVERED — GENERAL

Good up-to-date and virtually complete works of reference are available for myxomycetes, the dematiaceous hyphomycetes and the rust fungi. In the case of the myxomycetes the book is *The Myxomycetes* by Martin and Alexopoulos (1969) which covers all the 400 or so species known throughout the world. The beautiful, but much older *A Monograph of the Mycetozoa* (Lister, 1925) describes and illustrates most of the species likely to be found, and Ing's *A Census Catalogue of British Myxomycetes* lists all known British records (as at 1968) by vice-county. In the hyphomycetes, there is a very recent book, M. B. Ellis's *Dematiaceous Hyphomycetes* (1971) which covers species with dark conidia or conidiophores and which has made the study of this group comparatively straightforward. It is understood that Dr. Ellis will shortly be publishing a supplement to cover further British species. Henderson's *British Rust Fungi* (1966) is also complete and up-to-date in respect of that group.

ANNOTATED LIST OF SPECIES RECORDED IN 1974 AND 1975

ASCOMYCETES (1) DISCOMYCETES

- Actinoscypha scirpicola* (Fuckel) E. Muller. On dead basal sheaths of the grass, *Dactylis glomerata* and on thin, dead culms of *Deschampsia caespitosa*. Summer and autumn.
- Aleuria aurantia* (Fr.) Fuckel. In several places on the verges of the forest roads. The "Orange-peel" fungus. Autumn.
- Anthracobia maurilabra* (Cooke) Boud. One of three species of the genus which are frequent on the sites of fires. This one differs from the others in its fawn, rather than reddish colour. Summer.
- Anthracobia melaloma* (Alb. & Schw. ex Fr.) Boud. The commonest of this genus. On the sites of fires. Summer.
- Ascobolus albidus* Crouan. On rabbit dung. (It also occurs on the dung of other animals). Winter.
- Ascobolus brassicae* Crouan. Can be found almost invariably on or associated with mouse (or other small rodent) droppings under tussocks of grass, especially *Deschampsia caespitosa*. Also on rabbit dung. Winter.
- Ascobolus furfuraceus* Pers. ex Fr. On cow and rabbit dung. Probably the commonest of the dung discomycetes. Winter.
- Ascophanus cinerellus* Karst. On rabbit dung. A small, whitish discomycete with a fringe of delicate, flexuous hairs. Spring.
- Ascophanus microsporus* (Berk & Br.) Phillips. A yellowish species on the dung of fox. Spring.
- Ascozonus woolhopensis* (Berk. & Br.) Boud. Very abundant on mouse droppings under large grass tussocks.
- Belonium picae* Henn. On bark of dead branches of *Pinus*, particularly in the joints where side branches emerge. Winter.
- Belonopsis filispora* (Cooke) Nannf. On dead culms of the grass *Brachypodium sylvaticum*. Summer and autumn.
- Bulgaria inquinans* Fr. On cut logs of *Quercus*. Winter.
- Calloria fusarioides* (Berk.) Fr. A very common pinkish-orange species on dead stems of *Urtica dioica* preceded in the winter by a similarly coloured conidial state. Spring.
- Calycellina punctiformis* (Grev.) Hohnel. A small, downy, bright yellow cup fungus on dead leaves of *Quercus*. Summer and autumn.
- Cenangium ferruginosum* Fr. ex Fr. On dead, cut-off branches of *Pinus sylvestris*. Spring.
- Cheilymenia raripila* (Phillips) Dennis. On cow dung in marshy meadow. Other dung-inhabiting species of this genus are normally more common than this one, but were not seen at Chaddesley. Winter.
- Ciboria amentacea* (Balbis ex Fr.) Fuckel. On old, fallen male catkins of *Alnus*. Late winter.

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- Ciboria betulae* (Woron.) White. Arising from decaying fruit of *Betula*. Spring.
- Coccomyces dentatus* (Kunze & Schmidt) Sacc. Apothecia forming on whitish patches on decaying leaves of *Quercus* and opening by four or five teeth to expose the disc. Only immature examples seen. Summer.
- Colpoma quercinum* (Pers.) Wallr. On twigs of *Quercus*. Winter.
- Coryne cylindricum* (Tul.) Boud. On logs of *Betula*. One of two common, gelatinous, purple species of the genus, distinguished by the size of the spores. Winter.
- Cudoniella acicularis* (Bull. ex Fr.) Schroet apud Cohn. Whitish, with a convex disc on a tall stout stalk, crowded in crevices of rather hard, old stumps of *Quercus*. Winter.
- Cudoniella clavus* (Alb. & Schw. ex Fr.) Dennis. On small twigs of *Alnus* lying on boggy ground. Spring.
- Cyathicula coronata* (Bull. ex Merat) de Not. On an old petiole of *Fraxinus*. Also commonly to be found on dead herbaceous stems. Autumn.
- Cyathicula dolosella* (Karst.) Dennis. On dead stems of *Epilobium*. Like the preceding, often on old petioles of *Fraxinus*. Autumn.
- Dasyscyphus acutipilus* (Karst.) Sacc. On dead culms of *Brachypodium sylvaticum* and *Agrostis* sp. Notable in this genus for its long, tapering, smooth hairs. Seems to be unusually frequent at Chaddesley. Summer.
- Dasyscyphus acuum* (Alb. & Schw. ex Pers.) Sacc. Abundant on decaying coniferous needles, particularly on cut-off branches. Winter.
- Dasyscyphus albotestaceus* (Desm.) Masee. A flesh-pink species on dead culms of *Brachypodium sylvaticum* lying on the ground below a clump of this grass. Spring and early summer.
- Dasyscyphus brevipilus* le Gal. On decorticated sticks of *Betula* and *Crataegus*. Winter.
- Dasyscyphus corticalis* (Pers. ex Fr.) Masee. On a rotten stick. Late winter.
- Dasyscyphus dumorum* (Roberge) Masee. A minute brownish species with appressed whitish hairs to be found almost universally on the undersides of dead, fallen leaves of *Rubus fruticosus*. Spring to autumn.
- Dasyscyphus fugiens* (Bucknall) Masee. A very minute cup fungus on dead *Juncus*, particularly on old inflorescences lying in damp vegetation. Winter.
- Dasyscyphus grevillei* (Berk.) Masee. On dead stems of *Urtica dioica*. More commonly found on dead stems of Compositae. Spring.

- Dasyscyphus nidulus* (Schmidt & Kunze) Massee. On dead stems of *Epilobium hirsutum*. A beautiful species with a whitish disc surrounded by stiff, brown hairs. Summer.
- Dasyscyphus niveus* (Hedw. ex Fr.) Sacc. On decorticated wood of stumps of *Quercus*. Winter.
- Dasyscyphus nudipes* (Fuckel) Sacc. On dead stems of *Filipendula ulmaria*. Very frequent on this substrate. Summer.
- Dasyscyphus pteridis* (Alb. & Schw. ex Pers.) Sacc. A minute dark brown species on dead stems of *Pteridium aquilinum* (Bracken), usually near the points where branches emerge. Spring.
- Dasyscyphus pulveraceus* (Alb. & Schw. ex Fr.) Hohnel. On the bark of a fallen, dead branch of *Fraxinus*. Winter.
- Dasyscyphus soppitii* Massee. On dead leaves of *Quercus*. Winter.
- Dasyscyphus virgineus* S. F. Gray. On small, dead twigs of *Rubus fruticosus*, where it is very common, and on other debris. Spring.
- Desmazierella acicola* Lib. On decaying pine needles. Found just below the surface layer on the dark, decaying needles of previous years. A very distinctive species with dark bristles protruding from the disc and the outside covered with stiff, dark bristles, reputedly rather rare. Spring.
- Durella atrocyanea* (Fr.) Hohnel. On the decorticated wood of a "snag" where a small branch of *Fraxinus* had been cut off; also on dead stems of *Epilobium*. Winter.
- Fabraea ranunculi* (Fr.) Karst. Small grey discs scattered on dark, discoloured patches on living leaves, tending to fade, of *Ranunculus repens*. Winter.
- Haglundia perelegans* Nannf. On the underside of a loose root-stump, probably of *Quercus*. Resembling a *Mollisia* but densely hairy outside. Autumn.
- Helvella crispa* Fr. Growing on the gravelly edge of the main forest road. Autumn.
- Hyaloscypha dematiicola* (Berk. & Br.) Nannf. On dead wood, probably of *Betula*, amongst a dematiaceous hyphomycete (*Haplographium*) which is its conidial state. Summer.
- Hyaloscypha hyalina* (Pers.) Boud. On decorticated wood, probably *Betula* and *Quercus*. Autumn and winter.
- Hyaloscypha lachnibrachya* (Desm.) Nannf. In dense swarms on decaying leaves of *Acer pseudoplatanus*. Autumn.
- Hyaloscypha leuconica* (Cooke) Nannf. A species with rather long, fine hairs on old cones of *Larix*; to be found also on coniferous wood. Spring and autumn.
- Hyaloscypha velenovskii* Graddon. Crowded on rotten wood of *Larix*. A minute amber-coloured discomycete characterised by the yellow globules amongst the hairs. Summer.

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- Hymenoscyphus epiphyllus* (Pers. ex Fr.) Rehm. A sessile, orange species scattered on decaying remains of *Quercus* leaves. Autumn.
- Hymenoscyphus fructigenus* (Bull. ex Merat) S. F. Gray. On an old hazel-nut shell. Common on this and other nut shells. Summer.
- Hymenoscyphus imberbe* (Bull. ex Fr.) Dennis. A small, white, shortly-stalked species on rotten sticks in damp places. Winter.
- Hymenoscyphus phyllogenus* (Rehm.) O. Kuntze. On the veins of dead leaves of *Acer pseudoplatanus* and *Quercus*. Autumn.
- Hymenoscyphus repandus* (Phillips) Dennis. On rotting stems of *Epilobium hirsutum* in a marsh. Summer.
- Hymenoscyphus robustior* (Karst.) Dennis. On dead grass stems etc. in damp places; typically with yellowish cup and bright pink stalk. Summer.
- Hymenoscyphus scutula* (Pers. ex Fr.) Phillips. On dead stems of *Epilobium hirsutum* and of *Rubus*. Very common on dead herbaceous stems generally. Summer and autumn.
- Hypoderma virgultorum* DC ex St. Amans. On old, dead stems of *Rubus*. Autumn.
- Incrupila viridipilosa* Graddon. On a damp, rotting branch, probably of *Acer*. A small cup fungus, occurring in swarms, the cups thickly covered outside with short whitish hairs stained with a blue-green colouration. Described as a new species only as recently as 1974, although known for some time previously, but confused with another superficially similar species. Late winter.
- Lachnellula hahniana* (Seaver) Dennis. On dead twigs of *Larix*. This beautiful species, with its orange discs surrounded by white hairs can be found almost everywhere where Larch occurs. Winter.
- Lachnellula subtilissima* (Cooke) Dennis. On bark of dead branches and twigs of *Pinus*. Not quite so brightly coloured as the preceding. Particularly common at Chaddesley. Winter.
- Lasiobolus ciliatus* (Schmidt ex Fr.) Boud. On rabbit and fox dung. Also to be found on dung of other animals and throughout the year. Winter.
- Leucoscypha leucotricha* (Alb. & Schw. ex Fr.) Boud. On humus-rich soil under bracken and brambles. A rather striking species covered with long, downy, white hairs. Summer.
- Lophodermium pinastri* (Schrad. ex Fr.) Chev. On dead pine needles. Winter.
- Lophodermium rhododendri* Ces. ex Sacc. On dead leaves of *Rhododendron ponticum*. Summer.
- Micropodia pteridina* (Nyl.) Boud. On the blackened lower parts of old stems of *Pteridium aquilinum*. This small, whitish discomycete, for which the above is the only available name, should probably really be a *Pezizella*. Spring.

- Microscypha grisella* (Rehm) Syd. On the underside of dead fronds of *Pteridium aquilinum*, beginning to decay. This minute, greyish species is very common but rather inconspicuous. Spring and summer.
- Mollisia caespiticia* (Karst.) Karst. Erumpent in dense clusters from cracks in the bark of dead branch of *Quercus*. Winter.
- Mollisia chionea* Masee & Crossland. On dead stem bases of *Carex pendula*. Autumn and winter.
- Mollisia cinerea* (Batsch ex Merat) Karst. Very common on dead wood of all kinds throughout the year.
- Mollisia discolor* (Mont.) Phillips var. *longispora* le Gal. Erumpent in dense clusters through cracks in the bark of a dead branch of *Corylus*; also on twigs of *Quercus*. Winter and spring.
- Mollisia hydrophila* (Karst.) Sacc. On dead stems of *Juncus*. Winter.
- Mollisia ligni* (Desm.) Karst. Grows on decorticated wood. Found on a decaying cut surface where a small branch of *Fraxinus* had been severed. Winter.
- Mollisia mutabilis* Berk. & Br. On dead leaf bases of the grass, *Deschampsia caespitosa*. Winter.
- Mollisia pastinacea* Nannf. On a dead stem of *Chamaenerion angustifolium*. Commonly found on dead stems of Compositae. Winter.
- Mollisia pteridina* (Nyl.) Karst. On dead stems of *Pteridium aquilinum*, particularly in the axils of the branches. Spring.
- Mollisia ramealis* (Karst.) Karst. On dead twigs of *Betula* and *Alnus*, with a yellowish disc and with spores exceptionally long for this genus. Summer.
- Mollisia rubi* (Rehm) Hohnel. On dead leaves of *Rubus* and of *Betula* and other trees. A minute species with very short, delicate and often twisted hair-like protuberencies from the marginal hyphae. Summer and autumn.
- Octospora hetieri* (Boud.) Dennis & Itzerott. A small orange-coloured species with inconspicuous hairs on decaying parts of cushions of the moss *Ceratodon purpureus* amongst stones of a little-used roadway. Late winter.
- Orbilia auricolor* (Blox. ex Berk.) Sacc. Pale yellow, waxy cups becoming more golden on drying, with whitish anchoring hyphae. On bark of dead branch, probably *Fraxinus*. Spring.
- Orbilia leucostigma* (Fr.) Fr. On rotten plank of coniferous wood. Winter.
- Orbilia xanthostigma* (Fr.) Fr. The commonest member of this genus — waxy, deep golden yellow. To be found throughout the year. On decorticated rotten wood. Winter.
- Pezicula cinnamomea* (DC ex Pers.) Sacc. Abundant on bark of cut logs of *Acer pseudoplatanus*. Winter.

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- Pezicula livida* (Berk. & Br.) Rehm. Common on dead twigs of *Pinus*. Winter.
- Peziza badia* Pers. ex Merat. On the ground on the vertical side of a rut beside a forest road. The *Peziza* species are among the larger of the discomycetes and this one can attain a diameter of 8 cm. Summer.
- Peziza echinospora* Karst. On the site of a bonfire. Summer.
- Peziza micropus* Pers. Abundant on rotting felled logs of *Ulmus*, emerging from cracks in the bark. Spring.
- Peziza petersii* Berk & Curtis. On the site of a bonfire. Autumn.
- Pezizella alniella* (Nyl.) Dennis. On an old female catkin of *Alnus*. Winter.
- Pezizella amenti* (Batsch ex Fr.) Dennis. On old, fallen female catkins of *Salix*. Winter.
- Pezizella chrysostigma* (Fr.) Sacc. On the base of dead petioles of the fern, *Dryopteris filix-mas*. Spring.
- Pezizella filicum* (Phillips) Sacc. On dead stems of the fern, *Dryopteris filix-mas* lying on damp ground. Autumn.
- Pezizella punctoidea* (Karst.) Rehm. A minute, yellowish-white species, thinly scattered on dead leaves of *Chamaenerion angustifolium*, including those still hanging on the bases of the stems. Autumn and winter.
- Pezizella roburnea* Vel. A minute species with an amber-coloured disc and a dark edge, scattered over bleached patches on leaves of *Quercus*. Autumn.
- Pezizella rubescens* Mouton. On dead, fallen leaves of *Quercus* in damp situations. There are several small, pale species to be found on dead leaves in late autumn and winter; this one is distinguished by its slightly yellowish tinge tending to redden. Winter.
- Phacidium lacerum* Fr. ex Fr. On decaying needles of *Pinus sylvestris*. Winter.
- Phialea cyathoidea* (Bull. ex Merat) Gill. On dead stems of *Cirsium* etc. Common on various dead herbaceous stems. Spring.
- Phialea pteridicola* (Crouan) Gill. On dead stems of *Pteridium aquilinum* particularly in or near the axils of branches. Spring.
- Phialea subhyalina* Rehm. On petioles of dead leaves of *Acer pseudoplatanus*. Autumn.
- Phialea turbinata* Syd. A very minute goblet-shaped species on the fibrous remains of old leaves of *Ranunculus repens* lying on damp ground. Spring.
- Ploettnera exigua* (Niessl) Hohnel. A minute species embedded in dead leaves of *Rubus*. The more usual habitat is dead stems of *Rubus* where it stains the surrounding tissues blue-green. Autumn.

- Polydesmia pruinosa* (Berk. & Br.) Boud. On dead twigs and branches, over the ostioles of old submerged pyrenomycetes. Common and to be found at all times of the year. Winter.
- Propolis versicolor* (Fr.) Fr. In the bark of dead branches of *Salix* where the whitish disc is revealed by the peeling-back or shedding of the epidermis. To be found on wood of other trees and on woody herbaceous stems, throughout the year. Winter.
- Pseudohelotium alaunae* Graddon. On dead leaf sheaths deep in tussocks of the grass, *Deschampsia caespitosa*. First described only as recently as 1972 as a new species, on the basis of a collection by the author near Alcester (the Roman Alauna, according to some authorities) but actually quite common everywhere in this habitat and easily recognised by the large and distinctively shaped spores. Winter and spring.
- Pyrenopeziza mercurialis* (Fuckel) Boud. On old, dead stems of *Mercurialis perennis*. Spring.
- Pyrenopeziza urticicola* (Phillips) Boud. On dead stems of *Urtica dioica*. Spring.
- Rhytisma acerinum* (Pers. ex St. Amans) Fr. "Tar-spots" on leaves of *Acer pseudoplatanus*. In the spring, on fallen leaves, the black crust splits by elongated or forked fissures to reveal the soft, grey discs. Spring.
- Rutstroemia luteovirescens* (Roberge) White. An attractive greenish-yellow species on old petioles of *Acer pseudoplatanus*. Autumn.
- Rutstroemia sydowiana* (Rehm) White. Brownish apothecia solitary on the petioles of decaying leaves of *Quercus*. Late summer and autumn.
- Saccobolus versicolor* (Karst.) Karst. On dung of rabbit. Winter.
- Sarcoscypha coccinea* (Fr.) Lambotte. One colony of the beautiful "Scarlet Elf Cup" found on sticks (probably *Fraxinus*) embedded in moss. Winter.
- Sclerotinia cureyana* (Berk.) Karst. On wet, dead stems of *Juncus effusus*. The thin, pinkish-brown apothecia, often in small groups can be seen to break-out from sclerotia embedded in the hollow of the stem. Spring.
- Scutellinia hirta* (Schum.) Cooke. Amongst moss and charred fragments of wood on the old site of a fire (although this is not one of the species normally associated with burnt ground). There are other, commoner species of this genus but these have not been found. Winter.
- Tapesia fusca* (Pers. ex Merat) Fuckel. Blue-grey in colour on a subiculum of brown hyphae, on dead twigs and branches of *Alnus*. Winter and spring.
- Tapesia lividofusca* (Fr.) Gill. On dead bark of *Alnus*. Spring.

MICROFUNGI IN CHADDESLEY WOODS

- Torrendiella ciliata* Boud. Found in one small area of the woods (in a Larch plantation) on dead leaves of *Rubus fruticosus* agg., either recently fallen or still hanging on the bushes. A most attractive little stalked cup, brown outside with dark bristles, whitish inside. Singly or in small groups with a surrounding area of the leaf outlined by a black line. This is probably the most interesting discomycete found at Chaddesley since the species was, apparently, previously known only from Portugal and Australia. Careful search in the neighbouring county of Warwickshire has, however, revealed it since in four localities (two of them also in Larch plantations) so it may be not uncommon. Autumn.
- Trochila craterium* Fr. On dead leaves of *Hedera helix*. Winter.
- Trochila ilicina* (Nees ex Fr.) Greenhalgh & Morgan-Jones. On dead leaves of *Ilex aquifolium*. Autumn.
- Unguicularia costata* (Boud.) Dennis. A minute urn-shaped species on the bases of dead stems of *Juncus effusus*. Winter.
- Urceolella spiraeae* (Roberge & Desm.) Boud. A minute species on dead leaves of *Filipendula ulmaria*, very inconspicuous but, apparently, common. Spring.

ASCOMYCETES: (2) PYRENOAMYCETES AND OTHER ASCOMYCETES

- Apiocrea chrysosperma* (Tul.) Syd. On decaying fungi, particularly Boleti, in its mycelial state (known as *Sepidonium chrysospermum*) which bears masses of yellow, warted chlamydospores. Winter.
- Berlesiella nigerrima* (Blox. ex Currey) Sacc. On old stromata of *Eutypa* on dead branches. Spring.
- Calosphaeria wahlenbergii* (Desm.) Nits. In clusters under the bark of dead branches of *Betula*. Winter.
- Calyculosphaeria collapsa* (Romell) Fitzp. On rotten wood, probably of *Corylus*. Spring.
- Camarops lutea* (Alb. & Schw. ex Fr.) Nannf. Erumpent through cracks in the bark of a dead branch of *Corylus*. Numerous stromata of this fungus which was formerly regarded as rather rare, though, in the last year or two it has been found in many localities, in Warwickshire and other parts of the country. Summer.
- Ceratocystis ulmi* (Buisman) C. Moreau. Although the fungus was not actually observed (its perfect state is rare in the field) its effects, in the dying Elm trees, were everywhere apparent.
- Ceriophora palustris* (Berk. & Br.) Hohnel. Immersed in dead leaves of *Carex pendula*. Autumn.

- Chaetosphaeria callimorpha* (Mont.) Sacc. On dead twigs of *Rubus*. Winter and spring.
- Chaetosphaeria* sp. A fungus found on dead culms of the grass, *Deschampsia caespitosa* cannot be reconciled with any described species. Winter.
- Creopus gelatinosus* (Tode ex Fr.) Link. On a rotten small branch, probably of *Betula*. Autumn.
- Cryptodiaporthe salicella* (Fr.) Petrak. Embedded just below the surface of small twigs of *Salix*. Winter.
- Cryptosphaeria eunomia* (Fr.) Fuckel. Within the bark of dead sticks and twigs of *Fraxinus*. Winter.
- Diaporthe arctii* (Lasch) Nits. Immersed under the epidermis of dead stems of *Urtica* under greyish patches. Winter.
- Diaporthe eres* Nits. Immersed in small groups below the bark of dead twigs of *Fraxinus*, the ostioles erumpent through the surface as raised black pustules. Winter.
- Diaporthe leiphaemia* (Fr.) Sacc. Erumpent through the bark of dead branches of *Quercus*, with groups of black ostioles in a pinkish-brown stroma. Winter.
- Diatrype stigma* (Hoffm. ex Fr.) Fr. On dead branches of *Crataegus* etc. forming a thin crust dotted with minute protruding ostioles. Winter.
- Diatrypella favacea* (Fr.) Sacc. Clustered in small stroma erumpent through the bark of small branches of *Betula*.
- Diatrypella quercina* (Pers. ex Fr.) Cooke. With a grey cushion-shaped stroma erumpent through bark of dead branch of *Quercus*. Winter.
- Erysiphe polygoni* DC ex Merat. A common "powdery mildew" on living leaves of *Heracleum*. Autumn.
- Erysiphe tortilis* (Wallr.) Fr. A "powdery mildew" very common on leaves of *Cornus*, with abundant ascocarps. Autumn.
- Euryachora ulmi* (Schleicher ex Fr.) Schroet. In black raised pustules on dead leaves of *Ulmus*. Late winter.
- Eutypa acharii* Tul. Forming a black crust, dotted by minute ostioles, on dead branches. Spring.
- Eutypa lata* (Pers. ex Fr.) Tul. On small dead twigs, probably of *Crataegus*. Winter.
- Gaeumannomyces graminis* (Sacc.) Arx & Olivier. Immersed just below the epidermis of the basal parts of dead leaves of *Deschampsia caespitosa*. Winter.
- Gibberella cyanogena* (Desm.) Sacc. On dead twigs. Winter.
- Gibberella pulicaris* (Fr.) Sacc. On the surface of small dead branches of *Sambucus*. Winter.
- Gnomonia inclinata* (Desm.) Awd. Immersed in old petioles of *Acer pseudoplatanus* with long ostioles protruding. Winter and spring.

MICROFUNGI IN CHADDESLEY WOODS

- Gnomonia rubi* (Rehm) Winter. Black perithecia with long, stout, rather eccentric beaks immersed just below the epidermis of dead leaves of *Rubus*. Autumn.
- Gnomonia setacea* (Pers.) Ces. & de Not. A minute species embedded in dead leaves of *Betula* with long beaks protruding from the leaf surface. Winter and spring.
- Hypocrea pulvinata* Fuckel. Forming a flat, yellowish stroma, dotted with ostioles, on old fructifications of *Piptoporus betulinus*. Spring, but also to be found at other times of year.
- Hypoxyton fuscum* (Pers. ex Fr.) Fr. On dead branches of *Corylus*. Winter.
- Hypoxyton howeianum* Peck. Stromata small, semi-globose, reddish at first outside. On dead branches of *Betula*. Winter.
- Hypoxyton multiforme* (Fr.) Fr. Erumpent through the bark of dead branches of *Betula*. Very abundant. Winter.
- Hypoxyton rubiginosum* (Pers. ex Fr.) Fr. On dead wood, particularly of *Fraxinus* forming a thin crust, some of it covered with the cases of the gall-midge, *Mycocesis ovalis*, which causes a gall-like growth of the fungus. Winter.
- Keissleriella pmicola* Hawksworth & Sivanecan. A minute species immersed in the cut surface of a rotten piece of worked coniferous wood. Winter.
- Lasiosordaria coprophila* (Fr.) Chenant. In cow dung, in swarms, covered by a whitish tomentum. Autumn.
- Lasiosphaeria caudata* (Fuckel) Sacc. On the inside of an old hazel-nut shell. Summer.
- Lasiosphaeria ovina* (Fr.) Ces. & de Not. On rotten wood. Winter and spring.
- Lasiosphaeria strigosa* (Alb. & Schw. ex Fr.) Sacc. On rotten wood. Spring.
- Leptosphaeria acuta* (Fr.) Karst. At the base of dead stems of *Urtica*. Almost universal where nettles occur. Winter.
- Leptospora rubella* (Pers. ex Fr.) Rabenh. On dead herbaceous stems on reddish-purple patches. Summer.
- Melanconis stilbostoma* (Fr.) Tul. On dead twigs and branches of *Betula*. Winter.
- Melanomma pulvis-pyrius* (Pers. ex Fr.) Fuckel. Very common on decorticated sticks. Winter.
- Microsphaera alphetoides* Griff. & Maubl. A common "powdery mildew" on leaves of *Quercus*, especially sucker-growths; ascocarps, which are rarely formed, were not seen. Autumn.
- Microthyrium ciliatum* Grem. & Kam. Forming very minute, flattened, round spots on decaying leaves of *Ilex aquifolium*, usually in abundance. Winter and spring.
- Microthyrium culmigenum* Syd. On dead grass culms, probably of *Deschampsia caespitosa*. Autumn and winter.
- Microthyrium microscopium* Desm. Forming minute spots on dead leaves of *Quercus*; very common. Winter.

- Mycosphaerella clymenia* (Sacc.) Oudem. Minute perithecia thickly scattered in dead patches on fading leaves of *Lonicera periclymenum*. Winter.
- Mytilidion laeviusculum* (Karst.) Sacc. One of a small group of minute fungi with the fruit-bodies shaped like mussel-shells set on edge. This particular one is, apparently, very infrequently found. On decaying pine needles and cones. Winter.
- Nectria cinnabarina* (Tode ex Fr.) Fr. "Coral-spot" very common on dead twigs of *Ulmus* etc. Spring.
- Nectria coccinea* (Pers. ex Fr.) Fr. On decorticated wood of a dead tree of *Ulmus*. Spring.
- Nectria episphaeria* (Tode ex Fr.) Fr. A minute species of this genus, on old stromata of *Diatrype* on rotten wood. Spring.
- Nectria viridescens* Booth. On an old cone of *Pinus*. Spring.
- Niesslia exilis* (Alb. & Schw. ex Fr.) Winter. On decaying pine needles. A few scattered specimens (with rather long bristles) on a decaying leaf of *Ilex aquifolium* may be this, or a related species. Winter.
- Ophiobolus acuminatus* (Sow. ex Fr.) Duby. In dead stems of *Cirsium vulgare*. Spring.
- Peroneutypa heteracantha* (Sacc.) Berl. Embedded in decorticated wood with long, stout beaks protruding in groups; also erumpent through the bark of a dead branch of *Ulmus*. Winter.
- Phyllachora graminis* (Pers. ex Fr.) Fuckel. Abundant in grass leaves, especially *Dactylis glomerata* in the marshy meadow. Winter.
- Plagiostoma pustula* (Pers. ex Fr.) Arx. Perithecia immersed in dead leaves of *Quercus* in purplish pustules. Autumn.
- Podospora curvula* (de Bary) Niessl. On cow dung. Winter.
- Podospora minuta* (Fuckel) Niessl. On mouse dung. Winter.
- Rhopographus filicinus* (Fr.) Nits. Very common on dead stems of *Pteridium aquilinum*. Winter.
- Rosellinia aquila* (Fr.) de Not. On a small rotten branch, probably of *Crataegus* in a pile of trimmed twigs and branches. Winter.
- Stigmatea robertiani* (Fr.). Fr. Dotted thickly on living leaves of *Geranium robertianum*, particularly over-wintering leaves. Usually to be found wherever the host plant occurs. Winter and spring.
- Stomiopeltis* sp. Minute flattened perithecia just below the epidermis of dead twigs of *Betula*, forming groups of black pustules. The species is, so far, undescribed but is known from various parts of the country. Winter.
- Thyridaria rubro-notata* (Berk. & Br.) Sacc. On the bark of a dead branch of *Ulmus*. Winter.
- Trichosphaeria notabilis* Mouton. On very rotten wood. Spring.

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- Valsa ceratophora* Tul. Erumpent through the epidermis of a dead stem of *Rosa* sp. with a group of long-necked ostioles protruding through the raised pustules. Winter.
- Valsaria foedans* Karst. On a dead branch of *Alnus*. Spring.
- Venturia ditricha* (Fr.) Karst. A minute black pyrenomycete, in dead leaves of *Betula* with a tuft of black bristles on top. Winter.
- Venturia maculaeformis* (Desm.) Winter. Minute perithecia in round clusters on brown spots on living leaves of *Epilobium hirsutum*. Spring.
- Xylospheera hypoxylon* (L.) Dumortier. Common on dead wood, particularly when half buried in the ground. Winter.

HYPHOMYCETES

The following dematiaceous species (i.e. species with dark-coloured conidia or conidiophores) have been observed, but no attempt at an exhaustive study of this group has been attempted. The details given, however, will indicate some of the types of habitat where they occur.

- Arthrimum puccinioides* (DC ex Merat) Kunze. On dead leaves of *Carex flacca* and *C. sylvatica*. Summer.
- Bispora antennata* (Pers. ex Pers.) Mason. On the broken surface of a torn-off branch of *Quercus*. Autumn.
- Brachysporium bloxami* (Cooke) Sacc. On very rotten wood. Spring.
- Cryptocoryneum condensatum* (Wallr.) Mason & Hughes. On rotten branch. Spring.
- Cylindrotrichum* sp. On dead leaves of the grass, *Deschampsia caespitosa*. This is not yet named but is shortly to be published as a new species on the basis of a previous collection from Norfolk. Spring.
- Dendryphion comosum* Wallr. On dead stems of *Urtica*. Winter.
- Doratomyces stemonitis* (Pers. ex Fr.) Morton & Smith. On mouse dung. Winter.
- Endophragmia bisepta* M. B. Ellis. In a brown furry mass on dead wood of *Betula*. Winter.
- Endophragmia* sp. Densely covering decaying pine-needles; with pyriform, one-septate conidia. Though known from elsewhere this species is not yet described but it is understood that it will feature in a forthcoming work by Dr. M. B. Ellis.
- Epicoccum purpurascens* Ehrenb. ex Schlecht. On a dead leaf of *Populus tremula* and on the broken end of a branch of *Quercus*. To be found in numerous other habitats also. Winter.

- Graphium calicioides* (Fr.) Cooke & Massee. On bark of dead stick, Winter.
- Menispora glauca* Pers. On dead twig of *Betula*. Winter.
- Periconia byssoides* Pers. ex Merat. On dead stem of *Heracleum*. Winter.
- Periconia digitata* (Cooke) Sacc. On decayed seed capsule of *Carex pendula*. Winter.
- Sporidesmium altum* (Preuss) M. B. Ellis. On dead wood of *Sambucus*. Spring.
- Tetraploa aristata* Berk. & Br. On dead culms and leaf bases of *Deschampsia caespitosa*. Winter.
- Torula herbarum* (Pers.) Link ex S. F. Gray. On decaying bases of culms of *Deschampsia caespitosa*. Also to be found on many other types of dead herbaceous matter. Winter.
- Trimmatostroma betulinum* (Corda) Hughes. Black pustules erumpent from bark of small dead twigs of *Betula*, often those still attached to the tree. Winter.
- Trimmatostroma salicis* Corda. Small, black, powdery pustules erumpent on dead twigs of *Salix*. Winter.

UREDINALES (RUST FUNGI) AND USILAGINALES (SMUTS)

- Melampsora populnea* (Pers.) Karst.; aecidia on *Mercurialis perennis*. Spring.
- Phragmidium bulbosum* (Str.) Schlecht.; teleutospores on *Rubus fruticosus* agg. Winter.
- Phragmidium fragariae* (DC) Rabh.; aecidia on *Potentilla sterilis*. Spring.
- Puccinia acetosae* Kornicke; Uredospores on *Rumex acetosa*. Autumn.
- Puccinia annularis* (Str.) Rohl.; teleutospores on *Teucrium scorodonia*. Winter.
- Puccinia cnici-oleracei* Pers. ex Desm.; teleutospores on *Cirsium palustre*. Winter.
- Puccinia glechomatis* DC; teleutospores on *Glechoma hederacea*. Winter.
- Puccinia graminis* Pers.; teleutospores on *Deschampsia caespitosa*. On this host they are, apparently, very rare. Late winter.
- Puccinia lagenophorae* Cooke; aecidia on *Senecio vulgaris*. Winter.
- Uromyces ficariae* (Alb. & Schw.) Lev.; teleutospores on *Ranunculus ficaria*. Spring.
- Ustilago violacea* (Pers.) Fuckel; on stamens of *Stellaria graminea*. Spring.

MYXOMYCETES

This group is one which was specially studied. The species found, listed below, do not include any particularly rare ones. The season of collection is not generally quoted for this group. Most species tend to occur in any suitable weather conditions between late summer and early winter, but where a species is known to be a generally early or late one this is noted.

- Arcyria cinerea* (Bull.) Pers. Fallen branches etc.
Arcyria denudata (L.) Wettst. Rotten wood; about stumps.
Arcyria incarnata (Pers.) Pers. Rotten oak branches.
Arcyria nutans (Bull.) Grev. Rotten branches. An early summer species.
Badhamia utricularis (Bull.) Berk. Plasmodium covering old fructifications of *Stereum*, *Phlebia* etc. on which it feeds. A late species.
Calomyxa metallica (Berk.) Niewel. On twig of Spruce.
Geratiomyxa fruticulosa (O. F. Mull.) Macbr.; Rotten wood, summer species.
Comatricha nigra (Pers.) Schroet. Dead wood.
Comatricha pulchella (Bab.) Rostaf. Pine litter, bracken, grass etc.
Craterium minutum (Leers) Fr. Dead grasses and other vegetation.
Diachea leucopodia (Bull.) Rostaf. Grass, twigs etc.
Dictydiaethalium plumbeum (Schum.) Rostaf. *Alnus* log.
Diderma floriforme (Bull.) Pers. Half buried *Pinus* branch.
Diderma radiatum (L.) Morg. Litter under *Larix*.
Didymium clavus (Alb. & Schw.) Rabenh. Dead bracken stem in a thicket.
Didymium difforme (Pers.) S. F. Gray. Dead stems of *Urtica*.
Didymium melanospermum (Pers.) Macbr. *Pinus* twigs and other litter.
Didymium nigripes (Link) Fr. Dead twigs of *Pinus*.
Didymium ovoideum Nann.-Brem. Bramble leaves and twigs etc.
Didymium squamulosum (Alb. & Schw.) Fr. Dead leaves.
Enerthenema papillatum (Pers.) Rostaf. Developed in moist chamber culture on bark of *Ulmus*.
Fuligo septica (L.) Web. Litter around a rotten stump; covered with a whitish mould, *Acremonium* sp., the conidial state of *Nectria candicans*. Often an early species.
Lamproderma arcyrioides (Sommerf.) Rostaf. Bare ground by site of fire.
Lamproderma scintillans (Berk. & Br.) Morg. Pine debris.
Leocarpus fragilis (Dicks.) Rostaf. Pine twigs etc.
Lycogala epidendrum (L.) Fr. Dead wood, especially logs; often early.
Perichaena corticalis (Batsch) Rostaf. Crevices of bark of dead, fallen branch of *Fraxinus*. A winter species.

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Perichaena vermicularis (Schw.) Rostaf. Dead stems of *Urtica*.
Winter.

Physarum bivalve Pers. Bramble twigs and leaves etc.

Physarum leucophaeum Fr. Rotten logs and branches.

Physarum nutans Pers. Rotten branches etc.

Stemonitis fusca Roth. Dead wood; often early in season.

Trichia affinis de Bary. Rotten wood. This and other *Trichia*
species are found well into the winter.

Trichia botrytis (Gmel.) Pers. Dead wood.

Trichia decipiens (Pers.) Macbr. Dead branches etc.

Trichia persimilis Karst. On and near rotten wood.

Trichia varia (Pers.) Pers. Rotten wood.

FUNGI OF OTHER GROUPS WHICH WERE NOTED

AGARICALES

Amanita muscaria
 rubescens
Bolatus chrysenteron
Cantharellula cyathiformis
Clitocybe flaccida
Collybia carbonaria
 cookei
 maculata
Cortinarius alboviolaceus
 hemitrichus
Craterellus cornucopioides
Crepidotus luteolus
 variabilis
Hygrophorus conicus
 hypothecus
Hypholoma sublateralitium
Inocybe cincinnata
 fastigiata
 geophylla
 maculata
Lactarius glycosmus
 torminosus
 turpis
Leccinum scaber
Lepiota procera
Marasmius androsaceus

Marasmius epiphyllodes
 epiphyllus
Mycena amicta
 fibula
 pura
 stylobates
 swartzii
 tenerrima
Panellus mitis
 serotinus
 stipticus
Paxillus involutus
Pholiota carbonaria
Pluteus cervinus
Psathyrella candolleana
Pseudohiatula esculenta
Psilocybe semilanceata
Resupinatus cyphelliiformis
Russula nigricans
Stropharia aeruginosa
Suillus grevillei
 luteus
Tricholoma fulvum
Tricholomopsis rutilans
Tubaria furfuracea

MICROFUNGI IN CHADDESLEY WOODS

APHYLLOPHORALES

<i>Amphinema byssoides</i>	<i>Pistillaria quisquillaris</i>
<i>Calyptrella capula</i>	<i>Pterula gracilis</i>
<i>Clavaria acuta</i>	<i>Stereum hirsutum</i>
<i>Cristella sulphurea</i>	<i>purpureum</i>
<i>Cyphellopsis anomala</i>	<i>rugosum</i>
<i>Daedaleopsis confragosa</i>	<i>sanguinolenta</i>
<i>Heterobasidion annosum</i>	<i>Thelephora terrestris</i>
<i>Merulius corium</i>	<i>Vuilleminia comedens</i>
<i>Pistillaria micans</i>	

TREMELLALES

<i>Auricularia auricula</i>	<i>Exidia glandulosa</i>
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GASTEROMYCETALES

<i>Lycoperdon perlatum</i>	<i>Phallus impudicus</i>
<i>pyriforme</i>	<i>Sphaerobolus stellatus</i>

FUNGI IMPERFECTI

<i>Gilellula araneorum</i>	<i>Pestalotia fumerea</i>
<i>Neottiospora caricum</i>	<i>Marssonina potentillae</i>
<i>Paecilomyces farinosus</i>	

CONCLUSION

Most species of the groups covered in detail by this report are small and inconspicuous. Most of the hyphomycetes in particular are practically invisible to the naked eye. Unless the species is very common it may be largely a matter of chance whether it will be encountered. Undoubtedly, therefore, the list could be substantially extended, if sufficient time were devoted to studying the fungi in the area over several years. The author hopes to continue visiting the reserve, which is a very pleasant place to work in, and to add more species. Even some very common species seem to have been missed in this initial survey and they will surely be found.

The author's wife, Mrs. M. E. Clark was included in the permits and accompanied him on several occasions; she is responsible for a few of the records. Mr. R. E. Evans was invited on one occasion and a few of the records of pyrenomycetes and of Aphyllophorales are due to him.

The help of experts to whom some of the specimens were submitted for determination is acknowledged, namely, Mr. W. D. Graddon of Ross-on-Wye, Dr. R. W. G. Dennis of the Royal Botanic Gardens, Kew and Dr. M. B. Ellis, Mrs. P. Ellis and Dr. A. Sivanesan of the Commonwealth Mycological Institute, Kew.

Recent Publications on British Natural History

Part 3

By M. A. PEARMAN

The Library, City of Birmingham Polytechnic

INTRODUCTION

In 1973 and 1974 I attempted to give this bibliography some reference value for libraries and other institutions by making it as comprehensive as possible. But a new journal is now being published, entitled *Natural history book reviews*, which will serve this function very well and I am, therefore, restricting my own list to a selection of new books on British natural history that I think may interest Society members or other readers of the Proceedings. Reprints and new editions are excluded unless they seem to be of particular significance. The period covered is from November 1974 to October 1975, together with any items from the early part of 1974 that I had previously overlooked.

The abbreviations used are as follows : ed., edition; pp., pages; pbk., paperback; pt., pamphlet.

GENERAL

ETTLINGER, D. M. T. (editor). *Natural history photography*. Academic Press, 1974. 422pp. £8.80.

GRIMES, B. *Britain's wildlife*. Collins, 1974. 125pp. £1.95.

ECOLOGICAL STUDIES

COUSENS, J. *An introduction to woodland ecology*. Oliver and Boyd, 1974. 157pp. £3.25; £1.75 (pbk.).

GIMINGHAM, G. H. *An introduction to heathland ecology*. Oliver and Boyd, 1975. 132pp. £3.25; £1.75 (pbk.).

LEUTSCHER, A. *The ecology of towns*. F. Watts, 1975. 124pp. £2.95.

POLLARD, E., HOOPER, M. D. and MOORE, N. W. *Hedges*. Collins, 1974. 276pp. £3.50. (The new naturalist, 58).

RUSSELL, Sir F. S. and YONGE, Sir M. *The seas: an introduction to the study of life in the sea*. 4th ed. Warne, 1975. 341pp. £6.95. (Previous ed. 1963)

RECENT PUBLICATIONS

REGIONAL STUDIES

- LEUTSCHER, A. Epping Forest: its history and wildlife. David and Charles, 1974. 203pp. £4.95.
- RACKHAM, O. Hayley Wood: its history and ecology. Cambridgeshire and Isle of Ely Naturalists' Trusts, 1975, 252pp. £3.00.
- WILDLIFE conservation in Charnwood Forest: report by a working party. Nature Conservancy Council, Midlands Region, 1975. 79pp. £1.50 (spiral bound).

FAUNA

Mollusca

- SMITH, S. M., Key to the British marine gastropoda. Royal Scottish Museum, 1974. 56pp. Free (pt.). (Royal Scottish Museum, Information series: natural history, 2).

Arthropoda

CRUSTACEA

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M. A. PEARMAN

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NOTES AND BRIEF ARTICLES

The Enemy Within

(The Ichneumon fly, *Amblyjoppa proteus*)

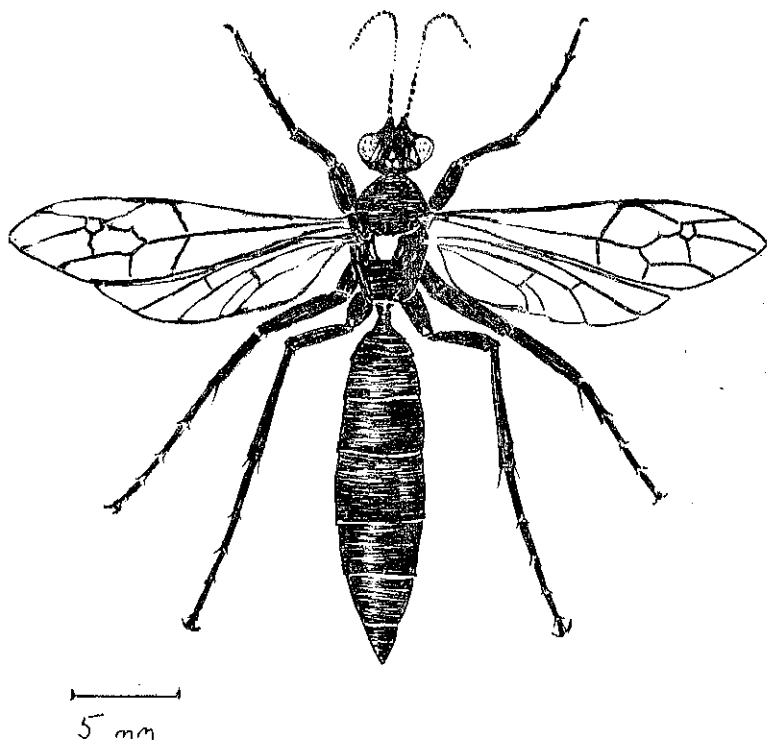


Fig. 1. *Amblyjoppa proteus* Christ.

The Alvecote Pools Nature Reserve was visited in September 1974 mainly for the purpose of studying the fungi of the area; during this visit the larva of an Elephant Hawk Moth (*Deilephila elpenor* L.) was found on an isolated stem of Rosebay Willow-herb. It was visible from some distance away and clearly in danger from predators.

It was taken with the intention that the moth on emergence should be released in an area known to have a population of this insect. The larva soon pupated but early in 1975 it became apparent that all was not well. It failed to move on being touched and the abdominal segments were quite rigid. In the event of pupal death there is usually shrinkage of these segments, but in this case they were slightly extended. A swelling appeared in the area of the pupal wing and became shiny. There was no change until 14 June when a slight movement in the pupa became detectable; by the afternoon a large black ichneumon emerged.

This was black except for white bands on the middle of the antenna, a cream coloured spot on the thorax and smaller light patches near the eyes and on the wings.

This ichneumon has been identified as *Amblyjoppa proteus* Christ.

R. E. EVANS
Sutton Coldfield

The life history of the mycetophilid *Trichonta terminalis*

Larvae of the mycetophilid ('fungus gnat') *Trichonta terminalis* Walker have been found living on various species of the resupinate fungus *Peniophora*, especially *P. cinerea* and *P. incarnata*. They are frequent on these hosts in most of our Warwickshire woods such as Wellesbourne, Oversley and Knavenhill.

Initially, the larva constructs a transparent, silky sheet which looks not unlike the track of a snail and beneath this it feeds on the *Peniophora* (Fig. 1A).

This canopy becomes discoloured by reddish-brown excretions of the larva, visible as "threads" under a hand lens (Fig. 1B). If the canopy should be removed young larvae are capable of building a further shelter; this facility would be useful if a move to a fresh locality were necessary in the event of dryness or shortage of food.

Finally only the edges of the original canopy are visible, the remainder being completely obscured by the larval excretions. At maturity, the larva leaves its canopy and builds a greyish-white, flimsy cocoon usually away from the fungus and in a drier habitat (Fig. 1C).

NOTES AND BRIEF ARTICLES

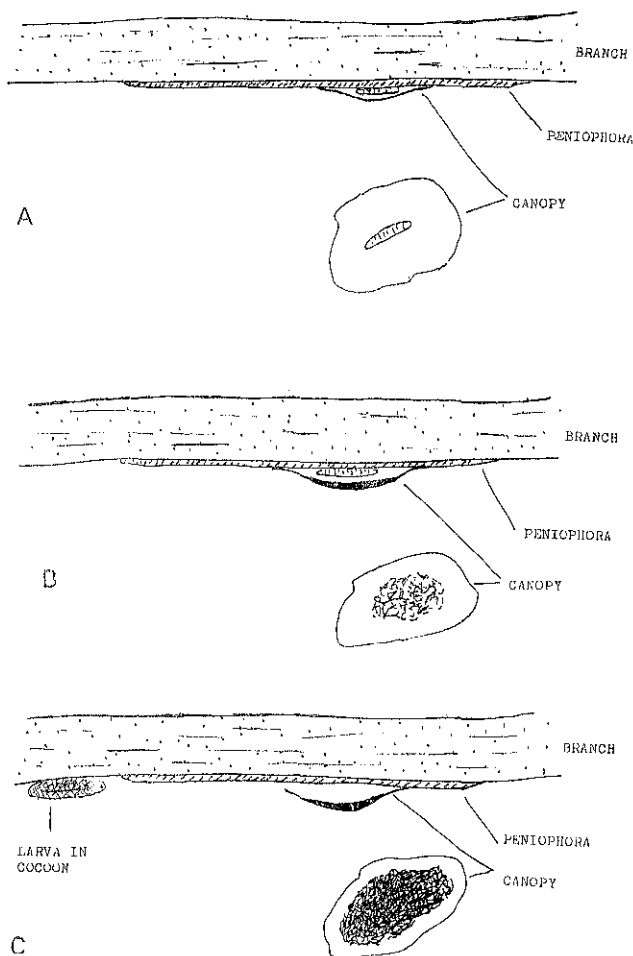


Fig. 1. Three stages in the development of the larva of *Trichonta terminalis* Walker, on the fungus, *Peniophora*.

Emergence usually takes place in a few weeks but it could be premature if the material is disturbed, adults leaving the cocoons and taking flight.

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The adult insect is illustrated in side view in Fig. 2.

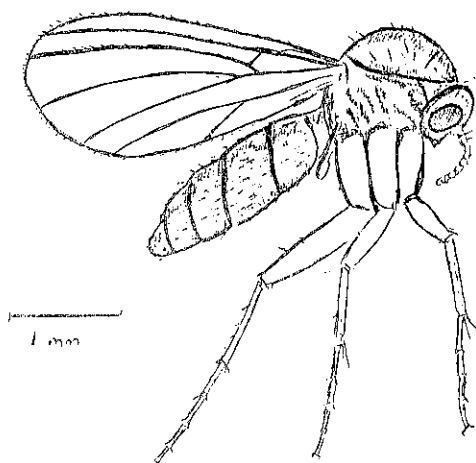


Fig. 2. *Trichonta terminalis* Walker; adult insect in side view.

During the observations of some fifty cocoons no parasites were seen to emerge, but this is not thought to be significant.

The assistance of M. A. M. Hutson (British Museum) in the identification of this species is acknowledged.

R. E. EVANS
Sutton Coldfield

Society Activities 1974-75

LECTURES 1974-75

General Meetings

8th October, 1974: S. C. Porter — '*Birds of Suffolk*'. After showing a few slides of typical scenery, our President first concentrated on some of the small and mostly common birds of woodland; he did include, however, the rare and elusive hawfinch. The slides were a fine demonstration of the success of the speaker's techniques. However, he has now almost given up the time-consuming process of photographing birds at their nests. This necessitates the erection of a hide and gradually moving it up, over a period of days, until the photographer is near enough and the hide accepted by the birds. He showed what good results could be obtained, instead, by erecting a hide near an isolated puddle in a suitable situation, and waiting for what comes; some fascinating pictures had resulted from this device. The speaker went on to deal more fully with two species — the avocet and the stone curlew. Avocets ceased breeding some 110 years ago as a result of persecution; though they were occasional visitors in subsequent years it was not until the last war, when the coast and its marshes were closed to public access, that they stayed and bred here once again. They are now well established as a breeding colony. There were shots showing typical Breckland, a type of country which is disappearing rapidly as a result of cultivation and forestry, then a particular corner of it where the stone curlew has nested regularly over a period of ten years. The crossbill was another bird dealt with; this is almost restricted to the lines of pine trees which were planted, in the past, alongside roads. These provide plentiful cones from which they extract the seeds, their principal food. Some other birds and a few flowers completed a delightful programme.

12th November, 1974: D. Hall — '*The Natural History of Grand Bahama*'. The speaker outlined the geography and history of the Bahamas, an archipelago of innumerable islands and rocks, but with a total land area only half that of Wales. Grand Bahama is some 70 miles long by 4 to 10 miles wide, lying about 80 miles off the coast of Florida. It is very flat, rising only to some 50 feet along a ridge of oolitic limestone. These rocks contain many caves which are of interest for the bats, ferns and other life which they shelter. The south coast is sandy while the north coast tends to be marshy with extensive mangrove swamps. There are no rivers or streams on the island. The marine life is of great interest and the speaker had on show some of the beautiful 'conk' shells; the molluscs which form them provide an important item of diet. After slides of the scenery there were shots of flowers, particularly the orchids, of which there are many species, some probably undescribed. The 'spider lily' and enormous agaves were very striking. Other plants shown were bromeliads, ferns, *Aster* species and flowering shrubs and, finally, some of the brilliant, introduced garden flowers. Other aspects of the natural history were also shown — birds, some of which are peculiar to this and adjacent islands, and insects. The speaker had collected 60 species of butterflies during the five years he had spent there.

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10th December, 1974: F. W. Shotton — 'New Zealand revisited'. This was a very varied and interesting lecture, with something for everyone. Prof. Shotton first of all described the main features of the country. It was surprising to know that a population of only 3 millions was living in an area 20% greater than that of the British Isles; also that the country was nearly as far from Australia as Britain is from N. America. This isolation accounts for many of the features of the flora and fauna. In the main, the animals are those groups which could get there by flying — though a surprising number of the birds evolved into wingless forms owing to the lack of predators. There are no native land mammals and many of the plants and insects have been introduced accidentally or deliberately. There were slides of geological features including views of the Southern Alps and their glaciers, the effects of earthquakes and the volcanos and the hot springs of the North Island. Then there were slides of flowers, with some beautiful alpine species including a species reminiscent of edelweiss. *Hebe* species (shrubby Veronicas) are very abundant. The insects include Cicadas of which there are many species, which an expert can recognise by sound; it was interesting to learn that they spend up to 20 years in the ground before emerging as perfect insects. A "glow-worm" — the larva of a dipterous fly was interesting. The Tuatara, a lizard-like creature not unlike a 2 feet long dinosaur and so a "living fossil" is one of the most interesting national animals. There were some shots of birds including one of the skeleton of the extinct *Moa*, of which there were, apparently, several species, one of them 15 feet high. Prof Shotton displayed a case of insects he had collected on his two visits, with quite a wide range.

14th January, 1975: J. G. Hawkes and D. Astley — 'Naturalists in Bolivia'. Prof. Hawkes first gave the background to the expeditions; he himself led a party sponsored by the Netherlands government, as well as supervising Mr. Astley's University expedition, which enjoyed the support of the Royal Society. The University expedition concentrated on Bolivia while the other party went as far as Argentina; contact was made several times. The expeditions were for the purpose of studying potatoes, particularly to seek strains with resistance to root nematodes and, in the case of the University expedition, to sort out some taxonomic problems. Considerable help was received from local sources, including an institute in Peru, devoted to potato studies. Mr. Astley then showed and commented on a fine selection of slides. There were many of the scenery, including the enormous Lake Titicaca, and other lakes with great populations of flamingos, the high plateau and the mountains on either side of it. There were some slides of peculiar geological formations and one of the local population enjoying a fiesta. Naturally, several of the wild potato species were shown, with their habitats, together with a few other plants; the most impressive was a huge bromeliad, reputed to flower only after 100 years, which is restricted to only one small rocky hill; also some spectacular cacti. Amongst other interesting shots was one of a condor, circling far overhead, a rare and unexpected sight. One expedition to see a particular species of potato took the party to a remote valley high in the mountains, containing some fine Inca remains, but reached only by finally wading through a very stony and wide mountain torrent.

11th February, 1975: E. H. Ratcliff — 'Collecting Butterflies with a Cine Camera'. This was a novel form of lecture for the Society and it proved very entertaining. Mr. Ratcliff showed and commented on a number of films in which almost every butterfly on the British list was shown as a living insect, in all but a very few cases in its natural surroundings. A great deal of patience (and film) must have been expended in securing these close-up pictures, often down to 9 inches or so. In only one or two cases

of very lively species had the specimens to be captured, taken home and quietened down by cooling. One or two species were taken abroad; these were cases where the British population is either extremely rare or possibly extinct. Some of the butterflies are very local and it was a remarkable feat, and, no doubt, a very enjoyable experience to track them all down to their particular breeding areas. The first film shown was different in character from the others and dealt with the Monarch butterfly, showing the process of emerging from the chrysalis and also the peculiar phenomenon in regard to this butterfly which can be seen in California. Here certain pine trees, scattered over the area, have a particular attraction for the insects and, in each of these trees, huge numbers of hibernating butterflies congregate; they are subject, by law, to strict prohibition from interference.

8th April, 1975: D. Ching — '*Contrasts in the American West*'. During a period of residence in Michigan on an exchange assignment, the speaker had the opportunity to spend April and May of 1973 touring with his wife and two small children in the American West, visiting first the great plains, then the eastern ranges of the Rockies and then the high plateau to the west. The last includes the Grand Canyon of Colorado and the Yellowstone National Park as well as other features less well-known but quite as spectacular in their way. There were many magnificent slides to illustrate the various features but, unfortunately, the audience which saw and heard this fine lecture was very sparse. The shots of the monotonous plains soon gave way to such thrilling scenes as "Monument Valley" and its Indian inhabitants, the "Devil's Tower" of South Dakota and the huge meteor crater of Arizona. Probably the most amazing sight was the "Silent City" of Bryce Canyon, a vast area of fantastic, fretted, upright rocks. There were some shots of cacti and of the Dogwood flower, the emblem of Missouri, and of a few of the animals, including a rattlesnake. The speaker explained that he was interested in industrial archaeology; he showed some of the old mining settlements and, in contrast, some of the modern industry of the area and the pollution it causes.

Botanical Section

19th November, 1974: H. H. Fowkes — '*The Andalusian Flora*'. This was an account of the speaker's experiences and some of the flowers he saw on an expedition to Andalusia, in April 1974, organised by the Botanical Society of the British Isles. The purpose was to assist in the survey of the flora of Andalusia, now in progress by recording in 23 of the 10 km squares within reach of Algeciras. Some little-known flowers were to be recorded in paintings executed by the three artists who accompanied the expedition. The weather at times was unpleasant but over 800 different species were seen with as many as 200 species recorded in each square. Mr. Fowkes referred to the richness of the Spanish flora; there are as many as 1,500 endemic species and nearly 500 species extend into Spain from Africa. Many genera of which we have only a few species in Britain are represented by large numbers in Spain, e.g. *Orobancha*, *Linaria*, *Ranunculus* and *Teucrium*. Beautiful slides of some of these were shown as well as many others, such as a selection from the wonderful range of Orchids and *Cistus*, *Iris* and *Scilla* species, together with the only species of Palm native in Europe.

17th December, 1974: *Members' slides*. Mr. Fowkes, continuing his travels, showed slides of plants and scenery in Majorca, making it look a much more attractive place than the travel brochure would lead one to expect. Mr. Pickvance concentrated on trees showing some of the many interesting species to be found planted in various places, which had been

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seen by the group which he has led for several years. Mr. Pinkess showed some beautiful flowers of the Pyrenees and also a few things seen on the section's week-end in North Wales. Mr. Clark also showed a few from this excursion and some plants from the Isle of Mull but his slides were mainly of fungi. Finally, Mr. Payne showed a few slides of plants seen in Yugoslavia and a few local ones too.

18th February, 1975: Symposium on 'Fungi for the general naturalist'. The object of the programme prepared was to show how the study of fungi involved other branches of natural history. Although space could not be found for it in the winter programme as a general meeting it was hoped that it would attract many non-specialised members of the Society, but the response was disappointing. Mr. M. C. Clark began by talking about the Ascomycetes in relation to plant hosts, living and dead. He mentioned a number of species, including two or three species new to science which he had found associated with *Deschampsia caespitosa* by close search, and similarly with other host plants. Other species which occurred on specific hosts, he was still hoping to see. Fungi on dung and on burnt soil were also touched upon. Mr. R. E. Evans dealt with several species of fungus which parasitize insects, including the *Clordyceps* species and *Paezilomyces farinosus*. He described experiments with these. He also talked about insects living on fungi and, in particular, two things of which he has made a lengthy study, *Mycocesis ovalis* on *Hypoxylon rubiginosum* which was once thought to be a gall, and another insect, so far unidentified, in spite of submission to experts in various parts of the world, which causes an actual gall in *Peniophora*. Mr. S. C. Porter gave a brief account of the present knowledge about mycorrhiza and illustrated his talk by a beautiful series of slides of species of toadstools associated with particular tree species and known to, or suspected of having a mycorrhizal relationship with the trees. Finally Mr. A. W. Brand dealt with plant parasites in general. He showed slides of various stages of Rust fungi, of Smuts and of "Ergots", with the fruit bodies — *Claviceps purpurea* — which emerge from them when they have fallen. It is, however, a vast subject, as evidenced by the book "British Parasitic Fungi" devoted only to parasitic fungi affecting cultivated plants.

Entomological Section

22nd October, 1974: N. Turner — '*Lepidoptera of Singapore and Malaya*'. Our much-travelled member gave a fascinating illustrated talk on his trip to South-east Asia, showing slides of various habitats in the Singapore, Malaya and Northern Queensland areas, including rain forest. These were backed up by several cases of exotic Lepidoptera, including Bird Wings of which the females outnumber the males by one thousand to one.

25th February, 1975: 'The years work'. After the election of officers of the section for the coming year, members showed results of their activities during the past season — exhibits which created great interest. These were as follows:

L. J. EVANS — Species of Lepidoptera from Randan Wood and Devon.

R. G. PAYNE — Lepidoptera obtained on a recent trip to Yugoslavia.

M. N. PUGH — A number of Diptera (Syrphidae) mainly from the Earlswood area.

N. TURNER — Several exotic Lepidopterous species, together with *A. iris* and *P. argus*.

G. KING — Pupae of *M. tiliae* (Lime Hawk) and *C. vinula* (Puss Moth) which he had bred.

DR. H. G. KLEMPERER — Various species of Coleoptera (Scarabaeidae) from the Pyrenees.

After an examination of the exhibits, members heard details from Mr. L. J. Evans of the study of Lepidoptera which he is carrying out in the new National Nature Reserve at Chadlesley Woods.

18th March, 1975: 'Members' transparencies'. This annual event is always well attended and is the opportunity for members to show off their prowess with the camera as opposed to the net. Each year seems to show a rise in standard and this year was no exception. Contributions came from Messrs. Evans, Green, Harvey, Howard, Payne, Pugh and the Reverend Hood. Subjects covered included a series on the developmental stages of *C. galii* (the Bedstraw Hawk), Beetles, Birds and, of course, many examples of Lepidoptera from home and abroad.

FIELD EXCURSIONS DURING THE 1975 SEASON

General

SATURDAY, 17TH MAY — HARBURY. A further effort to attract a good attendance of members to an outdoor excursion by arranging a general meeting in an interesting area was again a total failure as far as this object was concerned. The total attendance was six. The intention was to visit Harbury railway cutting in the morning and a stretch of old railway track at Combrook during the afternoon, but as rain became steadily heavier as the day progressed it proved possible to carry out the morning programme only.

The cutting at Harbury adjoins the village on the north side; the railway, the old Great Western route from London to Birmingham, is still operational. The full length of the cutting is about two kilometres but our leader, Mr. C. A. Catt, a local botanist, took us only to the central (and deepest) section, where, in several places, rocks of the Lower Lias are exposed through the blue, and slippery clay typical of this part of Warwickshire. The flora consisted of characteristic limestone plants such as *Blackstonia perfoliata* (Yellow-wort), *Cirsium acaulon* (Stemless Thistle), *C. eriophorum* (Woolly Thistle), *Clematis vitalba* (Traveller's Joy), *Daucus carota* (Carrot), *Listera ovata* (Twayblade), *Orchis mascula* (Early Purple Orchid) and *Poterium sanguisorba* (Salad Burnet). There was much Hawthorn scrub (only *Crataegus monogyna* noted) and scrub of *Ligustrum vulgare* (Privet) and *Prunus spinosa* (Blackthorn). The open slopes were notable for the profusion of *Primula veris* (Cowslip) and *Dipsacus fullonum* (Teasel). A noteworthy feature were the Violets although there were no flowers remaining. *Viola odorata* was common, *V. riviniana* less so, but there were large patches of what appeared to be hybrids of *V. odorata* and *V. hirta*.

SATURDAY, 30TH AUGUST — RANDAN WOOD. A further item in the programme designed to attract new and non-specialist members again proved a failure from this point of view. Only four members and the leader, Mr. F. Fincher, turned up. Mr. Fincher showed us round his wood, which he has occupied for 30 years, since the time it was clear-felled. He has watched it grow up into what appears to be almost mature woodland. In one fairly open area at the top of the hill, Mr. Fincher has an interesting small arboretum of *Sorbus* species and other trees. He has introduced other plants, too, but some have come in on their own, e.g. the Ivy Broomrape at the foot of the front wall of his bungalow. We were puzzled by a lime tree which had numerous rows of small holes encircling it at various levels. These, however, were apparently made by a greater spotted woodpecker, attracted by the

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sweet sap, as it ascended in the spring. We walked some distance through the woods beyond Mr. Fincher's own land and saw here an enormously tall specimen of *Sorbus torminalis* (Wild Service Tree), which is usually found as quite a small tree. Though this was very close to Mr. Fincher's boundary, he did not find any on his land, but has, himself, established a few trees! The extreme dryness was commented on — this particular area seemed to have missed even the scanty rain experienced in areas a few miles away, in what had otherwise been a very extended drought. Often fungi are quite abundant at this time of year, and this area is particularly rich in species, but on this occasion only one species of agaric was seen.

Botanical Section

SUNDAY, 15TH JUNE — CLOWES WOOD. The only flowering plant excursion arranged for this year (apart from the week-end) by the Section, actually turned into an informal entomological expedition, due to lack of support by botanists. It was intended to invite members of the Warwickshire Nature Conservation Trust and the Coleshill Natural History Society to this interesting botanical area, but apparently the arrangements fell through.

WEEK END EXCURSION

WEEK END, 4TH-6TH JULY — BRECON. The annual week-end continues to be a popular feature of the Botanical Section programme, mainly attracting the "regulars" but with a few new additions from time to time. This year there was a total attendance of 19 over half of whom were among those who came to Brecon on the occasion of the last visit, as long ago as 1961.

Unfortunately the whole country had been suffering from a prolonged drought which meant that many of the things we might have seen were completely dessicated. The drought was broken at Brecon itself on the Friday evening by a thunderstorm in which some 2 inches of rain fell, but this was very local and the areas visited which lay a few miles from Brecon were as dry as ever.

The speciality of the area is, of course, the *Sorbus* species, several of which occur nowhere else, and these local species were seen on the Saturday during visits to two sites, Craig y Cilau and Penmoelallt.

Craig y Cilau is a magnificent amphitheatre of limestone cliffs. We followed a rough track skirting the base of the cliffs and were able to see *Sorbus minima* (in its type locality); *S. anglica*, *S. leptophylla* and *S. rupicola*. The leader, Mr. M. Massey, Warden of the South Breconshire reserves, pointed out the features of the various species and also showed us other interesting plants — *Polygonatum odoratum* (Angular Solomon's Seal), *Saxifraga hypnoides* (Dovedale Moss), *S. tridactylites* (Rue-leaved Saxifrage) and *Hornungia petraea* (Rock Hutchinsia), the last two only as dried-up remains. There were the ferns, *Cystopteris fragilis* (Bladder-fern) and *Thelypteris robertiana* (Limestone Fern), the grass, *Melica nutans* and the sedge, *Carex lepidocarpa*. In slightly damp situations there were *Anagallis tenella* (Bog Pimpernel) and *Pinguicula vulgaris* (Butterwort). On the lower ground at the foot of the cliffs and screes it was rather surprising to find a raised peat bog with such plants as *Drosera rotundifolia* (Sundew), *Eleocharis quinqueflora* (Few-flowered Spike-rush), *Erica tetralix* (Cross-leaved Heath), *Potamogeton polygonifolius* (Bog Pondweed) and *Scutellaria minor* (Lesser Skull-cap).

After a long drive, including part of the "Heads of the Valley Road" we came to the remarkable limestone valley just north of Merthyr Tydfil. One side consists of large areas of rather bare limestone scree and pavement and very exposed cliffs, while the western side is wooded. This is the Pen-moelallt Reserve where the rarest of the *Sorbus* species, namely *S. leyana* grows. At this site it grows to quite a large tree, in contrast to the shrub-like growth on the opposite side of the valley. A few seedlings had been raised from fruits of the original trees and planted in clearings in the woods; they were now growing into sizeable trees, but, unfortunately, cattle had got into the reserve this spring and had stripped a lot of bark from the trunks, so that the outlook for these trees, an effort to increase the very small original population, looks very doubtful. The other plant seen here was *Carex montana* which has now been found to be quite widespread on the Brecon limestones, though at one time it was thought to be a very rare Sedge generally.

The leader on Sunday was Mr. M. Porter. It had been intended to visit the well-known site, Craig Gerrig Gleisiad but, as this was in a very dessicated state, the leader took us instead to two areas which would normally be boggy and which still retained a suggestion of moisture and we saw a wide variety of attractive plants of such localities.

The first was Traeth Mawr on Mynydd Iltyd. We followed the course of a small stream, the partly dried-up bed of which was covered by large areas of *Limnorea uniflora* (Shore-weed); it also contained some *Sparganium minimum* (Least Bur-reed) with a few flower spikes. There was a large stand of *Cladium mariscus* (Sedge) but this was rather stunted in growth and there were no inflorescences. Amongst the roots of this was a large colony of the hepatic *Marchantia polymorpha* with an abundance of the umbrella-like male "inflorescences". On dying, or in some cases apparently healthy area of the thalli a small whitish discomycete fungus was found in some abundance. This was identified as *Sphagnicola marchantiae* Vel. and is probably the first British record of this fungus. A nearby area of open boggy ground was sprinkled with the attractive flowers of *Baldellia ranunculoides* (Lesser Water-plantain); *Apium inundatum* (Marshwort) was also frequent. Other plants seen were *Veronica scutellata* (Marsh Speedwell) and various *Carex* species. This area is known for its Dragonflies (which may be in some danger due to the drying-up of open water) and several were seen including a fine specimen of the large blue *Libellula depressa*.

A magnificent drive up the Senni valley, over the mountains and down the valley of the Llia took us to Penderyn; near this village the leader showed us some marshy meadows with a remarkably rich flora. This included the Orchids, *Gymnadenia conopsea* (Fragrant Orchid), *Epipactis palustris* (Marsh Helleborine) and *Dactylorhiza fuchsii* and *D. maculata* ssp. *ericetorum* (Spotted Orchids). Butterfly Orchid also occurs here but was not seen. Other plants in abundance in these meadows were *Cirsium dissectum* (Meadow Thistle), *Eriophorum latifolium* (the rarest of the Cotton-grasses), *Euphrasia brevifolia* (an Eyebright), *Menyanthes trifoliata* (Bog Bean), *Narthecium ossifragum* (Bog Asphodel), *Serratula tinctoria* (Saw-wort) and *Trollius europaeus* (Globe-flower). Other plants seen were *Equisetum sylvaticum* (Wood Horsetail), *Eupatorium cannabinum* (Hemp Agrimony), *Genista tinctoria* (Dyer's Greenweed), *Galium uliginosum* (Fen Bedstraw), *Lythrum salicaria* (Purple Loosestrife), *Triglochin palustris* (Marsh Arrow-grass) and *Pedicularis palustris* (Red-rattle). Several *Carex* species were also noted, *C. hostiana* being particularly abundant.

SOCIETY ACTIVITIES

FUNGUS FORAYS

SUNDAY, 27TH APRIL — KNAVENHILL WOOD. This first foray of the season was, as usual, well attended, but fungi were not very plentiful. Ascomycetes, however, can always be found at this time of year and some 20 species were seen. Two Cyphellaceous species which occur on wood were found, namely *Cyphellopsis anomala* and *C. candidus*. Eight species of myxomycetes were recorded — quite a good collection for this time of year.

SUNDAY, 29TH JUNE — EDGE HILL. Only six members turned out, those not on holiday no doubt feeling that the long journey to the south of the county could hardly be justified in the conditions of extreme drought prevailing. Most parts of the woodland were certainly dessicated but there are a few areas at the foot of the escarpment where there is a seepage of water giving patches of damp clay soil. These yielded some interesting Discomycetes including *Haglundia peretegans*, *Psilopezia babingtonii*, *Scutellinia asperior*, *S. scutellata* and *Tricharia cretea* (the last new to our list). This area also produced a few myxomycetes, one being frequent, climbing up living stems of *Ranunculus repens*. This was found to be *Didymium ochroideum*, not previously found in this country or, in fact, in Europe. Fine colonies of two Polypores were found — *Laetiporus sulphureus* and *Polyporus squamosus*.

SUNDAY, 27TH JULY — HEATH WOOD, MAXSTOKE. Mr. C. Lewis had arranged this new venue, on the Maxstoke Castle estate. Obviously the wood could be very productive in the right conditions, but a foray at this time of year is always a gamble and conditions were too dry for more than a handful of the larger fungi to have appeared. A good list of microfungi was made, mainly in a rather damp area near the road. Here, notable finds were a magnificent specimen of *Cordyceps militaris* with four fertile heads emerging from a single large pupa, and *C. forquignonii* on flies, of which two examples were found; the latter has been found previously in the county in only one other locality. More mundane things from the same area were *Cheilymenia vitellina*, frequent among nettle roots, *Sphaerobolus stellatus* and *Calyptella capula*. Several specimens of an insect parasite of another fungus group, *Paecilomyces farinosus* were found and in one case this itself was parasitized by the Ascomycete, *Melanospora parasitica*. *Epichloe typhina* (Choke) was frequent on grasses.

SUNDAY, 24TH AUGUST — WRETHLEY WOOD. In spite of a little rain in the preceding few days, the long dry summer which had been experienced meant that agarics were very scarce. Those found on this and later forays will, in due course, be listed in the informal news-letter which is circulated to those interested in the fungus survey. Two interesting ascomycetes were found, in each case for only the second time in the county. *Protocrea farinosa* produces a dense layer of pale perithecia covering old resupinate polypores on rotten wood. *Torrendiella ciliata* was first found as a British species last year at Chaddesley Woods, Worcestershire and at Asplands Husk Coppice, Warwickshire. The material from the latter place was so poor that there might have been doubts about its identity so this further record confirming its existence in Warwickshire is welcome. The day was warm and the small party, finding fungi scarce, nevertheless had an enjoyable excursion looking at plants, insects and other features of this interesting wood.

SUNDAY, 21ST SEPTEMBER — CHESTERTON WOOD. After the driest and warmest summer on record, it takes a long time for the soil, particularly woodland soil, to become really moist. Obviously, in the Midlands, there had been by no means enough rain to encourage the larger fungi, which were very scarce, though those members who had recently attended the British Mycological Society's foray in Scotland could testify to the great abundance of fungi in that part of the country. Some of the quick-growing species such as *Coprinus* and *Psathyrella* species were to be found on the rides of this wood and there was a good colony of *Lentinellus cochleatus*. Among the ascomycetes, it was interesting to find an abundance of the small discomycete, *Torrendiella citata*, referred to in the preceding note, on dead leaves of *Rubus*. Evidently it is by no means uncommon, having been found now in three Warwickshire localities, and it is a mystery why it has not been recorded previously in this country. It is quite distinctive; the apothecia are stalked and have a number of stout bristles on the outside of the cup. Each one stands on a patch of the dead leaf outlined by a black line.

SUNDAY, 5TH OCTOBER — ALL OAKS WOOD. There was a good attendance for this second visit to this very attractive wood in the Rugby area. Conditions were still not ideal but a good list was made. Notable agarics were *Boletus porosporus*, *Coprinus acuminatus* and *C. cortinatus*, *Flocculina ferruginea*, *Mycena pterigena* and *Russula odorata*. There was a beautiful little discomycete on dead leaves of *Fagus* with a fringe of golden-yellow hairs which caused some problems; eventually it was decided at Kew that this was identical with the American species, *Daryscyphus acerinus*, although this occurs in America on leaves of *Acer* and is duller in colour than our specimens. *Auricularia auricula* was seen on *Fagus* (Beech) although it is rarely seen on the wood of trees other than *Sambucus* (Elder) or *Ulmus glabrus* (Wych Elm).

SUNDAY, 19TH OCTOBER — SUTTON PARK. This 'beginners' foray' was not so widely publicised as previous similar events and did not attract such large numbers of visitors; in view of the limited material found perhaps this was just as well. The foray was notable for the abundance in many habitats of *Hygrophoropsis aurantiaca*, largely consisting of the pale form, var. *pallida*. The neighbourhood of Banners Gate also produced a few species of damp, heathy ground, such as *Hypholoma elongatum*. A careful search under *Castanea* (Sweet Chestnut) trees eventually revealed a few specimens on the remains of old husks, of one of the two species of *Rutstroemia* which occur on this substrate, *R. americana*. The site of a woodman's fire yielded *Trichophaea hemisphaeroides*. After a move to the car park near Bracebridge Pool, a large colony of *Amanita muscaria* was seen. This species and the *Hygrophoropsis* seem to be two things which have flourished in this otherwise poor fungus season. Some interesting things were found along the railway embankment, notably *Sparassis crispa* at the base of a pine tree, only the second record of this species in the survey. The discomycete, *Sepultaria arenosa* was found on bare patches of old furnace ashes in the embankment, where it was also seen on a previous visit some years ago. *Leccinum versipelle*, *Tricholoma terreum* and *Cortinarius hemitrichus* were also seen by the railway.

SOCIETY ACTIVITIES

Entomological Section

SATURDAY, 10TH MAY — SUTTON PARK. Thirteen people gathered on a cool dull day in the hope of observing, photographing and collecting Moths, Butterflies, Beetles, Flies and Amphibians. No butterflies were seen and only the Summer Heath Moth was found flying. However, about a dozen Emperor Moths assembled to several females bred from pupae and brought along for the purpose; successful pairings were made. Numerous beetles were found, including Geotrupids and Staphalynids from dung, tussocks and fungi. Only two Syrphids were found, viz. *M. scalare* and *P. albimanus*. A frog and a toad completed the day and the party dispersed at 3 p.m. — a time which proved to be the optimum for assembly of Emperor Moths.

SATURDAY, 31ST MAY — BANNAMS WOOD. An afternoon visit, attended by ten members and friends, was held at the 50 acre private Bannams Wood, situated on a limestone outcrop about 15 miles S.S.W. of Birmingham. The area is rich in flora and fauna and has been extensively studied by Mr. Noble, the Society's Secretary. The day was fine but windy, with sunny periods, during which numerous insects were seen, the larva of *S. w-album* (White Letter Hairstreak) being the one example from the Lepidoptera. Ten species of the Syrphidae were found, viz: *M. scalare*, *P. albimanus*, *S. corolae*, *S. eligans*, *L. lucorum*, *B. obscuripennis*, *C. paganus*, *X. segnis*, *H. pendulus*, *R. campestris* and *E. pertinax*.

SUNDAY, 15TH JUNE — CRANHAM WOOD AND COMMON. The day turned out to be generally cold and wet for the party of four members and Cranham proved to be very unrewarding, the only insect found being a solitary butterfly, *C. pamphilus* (Small Heath). Moving to Shewell Wood produced no improvement — in fact it teemed with rain. Fortunately the sun came out during a stop at the downs above Winchcombe when *P. icarus* and *C. minimus* (the Common and Small Blue) were found together with Pyramidal and Spotted Orchids. During a subsequent stop at Sheepscombe, Rustyback, Hartstongue and Maidenhair and Black Spleenwort Ferns were found, together with Twayblade.

SUNDAY, 29TH JUNE — WHIXALL MOSS. Mr. Noble very kindly used his car to transport four members and one visitor to the Moss. Conditions on this day were very good, the sun shining all the time, keeping insects on the wing continuously. Photography was to the fore, all members trying to photograph the wealth of Dragonflies the Moss is noted for, and, of course, the Large Heath, *Coenonympha tullia*, was stalked and photographed from all angles. The following Lepidoptera were observed: *C. tullia*, *A. urticae*, *L. phlaeas*, *M. jurtina*, *C. pamphilus*, *P. strigillarea* and that lovely little moth, the Purple and Gold (*S. muricata*).

SUNDAY, 10TH AUGUST — BUTTONOAK AND STURT COMMON, WYRE FOREST. As the day started rather cloudy, the three members (two of whom were Coleopterists) decided it would be useless to go to the first venue on the programme, Chorley Wood, to look for the White Admiral, as conditions were unsuitable. A start was made up the track just past the inn at Buttonoak, beating and sweeping for larvae and beetles on the way. A few Lepidopterous larvae were beaten from Sallow and Birch and the Coleopterists found borings in fallen branches containing four chambers made by a Leaf-cutting Bee which had a larva in each. Photographs were taken of this interesting find. Later a visit was paid by two members to Sturt Common to photograph butterflies as the sun by then had warmed things up considerably. The following Lepidoptera were seen during the day: *P. aegeria*, *P. megera*, *M. jurtina*, *M. tithonus*, *A. cydippe*, *A. paphia*, *P. icarus*, *L. phlaeas*, *T. sylvestris*, *G. rhamni*, *P. brassicae* and *P. rapae*.