

THE VASCULUM

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Edited by
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THE POPLARS, CHESTER-LE-STREET

BY THE WAY

Secretaries of Societies and other contributors to the "Vasculum" are invited to send their notes to the Editor before 15th June, 1981.

NOTICES

We would remind all our readers that subscriptions were due on 1st January 1981. Because of a modern phenomenon called "cash flow", we would be grateful if all who have not yet sent off their cheques would do so immediately. Thank you. In order that entries can be made in diaries well in advance, here is a list of proposed outings and meetings for 1981—

Senior Field Meetings

- 30th May—Wynyard Hall Estate.
- 4th July—Rainton Park Wood (National Trust).
- 12th September—Dipton Woods (Hexhamshire).

Junior Field Meetings

- 9th May—Whitburn foreshore, for marine animals and plants.
- 26th September—Hollinside Woods, Durham, for fungi.

Heslop Harrison Memorial Lecture

- 7th November—Lecturer, Dr. J. L. Crosby
Venue, Captain Cook Museum, Middlesbrough, on the occasion of the Centenary of the Cleveland Naturalists' Field Club.

MODERN FORESTRY PRACTICE

It is becoming increasingly obvious to all naturalists that the abundance and variety of our wildlife is declining so rapidly that they are becoming seriously worried. There are, of course, more reasons than one. That which concerns us here is the practice of clear-felling broad-leaved woodlands and then replanting the area with conifers. Not only has the Forestry Commission been guilty of this practice but more and more

private estates are following in their footsteps. The reasons are the same as in all commercial ventures, the main one being the possibility of making a "fast buck". The trouble with planting deciduous trees or even allowing natural coppicing after felling is the time that it takes for the next crop to grow to a saleable girth.

The long term effects on our wildlife are incalculable. Whereas such trees as oak, ash, elm, birch, to mention just a few, will support thousands of species of invertebrate animals and provide just that amount of shade for the successful growth of a whole range of herbaceous plants, closely grown conifers provide food for a much more limited number of animals and shut out so much light that frequently not one herbaceous plant can survive. These effects are even more severe if the conifers are not native to these islands for even fewer invertebrates can use them. This problem has been recognised by the Forestry Commission for some time now, but as yet little seems to have been done except to plant more Scots Pine than used to be the case. With private commercial growers even less notice is taken of the situation and here one finds the plantings to consist of mono-cultures of some species of spruce or other similar tree.

We once thought that the establishment of the Nature Conservancy Council would take care of all these problems but this has not proved to be possible. Either the Nature Conservancy Council lacks muscle or there are so many loopholes in our forestry regulations that all efforts are useless. It is high time for the introduction of legislation to halt the appalling losses that have occurred during the last 30 years and still continue at an ever quickening rate.

REVIEWS

A Lichen Flora of Northumberland by O.L. Gilbert, reprinted from **Lichenologist** Vol. 12, No. 3 (1980).

This is an outstanding work on the Lichen Flora of the greater part of our region. Not only does it survey the species discovered but provides a considerable amount of information on the general biology of these interesting plants. It comes at a very opportune time, for the last catalogue was that in Winch's Flora of Northumberland and Durham in 1832, now very much in need of revision and updating. The book starts with a short introduction followed by a general consideration of the way in which lichens are affected by climate, geology and topography, and sulphur dioxide pollution. The history of lichen recording in Northumberland will be of great interest to our local botanists. Then follows the major portion of the book which deals, in detail, with the ecology of Northumberland lichens. Descriptions of associations in the various habitats are a welcome addition to a catalogue of this type and we cannot recommend this section too highly. Some of the most interesting are those seen at their best in this part of the country, such as the Great Whin Sill, the sandstone crags in the uplands and the Heavy Metal soils. Because of the extensive tracts of semi-natural vegetation, steep climatic gradients and some of the least polluted air in England conditions are right for a very rich lichen flora. Several sites have been discovered with a lichen flora indicative of ancient woodland. Thus 40% of British species have been recorded. Altogether 489 species are catalogued, seven of which are new to Britain and 271 new to Northumberland. Copies, of which only about 30 are available, can be obtained from the author at the Department of Landscape Architecture, The University, Sheffield, S10 2TN Price £5

The Magnesian Limestone of Durham County. Ed. T. C. Dunn. 77pp. Durham County Conservation Trust. 1980. £2.75.

In around 80 pages this most readable book has covered the subject well and the price is reasonable. The format is of large type on large A4 pages and is pleasing to the eye. The diagrams are particularly clear and there are plenty of site maps.

This well-produced volume covers six themes; Geology; Man and his use of the Land; Vegetation; Insects; Vertebrates and Conservation, and so does not stretch itself too thinly. Although 'meaty', it has been written for a wide readership; within its pages one can still find good old yards rather than metres.

The magnesian limestone of Durham is, of course, especially important because of its rarity; its open habitats, especially the quarries, allow for plants at their northern and southern-most limits of their range to be found together; disused quarries are encouraging the spread of orchids etc. and here is the home of the Durham Argus butterfly. Messages coming loud and clear through the book are the need for the preservation of quarries and other semi-natural habitats; the need for some grazing or other management; the need for more local nature reserves; and the need to watch increasing pressure due to recreational activities. The three most important sites, Thrislington, Cassop Vale and Crimdon dune system are all threatened.

There is much useful information within the pages on sites, such as whether they are protected by S.S.S.I. status, and there are numerous site map references in tabular form although not always used in the text. Is Harton Downhill the same as Boldon Downhill? References are particularly abundant and certainly useful because each page must have something new for nearly everyone. Typing spelling errors are few and similar factual errors even fewer.

This book is recommended for the balance between the various aspects of the subject. All those concerned in contributing to the topic are to be congratulated; there has been a need for this book for a long time. All those concerned with Man's use and abuse of the Durham limestone should read this excellent account.

D. Hall

THE SOCIETIES

NORTHERN NATURALISTS' UNION

The 57th Annual Meeting was held in the Hancock Museum, Newcastle upon Tyne, on 28th March, 1981, by kind invitation of the Natural History Society of Northumbria. During the short business meeting the Hon. Treasurer again reported a slight surplus on the year's working and did not ask for any change in subscriptions. During the election of officers, a new Vice-President, Mrs. V. Cromarty, was elected to fill a vacancy and Mr. D. Pickering was elected Field Secretary to replace Mr. and Mrs. Bradley who had resigned.

Dr. Burt then introduced the speaker. Dr. N. Dunstone, who then proceeded to deliver his lecture entitled 'The Mink Menace'.

In his introduction he mentioned the bad public relations attributed to mink by the shooting and fishing fraternity and then introduced the mink project currently being carried out by the Zoology Department at Durham University and his attempts,

with research students, to get a balanced view of the whole ecology of the animal. All wild mink in this country are the result of escapes from mink farms where the American Mink is bred for the manufacture of fur coats.

A distribution map showed that the areas most used by the animal are along the south coast, our own Northern Counties and in large areas of Scotland. Everywhere, the story was that of association with water. In the North East, it is well established along the North Tyne and the River Blyth, particularly the Font and along the Tees. Oddly enough, it is not present on the River Wear.

Habits of territorial behaviour, social activity, breeding habits, diet, etc., have been intensively studied. This has not been easy because of their crepuscular habits, so special methods of trapping and marking have been developed for detection in darkness. Two methods of marking have been used, a capsule which glows in the dark so that the animals can be followed by sight and a small radio transmitter which can be attached on a collar and then followed by a special direction finding aerial and radio receiver. These methods were both illustrated. Diet was studied by analysing the droppings, "skats", and identifying the remains.

The picture which has emerged is of a very aggressive animal, very territorial in its behaviour, and living entirely alone except for a short time at the breeding season. In spite of their attachment to water they are not good swimmers and take fish by stealth rather than speed. By far the most important item in their diet, however, is rabbit, mostly young ones which are available most of the year.

Taken over all it appears that mink have exploited a niche which has not been fully occupied previously and they compete only marginally with otter and other mustelids. The fish that they take are small and not many are game fish. Thus although they have bad habits and need to be controlled, they are not such a menace as the popular press would have us believe.

After questions and a vote of thanks from Mr. Pickering we proceeded to take tea provided by Mrs. Hall and Miss Vincent and to look at the various exhibits. Mr. Hird had an extensive show of pressed flowers, Mr. Dunn showed Lepidoptera illustrating differences between English and Scottish forms, Mr. Mann a case of spectacular butterflies and moths and a live Kentish Glory, Mr. Davis some of the fish caught at the Blyth Power Station water intake, and Mr. Jackson a wide-ranging set of live slugs in an attempt to initiate interest in the N.E. Slug Survey.

DARLINGTON AND TEESDALE NATURALISTS' FIELD CLUB

Once again the Annual Report (printed for the first time) shows that the Field Club continues to be actively healthy in spite of a very slight fall in membership. The indoor meetings have all been well attended with as many as 80 people at some of them. The extensive field outing programme was carried out to the full, comprising eight full day coach excursions and at least 16 shorter walks and half day outings by car. During these, the phenological observers have worked assiduously and it is regretted that their results cannot be reproduced in full.

Archaeology (L. Woodhouse). Excavations at Piercebridge and at Binchester have been hindered by the withdrawal of funds from the Youth Community Service and much of it has been left for the time being. During the year the emphasis has been historical rather than archaeological, with visits to stately homes combined with botanical activities.

Entomology (D. Griss). Taken all in all this has been a good year for butterflies and a specially notable one for the abundance of Painted Ladies. The first of these was seen on the Bass Rock on 29th June(3), then later, at the end of July and early August they seemed to be everywhere. The fine spring gave the Orange-tip a long season from the end of April to late June. Other species too, were seen frequently. Of moths, the six-spot burnet and yellow underwing were reported in fair numbers, and there were reports of two Humming-bird Hawkmoths (Darlington, 9th June and Hawthorn Dene, 28th July).

Geology (B. Hetherington). Outings nearly always provided something of note. In Upper Teesdale we examined the Carboniferous sandstones and limestones, and the outcrops of the Whin Sill, the last having been encountered again on our trip to the Roman Wall at Housesteads. Another igneous rock we visited was Bass Rock. Coal Measures rocks were examined at St. Mary's Island and again in the valley of the River Swale in Yorkshire. Our acquaintance with the Permian was renewed during our visit to Castle Eden Dene.

Ornithology (V. Brown). Here a lengthy account of the various species seen during the field trips indicates the presence of a very strong and enthusiastic birding section. Members have taken part in such activities as the year's National Rookery Survey and records have been very good indeed. A good year for birds in general is reported, with the whitethroat having done particularly well, although its recovery has still not reached its former abundance. Species lists for various places are given but this is an example of there being too much to quote in full.

Botany (M. Burnip). Here again full details are given of the plants listed during the outing to Upper Teesdale, of the trees found during a careful survey of the West Cemetery, Darlington, and of the fungi found during two fungus forays in Hamsterley Forest during September and October. Brian Walker and Gordon Simpson acted as forest guides. Altogether some 120 species are listed, a noble effort. Indoors, the year has been special because of the extensive repairs that have been carried out on the books in the library, and for the transfer, on loan, of the herbarium to Sunderland Museum, where proper curating can be carried out by professional staff.

BIRTLEY AND CHESTER-LE-STREET NATURAL HISTORY SOCIETY

The winter session of lectures got off to a good start on September 9th 1980 when Mr. T. Ayre talked about a trip across the U.S.A. by Greyhound bus. This was followed by further talks at fortnightly intervals until January 27th 1981, when the Annual Supper was arranged. Food provided by the ladies of the society was very much appreciated and a pleasant evening was enjoyed by all. The Annual General Meeting took place on March 24th when Mr. T. Dunn was re-elected President, Miss C. Gordon Secretary, and Mr. R. Harris, Treasurer.

Only one field meeting has been held since Christmas owing mainly to the weather. On February 1st, however, a few members enjoyed a brief sunny mild spell to look again at the Slit Woods in Weardale. Although almost everything living was "shut down" for the winter, the afternoon was most suitable for a little geology, and what more suitable place than this valley at Westgate. Apart from looking at the exposed strata, the lead miners' spoil heaps were again examined for pieces of attractively coloured fluorspar. The return via Rookhope was a fitting end to a very pleasant afternoon.

NOTES AND RECORDS

NOTES

Pink-footed Goose. A single bird of this species, *Anser brachyrhynchus*, arrived in a field planted with rape, alongside the River Wear at Chester-le-Street towards the end of October 1980. It seemed to enjoy the food provided by the rape plants and was to be seen on most days throughout November and the first half of December when it finally left. It appeared to be a young bird that was not quite sure of how and where it should spend the winter.

E Hall

Occurrence of the Opahor Moonfish, *Lampris guttatus*, (Brunnich), on the North East Coast. Two specimens of this large and distinctive fish were acquired by Sunderland Museum in August, 1980. The first specimen, some three feet in length and weighing 76 lbs., was stranded at South Harbour, Blyth on 6th August, the second slightly smaller fish being caught in salmon nets four miles off Hartlepool on 11th August.

This species is certainly one of the most beautiful of the occasional visitors to the N.E. coast, with its elliptical body and bright metallic greenish-blue colour dappled with pale yellow spots, its blood red fins and large golden eyes. The biology of the species is still largely unknown however, no details of its habitat, migrations, breeding and development having been discovered.

The occurrence of these two specimens of *Lampris* prompted a search of the literature for previous sightings on the N.E. Coast. In chronological order they are as follows—

- 1767 FILEY (Pennant, quoted Eagle Clarke & Roebuck 1881)
- 1769 BLYTH (Harrison, quoted Bolam 1919; Pennant, quoted Dixon dark 1872)
- 1807 WHITBY (Hinderwells History of Scarborough 1811, quoted Eagle Clarke & Roebuck 1881)
- 1809 BRIDLINGTON (Eagle Clarke & Roebuck 1881)
- 1840 NEWBIGGIN (Howse 1890)
- 1842 BRIDLINGTON (Meynell, quoted Eagle Clarke & Roebuck 1881)
- 1849 FLAMBOROUGH HEAD (Norman, Zoologist, 1849, quoted Eagle Clarke & Roebuck 1881)
- 1850 REDCAR (Rudd 1851)
- 1857 FLAMBOROUGH HEAD (Bailey MS quoted Eagle Clarke & Roebuck 1881)
- 1862 BRIDLINGTON (Boynton MS quoted Eagle Clarke & Roebuck 1881)
- 1867 BRIDLINGTON (Boynton MS quoted Eagle Clarke & Roebuck 1881)
- 1869 BUDLE BAY (Dixon dark 1872)
- 1869 WHITBY (Eagle Clarke & Roebuck quoted Stephenson MS 1947)
- 1894 NORTH SHIELDS (?) (Howse 1894)
- 1903 FARNE ISLANDS (Bolam 1919)
- 1904 HARTLEPOOL (Clarke, quoted Orkin 1950)
- 1904 CULLERCOATS (?) (Meek 1904)
- 1909 HOLY ISLAND (Bolam 1919)
- 1924 WHITLEY BAY (Storror 1925)
- 1946 AMBLE (Stephenson MS 1947)
- 1973 EAST CHEVINGTON (Turner 1974) Peter Davis and Judy Dunn.

Pearlsides (*Mauroliscus muelleri*) recorded from Blyth. A specimen of this attractive deep water fish was found on Blyth beach on Friday 30th January 1981 by Stephen Melgray of Gosforth, and subsequently brought to the Hancock Museum for identification. It is a mid-water fish (living between 200—500m.) which rises to the surface waters at night, and is readily identified by the rows of light organs on the lower side of the body which are pale blue in colour. Although there are few recorded occurrences of Pearlsides being found on the coasts of Northumberland and Durham, it is regarded as one of the few deep sea fishes to be captured regularly in shallow water and is frequently stranded on the open ocean coasts of Europe.

P. S. Davis

A rare find in N. Yorkshire. The weather in June 1980 was so atrocious that I did not specially search our Rock Rose areas for the *Cistus* Forester, but it was in good numbers at Ashberry near Reivaux on June 8th. The Duke of Burgundy also obliged at Ashberry. Our best new find this year came on June 22nd when Mrs. Stubbs took a Speckled Yellow, *Pseudopanthera macularia* L. at Castle Bolton. This moth is not known in Yorkshire outside Grass Wood, where it is common.

F. Stubbs.

Holy Island Notes. During my stay on Holy Island from September 30th to October 7th 1980, I was able to make the following observations.

Heavy westerly winds, some reaching gale force, had driven most of the birds off the island and the main migratory passage of Passerines had gone through early this year during the last week of August. There was therefore a definite scarcity of birds as compared with the numbers one expects when conditions are normal.

However, about 24 late young swallows were still hawking around for flies, a difficult task in the very strong winds. In addition, there were about 200 Golden Plovers, a few Redwings and some flocks of Linnets. The sea-shore provided more to look at and here I saw a few Goosanders in the tidal estuary together with a large congregation of Bar-tailed Godwits, some Oyster Catchers, Curlews and Redshanks. Wigeon were so numerous as to be impossible to count. In Coves Bay we saw a fair number of seals sporting about in the sea with oyster catchers, shags, cormorants and dunlins.

Most of the flowers were over but a few like Grass of Parnassus, Scarlet Pimpernel and Viper's Bugloss were still in bloom, making quite a good show.

L. P. Hird.

Hedgerows and Fieldfares. Not many years ago hedgerows were laden with haws at the onset of winter. Today it is difficult to find a hedgerow more than two feet six inches high, the height to which they are reduced every autumn. The result is the destruction of berries before the birds can benefit from what should be their winter store.

In some areas there has been total destruction of hedgerows by pulling the bushes out by the roots so that larger prairie-like fields result.

There are many cases where high hedgerows have been cut down for no apparent reason as they have not interfered in any way with cultivation. I have taken special notice during these last few years of this farming practice and there is no doubt that many hedges could have been left alone, with consequent help to small birds. There are many examples. Hedgerows around permanent pasture land have been slashed down when they could have been left at a standard height of five feet six inches. Hedgerows dividing plantations, or running across scrubland, or acting as boundaries could all have been left standing. The result is that food, shelter and nesting sites have been lost.

Fieldfares are usually seen in the Medomsley area during the late weeks of November, but I have noticed over the last few years a steady decline in their numbers. For 60 years I have watched them come and go and they have given me untold pleasure. They used to be in hundreds but only 20 fieldfares appeared in November 1980. This decline has gone hand in hand with changes in the management of hedgerows and although it may be coincidence that the two things have occurred together, I do not think so. Can anything be done to reverse the trend?

R. Pirt.

Two Quotations. Written about one hundred years ago, the following are not only still appropriate but refer to a situation which is even more serious than it was then—

Souvenirs Entomologiques J. Henri Fabre (1023-1915), **Life of the Grasshopper.** . . . "To measure the importance of things by the foot rule of one's own turnip patch is a horrible method which makes us forget the essential for the sake of trivial detail. The short sighted man would upset the order of the universe rather than sacrifice a dozen plums. If he thinks of the insect at all it is only to speak of its extermination".

Rev. J. G. Wood (1884) **Homes without Hands.** "The badger is a creature that cannot live in close proximity to human beings, and has, in consequence been gradually banished from the greater part of England. Forest after forest falls before the woodman's axe, mile upon mile of barren bog land is drained and converted into fertile, food producing soil, and so to the very great satisfaction of the political economist, and the very great discomfiture of the naturalist, all our large

carnivora, whether furred or feathered, are gradually ousted from the soil whereon they formerly exercised unquestioned sway.

The badger has long been driven out of the land; the otter is but seldom seen in the rivers where once it was so plentiful; the polecat and marten have retired into the deepest recesses of the few forests which are still left to us, but over which the demon of bricks and mortar already casts an evil eye; and the stoat and weasel only hold their own on account of their diminutive size, and the comparative ease with which they obtain a supply of food".

A. Todd.

The Moth and the Candle. Late in September 1980, Mr. Tony Tynan handed me a tin box containing a number of insects. He had collected them a few days previously, on 21st September, from the shield surrounding a fluorescent light in Blakemor Farm, Cresswell, now a holiday accommodation for members of the Northumberland Wildlife Trust. The shield had not been looked into for almost a year so that the total collection represents a year of inquisitive insects. The catch was examined by a number of entomologists and contained the following—

Coleoptera—beetles

Aphodius rufipes (L.)—about 50, a widespread and common species, often coming to light (det. M. L. Luff).

Diptera—flies

Syrphus torvus Ost.—Sack.—a hoverfly, several specimens.

Scathophaga stercoraria (L.)—a yellow dung-fly, several specimens.

Stomoxys calcitrans—a stable fly, one female specimen.

Hydrotaea irritans (Fall.)—the common sweat fly, one rather battered female.

Tipula oleracea L.—one female (det. J. C. Coulson).

One other small Tipulid, not fully determined.

Also a few other battered Muscids and Chironomids too far gone to determine accurately and one Bibionid fly. (det. L. Davies).

Lepidoptera—moths

Lacanobia oleracea L. Bright-line Brown-eye. One specimen.

Manestra brassicae L. Cabbage moth, one.

Mesapamea secalis L. Common Rustic, two.

Caradrina morpheus Hufn. Mottled Rustic, one.

Mythimna pallens L. Common Wainscot, one.

Euxoa tritici L. White-line Dart, one.

Crocallis elinguaris L. Scalloped Oak, one.

Chrysoteuchia culmella L. A grass moth, one. (*Agriphila straminella* D&S-hand written correction)

Agriphila tristella D. & S. A grass moth, two.

Agapeta hamana L. A Tortrix moth, one.

Pandemis heparana D. & S. Dark Fruit-tree Tortrix, three.

Hofmannophila pseudospretella Stt. Brown House-moth, three.

Endrosia sarcitrella L. White-shouldered House-moth, three.

Except for one species all the above moths are common and widespread. The one exception is *Euxoa tritici* L. which is always found near the sea-coast.

T. C. D.

Butterflies in 1980. Here is a list of the butterflies which I have seen during the year. Most of them were on the dismantled railway line between Low Thornley and Thomley Bank, Map. Ref. NZ 163603 to 173605.

Dingy Skipper, first seen 24th May, seven or eight, not seen elsewhere.

Common Blue, 29th June, five or six, not seen elsewhere.

Large Skipper, 29th June, five or six, regularly seen elsewhere.

Wall Brown, 1st September, ten or twelve, abundant elsewhere.

Small Copper, one on 1st September, and four on 7th September, not seen elsewhere.

Large White, Small White, Green-veined White, plentiful at all times.

Orange-tip, plentiful early in the year.

Small Tortoiseshell, regularly plentiful.

Meadow Brown, plentiful in August.

Not seen on the railway line, but nearby were—

Painted Lady, in abundance in early August.

Red Admiral, one only in May, four on 7th September.

I have not seen the Small Heath this year although it has been there on previous occasions, but never in large numbers. D. McCutcheon

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THE POPLARS, CHESTER-LE-STREET

BY THE WAY

Secretaries of Societies and other contributors to the "Vasculum" are invited to send their notes to the Editor before 15th November, 1981.

SELECTIVE WEEDKILLERS.

We have written about the use of weedkillers on roadside verges on several occasions. A Government directive a few years ago seemed to point in the right direction, for it suggested that the use of these chemicals should be discontinued except where safety considerations necessitated their continued use. In most cases it was thought that no more than one foot or eighteen inches alongside the road would need to be sprayed. What has happened since then?

It would seem that the message got through to the County Councils for a considerable reduction in their spraying programme was noticed immediately afterwards. Since then some increase has taken place. Only a few days ago we motored to Holy Island and throughout the journey the stench of hormone weedkiller was an insistent reminder of its continued use.

It has recently become apparent too, that some District Councils are still operating the old system of some ten years ago, of spraying everything alongside roads for which they are responsible, and every little grassy patch in council housing estates, recreation areas and playing fields are over-treated with the chemical. Only a few days ago we observed the horrible death of thousands of dandelions, daisies, buttercups and speedwells on the very extensive riverside recreation fields at Chester-le-Street. We could have no quarrel with the treatment of the turf on the football pitches in this area for that is really up to the Council, but to treat the whole of the surrounding area is just not necessary and a complete waste of ratepayers' money. What had been a riot of colour a week before the spraying is now a uniform green. Complaints have been made but all have

been rejected. Apparently the fields have always been managed in this way so they must continue to suffer. The whole trouble seems to be that the weedkiller is there to buy so these out-of-date technical staffs feel impelled to buy it without thinking of the consequences. Their actions are often so mindless that one shudders at the possibilities of mistakes that could occur in other directions with such uninformed employees.

This is supposed to be the year of the butterfly. A special set of postage stamps has been printed and a special survey organised to try to find out just what the position is with regard to population numbers. There is no doubt that during the past twenty years butterfly numbers have plummeted, two species have recently become extinct in England and the numbers of the common species like the three whites, common blue, meadow brown and small heath have been very much reduced. It is possible that the position is very serious indeed and the survey will help to highlight the true state of affairs. The practice of spraying to kill all Dicotyledonous plants is the very thing to have brought about this reduction in numbers. If every local authority in the country is working as some are in our area the total effect on insect populations in general must be disastrous. Without the flowers and the nectar they produce many insects are deprived of their food materials and consequently die before they complete their life-cycles.

In spite of these facts which are obvious to all naturalists, the spraying goes on. Is there no way of informing those who perpetrate these foul deeds?

THE SOCIETIES

NORTHERN NATURALISTS' UNION

The first junior field meeting of 1981 was held at Whitburn on May 9th, led by Miss J. L. Dunn.

Grey, wet weather appeared on the scene just as the group gathered on the cliff above Whitburn Steel. Nonetheless the afternoon provided considerable interest. After a short introduction a party of 17 members descended the cliff and gradually worked down the shore to the low tide mark.

Perhaps the most notable finding of the afternoon was the large numbers of Lumpsuckers, *Cyclopterus lumpus*, on the shore. We found the bodies of more than a dozen dead individuals scattered over the sand and rocks together with four live specimens in pools at the low tide mark and clumps of spawn. These observations are consistent with information on the breeding biology of these fish (Wheeler, 1969). They are known to move shoreward between February and May to spawn. After spawning the females return to deeper water whilst the eggs are guarded by the males until hatching, 6-7 weeks later. Also of note were the large number of shore crabs. Groups of 12-25 individuals of varying sizes were found under several of the larger stones.

Distinct zones of animals were observed. The seaweeds, found particularly on the lower shore, were:— *Enteromorpha intestinalis*, *Fucus serratus* (Saw Wrack), *Fucus vesiculosus* (Bladder Wrack), *Ascophyllum nodosum* (Knotted Wrack), *Chondrus crispus* (Irish Moss), *Corallina officinalis*, and species of *Lithothamnion*.

A large variety of animals, including representatives from each of the major animal phyla were seen. The Sandhopper, *Talitrus saltator* was found, as expected, high up on the shore under stones, and amongst rotting seaweed. In the midshore region examples seen were *Lepidochitonina cinereus* (Grey Chiton), *Patella vulgata* (Common Limpet),

Littorina saxatilis (Rough Periwinkle), *Littorina littoralis* (Flat Periwinkle), *Littorina littorea* (Edible Periwinkle), *Nucella lapillus* (Dog Whelk), and *Balanus balanoides* (Acorn Barnacle). These animals are characteristic of this part of the shore and they are particularly well adapted to coping with the problems of wave action, dessication, and large temperature ranges, all of which prevail in this habitat.

The greatest number of animals were found on the lower shore where the range of conditions is less extreme. Listed systematically these were:— 2 Sponges, *Halichondria panicea* (Breadcrumb sponge), and *Grantia compressa* (Purse sponge); 2 Coelenterates, red and green forms of *Actinia equina* (Beadlet anemone), *Taelia felina* (Dahlia anemone), and various hydroids; 5 worms, *Harmothoe impar* (Scale worm). *Nereis pelagica*, *Arenicola manna* (Lug worm), *Pomatoceros triquetus* (Keel worm), and *Spirorbis borealis*; 5 molluscs. *Patina pellucida* (Blue-rayed limpet), *Gibbula cineraria* (Grey top shell), *Mytilus edulis* (Edible mussel), *Anomia ephippium* (Saddle oyster shells), probably *Hiatella arctica* bore-holes in stones and eggs of *Urtoria* spp. on *Fucus serratus*; 4 Crustacea, *Idotea* spp., *Carcinus maenas* (Shore crab), *Cancer pagurus* (Edible crab), *Eupagurus bernhardus* (Hermit crab) inside shell of Grey top shell; 2 Moss animals, *Membranipora membranacea* and *Flustra foliacea*; one Echinoderm, *Asterias rubens* (Common Starfish),-and 4 fishes, *Zoarces viviparus* (Viviparous Blenny), *Blennius pholis* (Shanny), *Cottus bubalis* (Long-spined Sea Scorpion), and *Cyclopterus lumpus* (Lumpsucker).

The 158th Field Meeting was held on 30th May 1981 in Wynyard Forest near Sedgfield. It was kindly organised by the Cleveland Naturalists' Field Club as part of their Centenary year. A record gathering of between 70 and 80 members met one of the foresters who led the main party through the estate. The woodland proved to be very mixed so that a good variety of wildlife was on view, helped by perfect weather.

Mrs. Moses listed 77 plants many of which were the planted trees. The most important species along the rides were *Achillea ptarmica*, *Ajuga reptans*, *Cardamine flexuosa*, *Cruciata laevipes*, *Carex sylvatica*, *Carex flacca*, *Epipactis helleborine*, *Equisetum sylvaticum*, *Hypericum hirsutum*, *Lotus corniculatus*, *Myosotis arvensis*, *Orchis mascula*, *Primula veris*, *Scrophularia nodosa*, *Viola riviniana*, *Viola reichenbachiana*.

Birds either seen or identified from song were blackbird, great tit, willow warbler, rook, yellow hammer, swallow, robin, wren, greenfinch, pheasant, chaffinch and reed bunting.

The entomologists beavered away with net and beating tray in well-nigh perfect conditions. Butterflies seen during the course of the afternoon were Green-veined White, Large White, Orange-tip, Small Heath, Dingy Skipper and Peacock. Of the moths the most interesting finds were *Panemeria tenebrata* Scop. and *Lomographa tenerata*. The last species has never been common in Durham (vc 66), known only from the Darlington area until recently when it seems to have spread for it was recently captured near Durham City by Mark Walker. The rhinoceros beetle, *Sinodendron cylindrica* was discovered under the bark of dead pines. Along the rides the low growing plants carried many specimens of the large black and red froghopper *Cercopsis vulnerata*. As far as anyone can remember, this insect has not been seen before in Durham and therefore constitutes a very important record.

NOTES AND RECORDS

NOTES

Jackals of the Air. During recent years there has been a rapid change in the method of heating our homes. At one time the only method of warming a house for a family's comfort and other requirements was from one or more coal fires. With the development of natural gas and oil as fuels for central heating the whole picture has changed. Many chimneys that were built for the coal fires and once belched with smoke are no longer in use and stand as tempting places for birds which nest in holes. The species which has literally jumped into the gap is the jackdaw. This bird has increased tremendously in this new urban setting, causing nuisance to man by blocking some chimneys and dropping heaps of debris down others. It is not uncommon for whole nests to collapse and suddenly appear, with chicks, in a cloud of soot, on the sitting-room hearthrug. In some places they have become such a pest that owners have taken to fitting wire netting covers over their chimney-pots.

Because of their rapid increase in numbers they have become a nuisance in another way, namely by destruction in the garden, apparently just for the fun of it. I have watched them pulling up young two inch bean seedlings for no obvious reason. They start at one end of a row and systematically pull them up one by one, just throwing them about on the soil surface, until they reach the end of the row. Then they start on the next row.

A more serious habit is their apparent intolerance of small birds. Again they destroy with evident satisfaction. I have seen flocks of jackdaws enter trees and hedgerows and systematically destroy other birds' nests, smashing eggs and scattering fledgelings on the ground. I could cite many specific examples of this kind of behaviour.

Coupled with predation by carrion crows described in the *Vasculum* of December 1980 by Hazel M. Johnson it would seem that small birds are having a hard time at present from several quarters.

R.Pirt

The rare migrant, Eversmann's Rustic (*Ochropleura fennica*) in Northumberland. A critical examination of some difficult moths prior to submission of our final batch of records to the B.R.C. Lepidoptera recording scheme has revealed a female Eversmann's Rustic (*Ochropleura fennica*), captured inside the old Armstrong Building of Newcastle University (Grid ref. 45 246652) on 15th August, 1972. This is one of only five known British specimens, all probably immigrants from north-east Europe. Two of the other specimens were also taken in August 1972, one at Shepperton, Middlesex and one at Mapperley, Nottingham.

I. D. and B. Wallace

New rookery at Chester-le-Street. A new rookery was founded in February this year (1981) in the midst of the built up area of Chester-le-Street. There were five nests in Ropery Lane, some in trees near the gates of the cemetery and the rest across the road in the grounds of the Catholic Church.

T.C.D.

Holy Island Notes. I spent a week on Holy Island from 9th to 16th May 1981. It was evident from the state of the flora that the snow in late April had affected the migratory birds and the flowering plants. I think many birds had been caught en route for this country, many being killed by the blizzard. Swallows had arrived on 8th May in small numbers and the House Martins did not come until 12th May. A flock of about 30 Fieldfares were still in the fields, trapped by the weather the north-east winds holding them back until the wind backed a little to the south, when they all left on 15th. During the week the weather was sunny but the north-east wind prevented much movement of any migratory species. Birds seen in small numbers were whinchat, spotted flycatcher, pied flycatcher, garden warbler, willow warbler, grey plover, godwit. Sanderling, turnstone, dunlin.

chaffinch, greenfinch, and wren. The Causeway mudflats had a flock of more than 200 ringed plover but it was rather startling to find that these were mostly non-breeding birds. There was also one long-tailed duck which looked in poor condition.

The early flowering plants were just starting to produce their flowers. These were Meadow Saxifrage (*Saxifraga granulata* L.), Slender Speedwell (*Veronica filiformis* Smith), Corn Salad (*Valerianella locusta* L.), Blue-eyed Mary (*Omphalodes verna* Moench), Balearic Pearlwort (*Arenaria balearica* L.), Primrose (*Primula vulgaris* Hudson), Cowslip (*Primula veris* L.)

L. P. Hird.

Some early birds. A few early arrivals were recorded flying over or near Axwell Park Lake at Blaydon. Sand Martins were present on April 12th, swallows and pied flycatchers were seen on April 21st and a common sandpiper on 26th April.

L. P. Hird.

Bird Notes 1981. A mild winter without any long spells of snow was followed by a cold spring. There were one or two mild days in early April but cold northerly and easterly winds prevailed, some two inches of snow falling at Gosforth on 25th.

Willow warblers were singing at Bolam on April 12th, but I did not observe any swallows until the 27th when four were flying over the Big Waters, Seaton Burn. Swifts arrived at West Gosforth on May 1 1th when ten were flying round in the early evening.

On May 5th four drake wigeon were circling a duck on Gosforth Park Lake and displaying. A Slavonian Grebe frequented the small pond at Killingworth New Town during April and May, -when seen by me on May 6th it was in the process of acquiring its summer plumage.

The Green Woodpecker continues to recover; one was calling in the grounds of Wallington Hall on June 1st when broods of recently fledged Coots were observed on two of the ponds.

A reed warbler was again resident in the reed bed at Gosforth Park Lake where a cuckoo was calling on June 8th.

C. J. Gent.

RECORDS

ARANEAE - SPIDERS

Clubiona norvegica Strand.

65

A single female taken from *Sphagnum* amongst *Eriophorum vaginatum*, *Deschampsia flexuosa*, *Juncus squarrosus* on peaty ground, drained blanket bog, Crossthaite Common (NY9124), on 14-7-80. There are few known localities of this peatland species in Britain, but possibly it is not actually rare. New to v.c. 65.

Hilaira nubigena Hull

65

An immature male and female were collected on 15-7-80 from *Sphagnum* in a *Juncus effusus* soligenous mire on Mickle Fell (NY8025). The spiders matured indoors on 27-7-80. During 1980 I also found *H. nubigena* in *Sphagnum/Juncus effusus* mires on the following Yorkshire mountains—Buckden Pike, Pen-y-Ghent and Gt. Shunner Fell, at altitudes from 550 to 650m. This species was previously known from six localities in Yorkshire (V.C. 64), Cumberland, Northumberland and Scotland.

D. Horsfield.

COLEOPTERA -BEETLES

<i>Aphodius lapponum</i> Gyl.	65
On blanket bog, Merrygill Moss, on 16-7-80 (NY8227), alt. 530m. An upland dung-beetle often found on mountains in Northern England.	
<i>Stenus brevipennis</i> Thomson	65
Found in <i>Sphagnum</i> in a <i>Juncus effusus</i> soligenous mire. Crossthwaite Common (NY9225) on 14-7-80. Also found in moss and litter. blanket bog, Merrygill Moss (NY8227) on 16-7-80; Given as rare, but widespread by Tottenham (1954, Handbk. Ident. Br. Insects 4(8a) :70).	
<i>Lesteva monticola</i> Kies	65
Found in <i>Sphagnum</i> in a <i>Juncus effusus</i> soligenous mire, on the upper slopes of Mickle Fell (NY8025), alt. 670m on 15-7-80. A mountain species.	
<i>Euaethes laeviusculus</i> Mann.	65
Found in moss in a base-rich flush, Yad Moss (NY7737) on 23-4-78.	
<i>Phyllotreta flexuosa</i> (Illiger)	65
In the short turf on the spoil heap of a disused lead mine, Greenhurth Mines (NY7732), alt. 550m) on 23-4-78. Members of this genus of 'flea-beetle' feed on the Cruciferae and the likely host plants therefore were <i>Cochlearia pyrenaica</i> DC or <i>Thiapsi alpestre</i> L. both of which were abundant on this tip.	
	D. Horsfield.

HETEROPTERA-BUGS

<i>Pachytomella parallela</i> (Myer-Dur)	65
A small black mirid which was swept in large numbers from acidic grassland (rough pasture) at Crossthwaite Common (NY9324) alt. 350m on 14-7-80. The previous records were for southern England and Scotland.	
<i>Teloleuca pellucens</i> (Fab.)	65
A single specimen found on the short moss growing on the burnt ground of blanket bog at Cronkley Fell (NY8327), alt. 530m on 16-7-80. A mountain species recorded from most of the upland regions of Yorkshire.	
<i>Saldula orthochila</i> (Fieber)	65
Found to be frequent in the short dry turf on the spoil heaps of the Silverband lead mines, Cronkley Fell (NY8327), alt. 530m on 16-7-80.	
	D. Horsfield.
<i>Coreopsis vulnerata</i> III.	66
Found in some numbers on low growing plants along the rides in Wynyard Forest, during the field meeting on 30th May 1981. This appears to be a new record for the vice-county.	
	T.C.D.

ODONATA-DRAGONFLIES

<i>Pyrrhosoma nymphula</i> Sulzer. Large Red Damselfly	67
Blanchland Moor 28-8-1980.	
<i>Aeshna juncea</i> L. Common Aeshna	67
Blanchland Moor 28-8-1980.	

Ischnura elegans van der Linden. Common Ischnura. 67
Blanchland Moor 28-8-1980.

Sympetrum striolatum Charpentier. Common Sympetrum. 67
Stocksfield 29-8-1980.

O. L. Gilbert.

LEPIDOPTERA-BUTTERFLIES AND MOTHS

Anthocharis cardamines L. Orange-tip. 67
Stocksfield, Acomb, Haltwhistle, Corbridge, all May 1980; Sandhoe 11-5-1980. Ryton 11-5-1980.
Cynthia cardui L. Painted Lady. 67
Two at Stocksfield, 28-7-1980, one at Corbridge 26-7-1980, one at Allery Bank August 1980, one at Blanchland
Moor 28-8-1980.

O. L. Gilbert.

Euproctis similis Fuess. Gold Tail. 66
One captured by a lighted window at about 12 midnight, the Ambulance Station Washington 19-9-1980. '
R. Henderson.

Orthosia munda D. & S. Twin-spotted Quaker. 67
Light-trap, Gosforth, 13-4-80.

Harpyia furcula Cl. Sallow Kitten. 66
Light-trap, Gosforth, 5-5-80.

Hadena confusa Hufn. Marbled Coronet 67
Light-trap, Gosforth, 9-5-80 and 10-5-80.

Cycnia mendica Cl. Muslin Moth. 67
Light-trap, Gosforth, 16-5-80.

Cucullia umbratica L. Common Shark. 67
Light-trap, Gosforth, 9-7-80.

Polychrysis moneta Fabr. Golden Plusia. 67
Light-trap, Gosforth, 24-7-80, 30-7-80, 7-8-80.

Acrонicta leporina L. The Miller. 67
Light-trap, Gosforth, 8-7-80.

Mark Walker.

Diarisia brunnea D. & S. Purple Clay 67
Witton-le-Wear nature reserve, 22-7-76.

Noctua pronuba L. Large Yellow Underwing 67
Witton-le-Wear nature reserve, common.

Noctua janthina D. & S. Lesser Broad-bordered Yellow Underwing 66
Witton-le-Wear nature reserve 6-8-76

Hecatera bicolorate Hufn. Broad-barred White 66
Witton-le-Wear nature reserve 3-7-77

<i>Oligia strigilis</i> L. Marbled Minor	66
Witton-le-Wear. Common.	
<i>Mesoigi'a h'terosa</i> Haw. Rosy Minor	66
Witton-le-Wear nature reserve, 22-7-76.	
<i>Mesapamea secalis</i> L. Common Rustic.	66
Witton-le-Wear, very common.	
<i>Apamea monoglypha</i> Hufn. Dark Arches.	66
Witton-le-Wear, very common.	
<i>Mythimna ferrago</i> Fabr. The Clay	66
Witton-le-Wear, very common.	
<i>Mythimna conigera</i> D. & S. Brown-line Bright-eye.	66
Witton-le-Wear nature reserve. 22-7-76.	
<i>Mythimna pa'lens</i> L. Common Wainscot	66
Witton-le-Wear nature reserve, common.	
<i>Mythimna impura</i> Hb. Smoky Wainscot.	66
Witton-le-Wear nature reserve, common.	
<i>Mythimna comma</i> Hb. Shoulder-striped Wainscot	66
Witton-le-Wear nature reserve, 14-6-76. ₂	
<i>Amphipyra tragopogonis</i> Cl. Mouse Moth.	66
Witton-le-Wear nature reserve, common.	
<i>Orthosia gothica</i> L. Hebrew Character	66
Witton-le-Wear nature reserve, common.	
<i>Orthosia incerta</i> Hufn. Clouded Drab.	66
Witton-le-Wear nature reserve, common.	
<i>Xanthia togata</i> Esp. Pink-barred Sallow	66
Witton-le-Wear nature reserve 28-8-76.	

F.B.Stubbs

Orchroleura fennica Tausch. Eversmann's Rustic. 67
A single female captured inside the old Armstrong Building of Newcastle upon Tyne University on 15th August 1972. Probably an immigrant from north-east Europe.

I. D. & B. Wallace.

Phalera bucephala L. Buff Tip. 66
Caught at street lighting. High Spen, alongside Chopwell Woods

Thyatira batis L. Peach Blossom. 66
Caught in the same place as above, common.

Achlya flavicornis L. Yellow Horned. 66
As above, common.

Drepna falcataria L. Pebble Hook-tip. 66
One larva in 1973 and one imago in 1977 at High Spen.

R Henderson

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CONTENTS

	Page
Editorial	17
The Conservation of the Semi-natural Vegetation of the Magnesian Limestone 3. The Durham Coast. J. P. Doody	17
The Collembola of Northumberland and Durham: an Historical Record. R. P. Blackshaw	28
The Bryophytes of Thirlwell Bank, Sunderland. R. Stevenson	37
Some Observations of the Phenomenon of Peat Deposition during Upper Carboniferous Times in the Pontop Pike and surrounding area of North West Durham. G. Evans	40

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SUBSCRIPTIONS

May we, once again, remind readers that subscriptions were due on January 1st last. A few are still unpaid. Would the guilty ones please be good enough to let the Hon. Treasurer have the money as soon as possible. Since the Northern Naturalists' Union is an organisation without any capital and without any source of income other than your subscriptions, and since the Vasculum has to be paid for before it is passed over the counter so to speak, it follows that your money is absolutely necessary for its continued production on time.

EDITORIAL

This October edition is not quite so large as usual. This is in order to be somewhat prudent about printing costs. Inflation continues but we are trying to avoid an increase in subscription for as long as possible.

THE CONSERVATION OF THE SEMI-NATURAL VEGETATION OF THE MAGNESIAN LIMESTONE 3. THE DURHAM COAST

J. P. DOODY

Nature Conservancy Council, Newcastle*

Introduction

The first two papers in this series dealt with the conservation of the semi-natural vegetation of the magnesian limestone in the Durham Escarpment and in Tyne and Wear (Vasculum, Oct. 1977 and Oct. 1980). The present paper completes the account by identifying the main features of nature conservation interest in the coastal zone, stretching from Crimdon Dene in the south to Seaham in the north.

Ecologically the three areas have much in common and the distinction between the escarpment in Durham and that in Tyne and Wear was drawn for convenience only. In the coastal zone the presence of physical features associated with glacial activity, particularly the denes and unstable calcareous boulder clay cliffs, together with the para-maritime nature of the habitats, make the area to some extent ecologically distinct. The underlying nature of the magnesian limestone substrate is still of course an important unifying feature.

The sea banks, cliffs, sand dunes and wooded denes of the Durham Coast have been recognised by naturalists for their botanical interest for many years. Baker and Tate (1868) recorded many rarities, although even then several species including *Cypripedium calceolus* were thought to have become extinct. At about the same time reports by local naturalists in the Sunderland Times give a valuable insight into the status of many of the plants occurring on the coast and also the reason for the demise of some of the more interesting species. Thus the description of Tunstall Hope suggests that the coal industry may have had a major impact on the vegetation. *Botrychium lunaria* and *Daphne mezereum* are described as having disappeared " ... and everything else in the form of vegetation is rapidly going, on account of the horrid and pernicious smoke and gases of the pit ... ",

More recently Heslop-Harrison and Richardson (1953) described the vegetation of the coast and denes and mentioned the advent of the railway, the establishing of three new collieries and the construction of a new coast road as having had a major adverse impact on the vegetation during the previous 50 years or so. Despite this, in 1968, Hart Warren Dunes, Blackhall Rocks and Hawthorn Dene were notified as Sites of Special Scientific Interest** and Castle Eden Dene was established in 1954 as one of the first Local Nature Reserves*** in Britain, in recognition of their value for nature conservation. More recently still (Ratcliffe 1978), almost the whole of the Durham Coast from Crimdon Dene to Hawthorn Dene, excluding those stretches which have been damaged by colliery workings and spoil, and Castle Eden Dene were identified as of national significance as examples of a semi-natural coastal habitat and woodland respectively.

Coastal Grassland

Species-rich calcareous grassland occurs extensively on the boulder clay and magnesian limestone cliffs along the whole coast. In common with similar grassland habitats on the escarpment this vegetation forms a link between the southern limestone grasslands and the northern arctic-alpine grasslands. However, here, in contrast to sites further inland, the northern *Sesleria caerulea* which is characteristic and often dominant in the intermediate grasslands, is almost completely absent. It would appear that this plant, which is better adapted to colder climates, finds the warmer coastal zone unsuitable for its survival.

It is in these coastal grasslands that several species reach the absolute northern limit of their distribution in Britain including *Ophrys insectifera* in Castle Eden Dene and *Orchis ustulata* at Hart Warren. Several other plants including *Serratula tinctoris*, *Hypericum montenum*, *Blackstonia perfoliata* and *Bromus erectus* occur near their northern limit and *Anacamptis pyramidalis*, which is predominantly a southern and western plant in Britain, is locally plentiful.

On the drier slopes where the soil has developed directly on the magnesian limestone cliffs as at Blackhall Rocks and Hawthorn Hive, some of the richest communities occur. Here boulder clay is absent or only present in a relatively thin layer in the cliff hollows and the species composition is somewhat similar to that occurring further inland on the magnesian limestone escarpment. Although *Sesleria caerulea* is absent many rarities are present together with the typical limestone plants of the coast. At Blackhall the grassland includes *Festuca ovina*, *Carex flacca*, *Briza media* and *Helictotrichon pratense* amongst the dominant species whilst *Geranium sanguineum*, *Helianthemum chamaecistus*, *Primula vulgaris*, *P. veris* and *Carlina vulgaris* are also present in some quantity. The more uncommon plants include good populations of

*Now with the Nature Conservancy Council's Chief Scientists Team, Godwin House, George Street, Huntingdon.

Notified under Sections 23 and 21 *** respectively of the National Parks and Access to the Countryside Act, 1949.

both *Anacamptis pyramidalis* and *Gymnadenia conopsea* together with the localised *Astragalus danicus*, and *Juniperus communis*. This last species is particularly interesting as it occurs extensively in Teesdale and is thought to have been an early coloniser of post-glacial skeletal soils. Although previously more extensive on the coast a few scattered bushes survive here and at Hawthorn Hive.

Locally drainage is impeded and the thin flushed soils are particularly rich in species including a number of rarer plants some with a typically northern distribution. In Blue House Gill on the north facing slope one small area supports *Pyrola rotundifolia* and *Pinguicula vulgaris* whilst nearby a seaward facing flush community includes these species and was reported to support *Epipactis palustris*. To the south of Blackhall Rocks another area has *Primula farinosa* in a cliff hollow which also supports a tall herb community with *Eupatorium cannabinum* and *Equisetum telmateium* prominent.

In the vicinity of Hawthorn Hive these flushed communities are largely absent, but the steep magnesian limestone cliffs support a rich vegetation which includes many of the species of the drier slopes at Blackhall. In addition *Serratula tinctoris*, *Ononis repens*, *Echium vulgare*, *Poterium sanguisorba* and *Filipendula ulmaria* are present and help form locally a species-rich tall herb community. A meadow at the top of the cliff has many of these species, but also includes *Coeloglossum viride* at its only station on the coast.

Several species recorded from Hawthorn Dene by Heslop-Harrison and Richardson (1953) were thought to be extinct, but the recent rediscovery of one of these, *Ophrys apifera*, in 1979 (T. C. Dunn pers comm) suggests that others may still be extant. The relocation of this species is of particular significance in the context of North East England since it is growing at the base of the sea cliff, in what is probably its only truly natural site in the area. All its other locations are in secondary man-made situations such as disused quarry floors and calcareous spoil banks.

Over much of the rest of the coast calcareous boulder clay obscures the magnesian limestone and in some areas, particularly south of Castle Eden Dene mouth, slippage has resulted in the banks almost reaching high water mark. The mature vegetation which has developed on these clay banks is also rich in species and although some of the rarer plants found in Blue House Gill and at Blackhall Rocks are absent there are particularly good populations of other species. Amongst these are the orchids *Gymnadenia conopsea*, *Anacamptis pyramidalis* and *Dactylorhiza fuchsii*, and the uncommon *Serratula tinctoria* is particularly plentiful. This last species of permanent pasture is another plant with a mainly southern distribution which is near its northern limit in Britain.

Because of the very unstable nature of this substrate the vegetation which has developed upon it ranges from a closed turf of the type described above, which to a large extent is similar to that which has developed on soils derived directly from magnesian limestone rock strata, to relatively open communities where species such as *Tussilago farfara*, *Anthyllis vulneraria*, *Centaurium erythraea* and *Ononis repens* are present.

These plants are also found together with *Plantago maritima*, *Agrostis stolonifera*, *Lotus corniculatus*, *Potentilla anserina* and *Euphrasia spp* in upper shore line communities which merge with those of the boulder clay cliffs in places along the coastline particularly southwards from Castle Eden Dene mouth. Towards high water mark the, vegetation includes true maritime driftline species *Cakile maritima* and *Salsola kali*.

Small gills occur along the length of the coast, the most important being Limekiln and Cross Gills, Blue House Gill, Blackhills Gill, Ash and Warren House Gill and Foxholes Dene. Towards their seaward end most of these have open grassland communities similar to those found elsewhere along the coast. In several areas *Pteridium aquilinum* dominates. However, even under these circumstances good populations of species such as *Rosa pimpinellifolia* and *Thalictrum minus*, together with many other limestone plants still survive.

Where these grasslands are sheltered from the wind, both on the gill sides and in depressions in the cliff top, low growing scrub has developed. Here there may be dense thickets of *Ligustrum vulgare* with extensive *Salix repens* and the herb communities include *Origanum vulgare*, *Geranium sanguinum* and notably in Foxholes Dene *Cirsium heterophyllum*. This last species has a predominantly northern distribution and is here growing at one of its very few lowland stations in County Durham.

In wet hollows where the soils are deeper and developed largely on boulder clay, tall communities composed of predominantly wetland species occur. Here and along the gill bottoms *Eupatorium cannabinum* is often dominant together with other plants including *Phragmites communis*, *Angelica sylvestris*, *Iris pseudacorus* and locally *Juncus subnodulosus*.

Although the most extensive grasslands occur on the cliff tops and clay banks there are several additional areas of grassland such as those, inland at Castle Eden Dene, on Beacon Hill and an adjacent railway cutting. The first of these notably supports *Ophrys insectifera* growing at its absolute northern limit in Britain and *Parnassia palustris* in a damp community which includes *Mercurialis perennis* beneath an open canopy of young ash. By contrast the other two areas support typical open species-rich turf developed on shallow soil. Beacon Hill has become invaded by gorse but the railway cutting provided a suitable substrate for the limestone plants and today the vegetation is very rich with *Serratula tinetoria* and *Hypericum montanum* growing together with typical limestone plants including *Helianthemum chamaecistus*, *Thymus drucei* and *Daucus carota*.

The Denes

The steep sided gorges (Denes) of the Durham Coast are thought to have been formed as a result of the rapid flow of water from glacial lakes when the coastal ice, which held them back, melted. Subsequent glaciation left layers of calcareous boulder clay on the valley slopes creating a habitat similar to that of the sea facing coastal cliffs. However, unlike these where exposure and the unstable nature of the substrate serve to restrict the development of scrub in all but the most sheltered spots, woodland probably developed quite quickly after the last glaciation some 10,000 years ago. Since then

although slippage has occurred from time to time, which may have opened up the canopy, the steep sided denes have probably remained continually wooded (for several thousand years) with varying degrees of interference by man.

Castle Eden Dene is undoubtedly the richest of the larger denes and is in places host natural. On the upper slopes where leaching of the largely calcareous boulder clay soils occurs *Quercus petraea* is dominant in the canopy, although elsewhere, *Fraxinus excelsior* and to some extent *Ulmus glabra* are more frequent. Ash is considered the natural dominant on the calcareous soils and where it occurs together with *Taxus baccata* in the understorey, as it does, particularly on the steeper north facing slopes, it would appear to represent some of the most natural woodland in north east England.

Beneath the oak canopy, *Ilex aquifolium* and *Sorbus aucuparia* are present whilst *Corylus avellana* is scattered throughout the area. Other species in the understorey include two species of cherry, *Prunus avium* and *P. pedus*, with *Euonymus europaeus*, *Viburnum opulus* and *Acer campestre*. This last species is of particular interest since like several of the grassland herbs it is here growing at or near its natural northern limit in Britain.

It is clear that there has been much interference particularly by way of the introduction of alien trees and shrubs including several species of conifer, sycamore and beech together with rhododendron. However, despite this, extensive areas retain many of the features of natural woodland and Bellamy (1970) has drawn comparisons between Castle Eden Dene and the pre-alpine woods of the Bavarian Alps.

In this context the abundance of *Phyllitis scolopendrium* in the moist Dene bottom, which typifies the ground flora of the Bavarian woodlands and is also found extensively in western Britain though not in the north east, suggests that Castle Eden Dene holds a unique place in the range of variation of natural woodland in Britain. In addition to this the herb flora is exceptionally rich with *Mercurialis perennis* and *Allium ursinum* often dominant, with *Chrysosplenium oppositifolium* plentiful where the soils are wet. Although several of the known past rarities have become extinct, including notably *Cypripedium calceolus*, others still survive, including *Epipactis helleborine* and *Convallaria majalis*. Lichens, mosses, liverworts and fungi are also plentiful and the woodland is probably richer in these groups than those elsewhere in the lowland areas of the north east.

Hawthorn Dene is smaller and has suffered rather more interference than Castle Eden, but still retains many features of natural woodland and has a rich flora and fauna. In the more inaccessible areas ash is the dominant tree and although *Quercus petraea* is present it is comparatively rare. On the flatter ground *Acer pseudoplatanus* and *Fagus sylvatica* have been planted and, locally at least, are the dominant species in the canopy.

The shrub layer includes many of the species also present in Castle Eden Dene, although yew is relatively scarce. The herb layer is also rich and in the spring it may be dominated by carpets of *Endymion non-scriptus*, *Mercurialis perennis* and *Allium*

ursinum although many of the species recorded by Heslop-Harrison and Richardson (1953) are now thought to be extinct. These include, columbine *Aquilegia vulgaris*, *Convallaria majalis* and *Cephalanthera longifolia*. The herb layer also includes several introductions amongst which *Polygonatum multiflorum* is one of the more interesting. This species is an uncommon plant of southern woodlands growing here in a natural setting although much further north and east than its present natural range.

There are several other wooded denes of which the Thorpe Bulmer, Crimdon and Hesleden Dene complex is the biggest. Unlike the two previous woodlands, where economic forestry operations have been on a relatively small scale and are no longer a consideration in management, this large area has relatively extensive plantations of conifer. However, despite this, immediately along the stream sides and on the steeper slopes near native deciduous woodland still survives.

In Hesleden Dene an ash, birch, hazel, scrub has developed which also includes oak. No doubt this has replaced felled mature woodland and the continued presence of many typical woodland herbs which include *Allium ursinum*, *Mercurialis perennis*, *Galium odoratum*, *Orchis mascula*, *Endymion non-scriptus* and *Primula vulgaris* is indicative of this.

Here and in the other smaller wooded Denes, Ryhope and Horden Dene (west of the railway), Seaham Dene and Dalton Dene, ash is the dominant species. Oak, beech, sycamore and birch may also be present over a shrub layer which includes *Crataegus monogyna*, *Sambucus nigra*, *Corylus avellana* and, in wetter spots, *Salix spp.* The herb layer may be quite rich in the least disturbed areas, and many typical woodland herbs are present which include *Ranunculus ficaria*, *Endymion non-scriptus* and *Arum maculatum*.

At Crimdon Dene and Warren House Gill shrub woodland has developed which again contains ash but also includes a fairly dense shrub layer. At Crimdon Dene the herb layer beneath this dense canopy is rich with good populations of *Orchis maculata* and *Primula veris* together with the primrose/cowslip hybrid, *Primula veris x vulgaris*.

Although these other denes, with perhaps the exception of the Hesleden Dene complex, are not as important to nature conservation as Castle Eden and Hawthorn Denes, they are very important in the local context. In addition to supporting populations of typical woodland herbs many of which are restricted to this type of habitat, they also support a variety of mammals, birds and insects. In particular they provide, along with the other woodland areas of scrub, important resting and feeding areas for migratory birds (notably passerines) which make land fall on the north east coast.

The Dune System

Either side of Crimdon Dene important plant communities have developed on sand dune and sand banks. Undoubtedly the most important of these, is the fixed dune

at Hart Warren*. Here despite the creation of a golf course and large scale erosion brought about largely as a consequence of the diversion of Crimdon Beck, species-rich calcareous dune grassland still survives.

Many of the species found elsewhere along the coast to the north including *Geranium sanguinum*, *Rosa pimpinellifolia* and *Thalictrum minus* occur in some profusion. There are two rare grasses, *Festuca juncifolia* and *Hordeum marinum* and of particular interest is the presence of *Orchis ustulata*. This last species was thought to be extinct in this its only north-eastern locality, however, it was refound in 1969 after an apparent absence of approximately 150 years.

North of Crimdon Beck a low eroding sand bank supports a number of species typical of the coastal magnesian limestone grasslands. Amongst these *Anacamptis pyramidalis* is perhaps the most interesting, although the presence of the maritime *Plantago maritima* and *Carex arenaria* in this community is also important.

The only fore dunes on the coast also occur here and in the longer term the binding capacity of *Ammophila arenaria* and *Agropyron junceiforme* may be of considerable importance to the survival of Hart Warren Dune.

Insects

The richness and diversity of the plant life of the Durham Coast is reflected in its insect fauna. Undoubtedly pride of place must go to the Durham Argus butterfly *Aricia artaxerxes salmactis* a form of the northern brown argus which only occurs in Durham, and has its most important colony on the sea cliffs at Castle Eden Dene mouth. Isolated small colonies also occur at Blue House Gill to the south and Hawthorn Dene to the north.

The food plant of this butterfly is the rockrose *Helianthemum chamaecistus* and clearly its survival depends on the retention of an adequate amount of this species. In addition it appears that the butterfly is also dependent on an association with an ant, *Myrmica scabrinodis*, (Pers. Comm. Mr. D. Sheppard) thus a mature vegetation in which both food plant and ant survive is essential to the continued wellbeing of the butterfly populations.

In addition to this species, throughout the length of the coastal cliffs there are important colonies of other lepidoptera. Amongst these the least minor moth *Photedes ceptiunculs*, which is present at Hawthorn Dene, has only one other station in County Durham at Cassop Vale. Another moth *Epiblema grandaevana* which was present along the coast at the turn of the century was thought to be extinct by 1949. However, it has since been refound at Castle Eden Dene mouth in 1972 (Sheppard and Monk 1976) and appears to have only one other site in Britain.

"Hart Warren Dene is in fact just in the county of Cleveland.

The insect fauna of Castle Eden Dene has perhaps been more intensively surveyed than in any other site in County Durham. For example a survey in 1972 identified 448 species of lepidoptera of which 305 were collected in the Dene between June and September of that year. (Sheppard and Monk 1976). In a more recent study the total number of Diptera (flies) recorded including both historical and more recent finds was 379 species, of which 184 have been confirmed by collecting since 1970 (Luff and Selman 1977). Although perhaps not as rich as Castle Eden Dene there is no reason to suppose that the other denes do not also support a rich insect fauna.

It is clear that the diversity and abundance of plant life which survives in the semi-natural vegetation of the coast also supports a rich and varied insect fauna. This includes several rare species as well as substantial populations of some of those which are more widespread. Amongst these the day flying 5 and 6 spot burnet moths *Zygaena loniceras* and *Zygaena folipendae* respectively, the wall brown butterfly, *Lasiommata megera*, and the common blue butterfly *Polyommatus icarus* are frequently found.

Clearly the continued existence of this rich insect fauna is dependent on the maintenance of semi-natural vegetation.

Conservation

The main influence on the semi-natural habitats of the coastal region has undoubtedly been from the development of the several large coal mines at Blackhall, Horden, Easington, Ryhope and Dawdon. The initial works associated with the development of these and the spoil tipped directly on the cliff tops destroyed a considerable area of magnesian limestone grassland and probably filled a number of gills and small denes.

Since then the policy of tipping directly off the coast into the sea has destroyed much of the marine life and left only vestigial drift-line communities which have developed on colliery waste and in some areas form a raised beach. Further destruction has been caused by pollution, particularly from noxious fumes produced when one of the tips caught fire. In addition the construction of the coastal railway and road both resulted in disturbance and destruction of parts of some of the richer denes and gills.

Other factors which have influenced the vegetation of the coast and denes since then include recreational pressures, woodland management, unauthorised tipping and coal gathering. The first of these is probably most significant with the development of caravan parks and Crimdon and south of Blackhall resulting in damage to sand dune and cliff communities. Whilst erosion is a natural process, when it is accelerated by development of footpaths as at Crimdon and by motorcycles as at Castle Eden Dene mouth, the regeneration of the vegetation may be inhibited. Thus the stabilising effect of the plants will be lost and the erosion is likely to continue. Erosion of the Hart Warren Dune is particularly acute threatening important plant communities, local amenity and several of the tees on a golf course. This has been caused by the progressive natural diversion of Crimdon Beck and this together with high tides and human agencies is accelerating the process.

Forestry operations have undoubtedly resulted in the loss of much of the wildlife interest in the Hesleden Dene complex. To some extent the same is also true at Castle Eden and Hawthorn Denes, however, despite the planting of exotic species including plantations of species like beech and sycamore, quite large areas still contain relatively natural deciduous woodland.

Recently tipping of soil into the small gills to facilitate agricultural reclamation in the vicinity of Blackhall Rocks has resulted in the loss of interest on the cliff top and at Crimdon Dene, sand dunes have been affected. In addition the laying of a water pipe along the base of the cliff between Blackhall and Horden by the National Coal Board has destroyed plant communities which have developed on the boulder clay which has slipped onto the upper beach. Other developments, associated ironically with the reclamation of Blackhall Colliery including the creation of a footpath and making provision for drainage at Blue House Gill, have also resulted in loss of vegetation.

Despite these destructive forces the Durham Coast and Denes are still of considerable conservation significance. The development of Castle Eden Dene as one of the country's first Local Nature Reserves has undoubtedly served to protect and enhance the value of the woodland both for wildlife conservation and as a local amenity, though some poor management decisions were made during the early years of the reserve. Hawthorn Dene has also been protected, in this case by the Durham County Conservation Trust, who bought it in 1966 with the help of a grant from the World Wildlife Fund and have developed it as a nature reserve.

Both sites are managed as semi-natural woodland and the main aim is to protect the natural canopy, shrub and herb layers and their associated fauna. To this end, non-native trees such as spruce, pine, sycamore and beech are selectively thinned and replaced with appropriate native trees, usually oak or ash. In this way the diversity and abundance of plants and animals which is characteristic of native woodland is protected and their value both for research and pleasure either for the casual observer or the naturalist is maintained.

Physical destruction of some of the other smaller denes has occurred as a consequence of unauthorised tipping where these are adjacent to housing. Clearly in this situation other factors such as disturbance, nest robbing and shooting form a constant threat to the animal life.

Two of the richest sections of the coast, Blackhall Rocks and Hawthorn Hive, are also managed as nature reserves. The Durham Trust acquired the leaseholds from the National Coal Board and Necoast Limited respectively. Negotiations are also under way with Durham County Council, who own Blue House Gill, for the extension of the Blackhall Rocks reserve to include this area. In contrast to the woodlands active management of these areas is minimal. However, protection from illegal tipping, fire and excessive erosion is essential if their wildlife interest is to be maintained. In an area which for the most part is very accessible to the public, protection from these pressures poses many problems.

The problems are likely to increase as the tipping of colliery waste ceases and the beaches gradually become less polluted. Thus the future of both coast and denes will depend on the reconciliation of the continued use of the coast by the Coal Board and for recreation with the requirements of nature conservation.

Conclusion

It is clear that the semi-natural vegetation of the coast and Denes of Durham is of considerable importance for nature conservation and that this interest must be considered along with that of Thrislington Plantation and Cassop Vale, inland in the escarpment and Upper Teesdale, in a national rather than a regional context. The coastal grasslands, in particular, form the most thermophilous example of the range of variation of this intermediate type of calcareous grassland in Durham, with those occurring in Teesdale having much closer affinities with the arctic-alpine grasslands.

The woodlands are important in their own right, and in the case of Castle Eden Dene must be considered along with the only other nationally important woodland in County Durham, namely Shipley and Great Woods.

In the first instance the continued management of the existing nature reserves in the interests of nature conservation is essential for the protection of the scientific interest of the area. In view of the national importance of much of the semi-natural vegetation this should be given priority over other uses. In the case of Castle Eden Dene the reconciliation of recreational development with the requirements of wildlife conservation seems to be working reasonably well and there would appear to be no reason why this principle should not be extended to the rest of the more important parts of the coastline.

In the long term the development of recreational use of the area, as the beaches are cleared of colliery waste, poses the most significant threat to the nature conservation interest and to some extent the landscape of the coastal zone. However, if the need to conserve the natural environment is taken as a major constraint upon the development of recreational facilities there is no reason why the two uses should not exist side by side.

Fundamental to any policy designed to protect the scientific interest of the coast will be the prevention of damaging developments. Thus access to the Denes and beach, illegal tipping and vandalism must be brought under control. Evidence from both Castle Eden Dene and Hawthorn Dene suggest, however, that in practise it is not easy and even where wardens are employed damage still occurs. Eventually it is a question of education and undoubtedly any extension of interpretative facilities associated with nature reserves will help.

At Hesleden Dene forestry operations have destroyed much of the interest. However, following identification of those areas which support predominantly native deciduous woodland an attempt should be made to protect the canopy from further destruction. Again this will not be easy, particularly since much of the area is being sold by the National Coal Board.

Whilst it is unlikely that all the problems referred to will be solved completely, the development of more formal access between Blackhall and Easington associated with a general improvement of the appearance of the area should help. The provision of several small and discreet car parks with good access to the beach would allow opportunities for seaside recreation. These could be linked by careful development of a coastal footpath (already largely in existence) with which could be coupled facilities for provision of information about the coast and its interests at strategic points.

Finally protection from excessive erosion is essential and any developments must be considered very carefully in order to avoid any additional pressures being exerted particularly on the boulder clay cliffs. It seems possible that as coal tipping ceases then the raised beach formed from the colliery spoil will disappear and result in erosion of the cliffs. (It appears from a report produced by the Hydraulics Research Station that in places the high water mark has moved seaward by as much as 400 feet since 1858). If this were to happen over a relatively short period of time and was associated with other pressures brought about by recreational uses then serious erosion could occur. Whilst continual slipping of the clay banks helps maintain the species rich communities, recolonisation is slow and could be overtaken very quickly by further accelerated erosion.

The problem of the erosion at Hart Warren is particularly acute and remedial action is urgently required. Unfortunately previous attempts to persuade Hartlepool and Easington District Councils to join in a scheme to help reverse the process by using a combination of diversion of the Crimdon Back to its original course and fencing to encourage sand accretion on the fore dunes have been unsuccessful. It is hoped that a new initiative presently being undertaken by the Nature Conservancy Council may prove to be more effective.

There would seem to be no reason why, with careful planning, the development of the Durham Coast for recreational and other uses should not be compatible with the requirements of nature conservation. However, it must be remembered that once destroyed the complexity of natural systems cannot readily be recreated and the fate of the unique wildlife interest of the Durham Coast and Denes will be determined largely by decisions taken today.

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**THE COLLEMBOLA OF NORTHUMBERLAND AND DURHAM:
AN HISTORICAL RECORD
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The first reported records of Collembola in Northumberland and Durham were made by Bagnall in 1906 (1). He then went on to publish records and describe species for over 40 years. Despite this work, it was 1960 (25) before anyone else published a further record of this group. Since then, authors have made detailed studies in specific habitats rather than sampling widely over the two counties as did Bagnall.

This paper is an attempt to collate all the available records of collembolan species within the old counties of Northumberland and Durham. Each record is referred to in the text and, where applicable, the original synonyms are given together with their records. The classification and nomenclature follow that of Gisin (22). Where there is doubt about synonymy I have marked it '?'. All the species listed have definitely been reported in the literature as occurring in Northumberland or Durham.

In the list of localities accompanying the records occasional use is made of the expressions 'Northumberland and Durham' and 'Northern Counties'. These are taken from Bagnall's texts. In certain cases it is possible that he intended to convey an impression of widespread distribution, however I feel it is more likely that he had simply forgotten where the specimens were taken or had lost the original records!

No attempt has been made to describe sites where specimens were taken; the small size of Collembola means that it is generally the microhabitat that is important. For most records, the site descriptions are available through the bibliography. Those references listed as unpublished (20, 23, 26, 28) are kept in the Department of Agricultural Biology, University of Newcastle upon Tyne. Knowledge of the species distribution in Northumberland and Durham is severely limited by the paucity of sampling; many more sites will have to be sampled before firm ideas can be formulated.

PODURIDAE

- Anurida calcarata* (Denis) syn. *Anuridella sub marina* Bagnall (8, 10), Whitburn.
A. denisi Bagnall (15, 17), Roker
A. ellipsoides Stach (25), Close House
A. forsslundi (Gisin) (20, 28), Close House, Cockle Park
A. granaria (Nicolet) (4), Northern Counties
A. marina (Willem) syn. *Anuridella marina* Willem (8, 10), Ryhope Dene, Seaton Sluice
A. maritima (Guerin) (2), syn. *A. bisetosa* Bagnall (19), Northumberland and Durham, Tynemouth
A. pygmaea (Borner) (25, 27, 28), s.vn. *Micranurida pygmaea* Borner (15), Close House, Cockle Park, Cox Green, Gibside, Hazelrigg, North Choppington, Stocksfield
A. sensillata Gisin (28), Close House
A. sexpuncta (Axelson), syn. *Paranura sexpuncta* var. *clavisetis* Axelson (15), Cox Green
A. thallossophila (Bagnall) (20, 28), s.vn. *Aphoromma thallossophila* Bagnall (15, 17), syn. *Anuridella immstiana* Bagnall (15), Alnmouth, Close House, Cockle Park, Gateshead, Jesmond Dene, Newcastle, Ryhope Dene, Seaton Sluice, Whitburn, Whitley Bay
A. tullbergi Shott (3, 4, 14), syn? *A. crassicornis* L. & O. M. Reuter (16), Barnard Castle, Chaster-le-Street, Derwent Valley, Lintzford, Penschaw, Piercebridge, Swalwell, Winlaton, Wylam.
Friesia afurcata Denis (28), Close House
F. claviseta Axelson (15), Alnmouth, Cox Green, Gibside, St. John's Chapel, Wooler
F. mirabilis (Tullberg) (4, 20, 27, 28, 29), syn? *F. poseidonis* Bagnall (15), Alnmouth, Close House, Cockle Park, Lockhaugh, Seaton Sluice
F. mirabilis (Tullberg) var. *reducta* Stach., s.vn. *F. truncata* Cassagnau (25), Close House, Hazelrigg, North Choppington, North Walbottle
F. tourratensis Cassagnau (28), Close House
Hypogastrura armata (Nicolet), syn. *Achorutes armatus* (Nicolet) (4), Northumberland and Durham
H. bengtssoni (Agren) syn. *Achorutes bengtssoni* Agren (17), Bradbury, Fatfield, Low Fell, Nawarth

H. denticulate (Bagnall) (20, 22, 24, 25, 27, 28), syn. *Achorutes denticulata* Bagnall (18), svn. *A. distenguendus* Bagnall (18), Alnmouth, Bradburv, Close House, Cock., ark, Cullercoats, Gibside, Hazelrigg, Low Fell, Nafferton Farm, Newcastle, North Choppington, Roddymoor, Team Valley Trading Estate, Whickham, Whitburn
H. gibbosa (Bagnall), syn. *Achorutes gibbosus* Bagnall (17), Axwell Park, Benton, Cullercoats, Fatfield, Gibside, Low Fell, Team Valley Trading Estate, Whickham *H. longispina* Tullberg, syn. *Schetterie tonqispine* (Willem) (19), Gibside
H. manubrialis (Tullberg) (24,25), syn. *Achorutes manubrialis* Tullberg (17), syn.
A. mucronalis Bagnall (18), Hazelrigg, North Choppington, North Walbottle, Roddymoor, Sunderland
H. purpurescens (Lubbock) (28), syn. *Achorutes purpurescens* Lubbock (41. syn. *A. britannicus* Bagnall (17), Close House, Gibside, Northumberland and Durham
H. sahlbergi (Reuter), syn. *Achorutes schneideri* Schaffer (4), syn. *A. sahlbergi* Reuter (17), Axwell Park, Northumberland and Durham
H. scotia (Carpenter and Evans), syn. *Achorutes scoticus* Carpenter and Evans (17), Blanchland, Chapel Fell, St. John's Chapel, Stanhope, Wooler
H. sigillata (Uzel), syn? *Achorutes rufescens* (Nicolet) (4), Northumberland and Durham
H. socialis (Uzel), syn. *Achorutes socialis* Uzel (10), syn. *Hypogastrura nivicola* Fitch (14), Cheviot
H. tullbergi (Schaffer), syn. *Achorutes browni* Bagnall (17), syn. *Lubbockiella browni* Bagnall (18), syn? *L.titoralis* (Axelson) (18), Alnmouth, Jesond Dene
H. viatica (Tullberg), svn. *Achorutes viaticus* (L.) (4), syn. *A. viaticus* Tullberg (17), syn. *A. subviaticus* Bagnall (18), Alnmouth, Sunderland, Warkworth
Neanura muscorum (Templeton) (24, 25, 28), syn. *Anoura (Achorutes) muscorum* Templeton (1), syn. *Anura muscorum* (Templeton) (2), Close House, Gibside, North Choppington, Roddymoor, Winlaton
Podura aquatica L. (4), Winlaton
P. nivicola Fitch, syn. *Hypogastrura nivicola* (Fitch) (14), Cheviot
Pseudachorutes asigillatus Börner (28), Close House
P. dubius Krausbauer (19), Axwell Park, Blaydon-on-Tyne
P. parvulus Börner (25, 28) Close House
Schaefferia willemi (Boner) (20, 28), syn. *Achorutes longispinus* Tullberg (4), syn.
Hypogastrura (Schüsteris) willemi Bonet (14), Close House, Cockle Park, Gibside, Tarsset, Winlaton
Willemia anophthalma Börner (20, 25, 28), Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle
W. aspinata Stach (20, 25), Cockle Park, Hazelrigg, North Choppington
Xenylla brevicauda (Tullberg) (3,4), Chopwell, Derwent Valley
X. humicola (O. Fabricius) (4), Roker, Whitley Bay
X. longispina Uzel (10), Wooler
X. maritima Tillberg (28), Close House

ONYCHIURIDAE

- Onychiurus absoloni* (Borner) (19), syn. *O. groenlandicus var. affinis* (Agren) (10), North Tyne, Tynedale, Upper Derwent, Wooler
O. armatus (Tullberg) Gisin (24), Roddymoor
O. burmeisteri (Lubbock) (28), Close House
O. debilis (Moniez), syn. *O. debilis* (Moniez) Denis *nee* Bagnall (9, 10), Northumberland Coast, Ryhope
O. edinensis Bagnall (12), Gibside
O. furcifer (Borner) (27, 28, 29), Close House, Cockle Park
O. halophilus Bagnall (14), Cullercoats
O. minutus Denis (12), Gibside
O. procepmptus Gisin (21, 27, 28, 29), Close House, Cockle Park
Tullbergia callipygosa Borner (20, 28), syn? *Paratullbergia carpenteri* Bagnall (11, 15), Blackhall Rocks, Close House, Cockle Park, Cox Green, Hylton
T. crassiscuspis Gisin (20, 25, 28), Close House, Cockle Park
T. denisi (Bagnall) (20, 25, 27, 28), syn. *Stenaphorura denisi* Bagnall (11), Blackhall Rocks, Close House, Cockle Park, Nafferton Farm
T. krausbaueri (Borner) (20, 22, 25, 27, 28, 29), syn. *Mesaphorura iowensis* (Mills) (12), Close House, Cockle Park, Hazelrigg, Nafferton Farm, North Choppington, North Walbottle
T. macdougalli (Bagnall), ssn. *Paratullbergia macdougalli* Bagnall (15), Blackhall Rocks, Seaton Sluice
T. quadrispina (Borner) ssn. *Stenaphorura axelsoni* Bagnall (15), syn. *S. lubbocki* Bagnall (15), syn. *S. absoloni* Bagnall (15), Blackhall Rocks, Gateshead, Hylton

Species dubiae

- Onychiurus flavidulus* Bagnall (15), replacement name for *O. flavescens* (10), St. John's Chapel
O. laminatipes Bagnall (14), Northumberland and Durham
O. moniez Bagnall (10), Gibside
O. scoticus Bagnall (9, 10), Alnmouth, Ryhope
O. stachi Bagnall (26), Seaton Sluice
Tullbergia japygidiformis (Absolon), syn? *Stenaphorura iapygidiformis* Absolon (11), Hylton

ISOTOMIDAE

- Agrenia bidenticulata* (Tullberg) (4, 16), syn. *Isotoma bidenticulata* Tullberg (3), Allendale, Chapel Fell, Cheviot, Edmundbyers, Harthope Burn, Harthope Fell, High Force, Kilhope Law, Langden Beck, Mickle Fell, North Tyne Valley, Northumberland, Piercebridge, Sharnberry Ghyll, Stanhope, Tarsset, Tyne Valley, Wolsingham, Wooler
Anurophorus binocularis (Kseneman), syn. *Pseudanurophorus binocularis* Kseneman (26), High Force

A. laricis Nicolet, syn. *Lipura corticina* Bourlet, Northumberland and Durham (1)
Archisotoma hesselsi (Packard) (14), syn. *Proisotoma besselsi* (Packard) (4), Whitley Bay
Folsomia achaeta (Bagnall) (13), Low Fell *F. brevifurca* (Bagnall) (20) Cockle Park
F. candida (Willem) (25, 27, 28) syn. *F. distincta* Bagnall (2), Alnmouth, Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle
F. diplophthalma (Axelson), syn. *Listeria diplophthalma* (Axelson) (19), Cox Green
F. fimetaria (L.) (20, 24, 25, 27, 28), syn. *F. fimetaria* Tullberg (12), Close House, Cockle Park, Hazelrigg, Roddymoor
F. garretti Bagnall (12,28), syn. *Cryptopygus garretti* (Bagnall) (25), Alnmouth, Close House, Hazelrigg, North Choppington, North Walbottle, Ryhope
F. listeri Bagnall (13), Gibside
F. manolachei Bagnall, syn. *F. manobechi* Bagnall (13), Ryhope *F. multiseta* Stach (20), Cockle Park
F. penicula Bagnall (13, 27, 28, 29), Close House, Cockle Park
F. quadrioculata (Tullberg), (4, 20, 24, 25, 27, 28), syn. *Isotoma quadrioculata* Tullberg (3), Close House, Cockle Park, Derwent Valley, Roddymoor
F. spinosa Kseneman (25, 27, 28), Close House, Cockle Park
Folsomides angularis (Axelson), syn. *Proisotoma angularis* (Axelson) (12), Whitley Bay
F. inaequalis (Bagnall), syn. *Folsomidiella inaequalis* Bagnall (19), Blanchland Moor, Sunnyside, Tinkler Row Fell
Isotoma antennalis (Bagnall), syn. *Isotomurus antennalis* Bagnall (16), Blanchland, Roughside, Stanhope
I. arborea (L.) (25), Hazelrigg, North Choppington, North Walbottle
I. cinerea (Nicolet) (4), Northumberland and Durham
I. maritima Tullberg, syn. *I. poseidonis* Bagnall (14), Alnmouth, Cullercoats
I. multisetis Carpenter and Phillips (20), Cockle Park
I. nivalis Carl (20,25), Cockle Park, Hazelrigg, North Choppington, North Walbottle
I. notabilis Schaffer (20, 25, 27, 28, 29), Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle
I. olivacea Tullberg (20, 24, 25, 27,28), syn. *I. grisescens* Schaffer (4), Close House, Cockle Park, North Choppington, Northumberland and Durham, Roddymoor
I. sensibilis (Tullberg) (4, 27, 28), Close House, Cockle Park, Northumberland and Durham
I. violacea Tullberg (28), Close House
I. viridis Bourlet (4, 20, 24, 25, 27, 28) syn. *I. hibernica* Carpenter (4), Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle, Northumberland and Durham, Roddymoor
I. westerlundi Reuter (25, 28), Close House, North Walbottle
Isotomielte minor (Schaffer) (14, 20, 25, 27, 28) Close House, Cockle Park, Hazelrigg, Northumberland and Durham

Isotomina thermophila (Axelson) (20), Cockle Park
Isotomodes productus (Axelson) (20, 24, 25, 27, 28), syn. *I. britannicus* Bagnall (14,19) Close House, Cockle Park, Hazelrigg, Hylton, North Choppington, North Walbottle, Northumberland and Durham, Roddymoor, Skirlnaked, Wooler
Isotomurus alticola (Carl) (14), Cheviot
I. palustris (Muller) (4, 20, 24, 25, 27, 28), Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle, Northumberland and Durham, Roddymoor
I. plumosus Bagnall (16), Rothbury
Proisotoma minima (Absolon) (15), Cox Green, Gibside
P. minuta (Tullberg) (4, 24, 25), syn. *Isotoma minuta* (3), Hazelrigg, North Choppington, North Walbottle, Roddymoor, Whitley Bay
P. schoetti (Dalle Torre), syn. *P. schoetti* Dalle Torre (*litoralis* Schottl) (4), Axwell Park
Tetracanthella pilose Schott, syn. *T. pilosa* (Schott] Axelson (5), Cheviot Peak, Corbridge, St. John's Chapel
T. wahlgreni Linnaniemi (10, 12, 19), Blanchland Moor, Bolt Law, Cheviot, Edmundbyers

Species dubiae

Archisotoma megalops Bagnall *sp. inquirenda* (15), Roker
A. nigricans Bagnall *sp. inquirenda* (15), Whitburn
Isotoma vestita Brown (16), Blanchland, Edmundbyers, Rothbury, Roughside
Tetracanthella brachyura Bagnall (19), Cheviot, Teesdale, Tynedale, Weardale

ENTOMOBRYIDAE

Cyphoderus albinus Nicolet (4), Northumberland and Durham
Heteromurus absolonii Kseneman (20), Cockle Park
H. nitidus (Templeton) (4, 27), Close House, Matfen, Newcastle, Winlaton
Entomobrya albocincta (Templeton) (4, 20, 24, 25, 27, 28) Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle, Roddymoor
E. aurantiaca Stach (28), Close House
E. lanuginosa (Nicolet) (4, 25), Hazelrigg, Northumberland and Durham *E. marginata* Tullberg (4), Northumberland and Durham
E. multifasciata (Tullberg) (4, 24, 25), Hazelrigg, North Choppington, North Walbottle, Northumberland and Durham, Roddymoor
E. muscorum (Nicolet) (4), Northumberland and Durham
E. nivalis (L.) (4, 20, 25, 27, 28), Close House, Cockle Park, Hazelrigg, North Choppington, Northumberland and Durham
Lepidocyrtus curvicollis Bourlet (4, 25, 28), Close House, North Choppington, Winlaton
L. cyaneus Tullberg (20, 25, 28), Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle

L. lanuginosus (Gmetin) (20, 25, 27, 28). Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle
L. paradoxus Uzel (20), Cockle Park
Orchesella alticola Uzel (14). Cheviot Summit
O. cincta (L.) (4, 24, 25, 28). Close House, Hazelrigg, North Choppington, North Walbottle, Northumberland and Durham, Roddymoor
O. villosa (Geoffrey) (4, 20, 25, 28). Close House, Cockle Park, Hazelrigg, North Choppington, North Walbottle, Northumberland and Durham
Pseudosinella alba (Packard) (20, 28). Close House, Cockle Park
P. decipiens Denis (20). syn? *P. handschini* Bagnall (18). Alnmouth, Cockle Park Fatfield
P. fallax Börner (18), Cullercoats
P. immaculata (Lie-Pettersen) (18). syn. *P. cavernarum* Absolon (4), Ormiston
P. inflata Bonet, syn? *P. maritima* Bagnall (18), Alnmouth, Cullercoats, Jesmond Dene, Ryhope Dene
P. octopuncta Börner (18). Fatfield, Low Fell, Whickham
P. sexoculata Schott (20, 25, 25). Cockle Park, Hazelrigg, North Choppington, Roddymoor
Sinella coeca (Schott) (20), Cockle Park
Tomocerus minor (Lubbock) (28). Close House
Willowsie buski (Lubbock) (28), syn. *Sira buski* Lubbock (4). Close House, Newcastle, Winlaton
Wnigromaculata (Lubbock) (25), Hazelrigg, North Walbottle
Species dubia
Orchesella anomala Carpenter, syn. *O. alticola* Uzel var. *obscura* Hansch (15), Cheviot

SMINTHURIDAE

Arrhopalites caecus (Tullberg), syn. *Sminthurinus caecus* (Tullberg) f. *principalis* (4), syn. *S. caecus* (Tullberg) var. *attenuatus* Carpenter and Evans (4). Alnmouth, Hylton, Newcastle, Winlaton, Wylam
A. principalis Stach syn? *A. binoculatus* (Börner) (6). St. John's Chapel
A. tenuis Stacfi (20). Cockle Park
Bourletiella bicincta (Koch), syn. *Sminthurus cinctus* Tullberg (3), syn. *B. cincta* (Tullberg) (4). Derwent Valley, Gibside, Winlaton
B. bilineata (Bourlet) (4), Alnwick, Corbridge, Gibside, Haydon Bridge
B. hortensis (Fitch) (4, 20, 24), Cockle Park, Gibside, Roddymoor
B. insignis (Reuter), syn? *B. novemlineatus* var. *insignis* (4). Greatham, Whitley Bay
B. novemlineata (Tullberg) syn. *Deuteriosminthurus novemlineatus* var. *pilosicauda* (Reuter) (6). Whitley Bay
B. pallipes (Lubbock) (4). Winlaton
Dicrytoma fusca (Lucas) (28). Close House

B. minuta (Fabricius) (28). Close House
Neelus minimus Willem (20). Cockle Park
Neelus marinus Folsom (20, 28), Close House, Cockle Park
Sminthurides aquaticus (Bourlet) (4). Greatham, Whitley Bay
S. elegantula Reuter, ssn. *S. malmgreni* (Tullberg). var. *elegantula* Reuter (4), Geatham, Whitley Bay
S. pumilis Krausbauer (20, 25), Close House, Cockle Park
S. schoetti (Axelson). ssn. *S. schotti* Axelson var. *bilineata* Axelson (6). St. John's Chapel
S. violaceus (Reuter) (4, 20). Cockle Park, Winlato
Sminthurinus albifrons (Tullberg) (6). Ninebanks, Weardale, Wooler
S. aureus (Lubbock) (4, 20, 28). Close House, Cockle Park, Gibside
S. bimaculatus (Axelson) (20), Cockle Park
S. elegans [Fitch] (20). ssn. *S. quadrilineatus* (Tullberg) var. *orchopus* (4). Cockle Park, Gibside
S. igniceps (Reuter) (4). Newcastle
S. niger (Lubbock) (4, 20). Cockle Park, Newcastle, Wylam
S. trinotatus Axelson, ssn. *S. fenestratus* (Bomer) (6). Hylton
Sminthurus fuscus (L.) (28). Close House
S. lubbocki (Tullberg), ssn. *Sphyrotheca lubbocki* (Tullberg) (6). Alnwick Moor, Blanchland
S. multifasciatus Reuter (20). ssn. *Sphyrotheca multifasciatus* (Reuter) (6), Cockle Park, Hylton
S. viridis (L.) (20, 24, 28). Close House, Cockle Park, Roddymoor

Species dubiae

Bourletiella coronata Bagnall, ssn. *Deuterosminthurus coronatus* Bagnall (6). Gibside
Sminthurinus cingula Bagnall, ssn. *S. cingulatus* Bagnall (6, 7), Langdon Beck
 Additionally, Bagnall recorded two species which I am unable to place with any degree of certainty. The first is *Bourletiella pallipes* which he found at Winlato Mill (4) and may possibly be synonymous with *B. pallipes* (Bourlet). although Bagnall himself states that Axelson 'treats *pallipes* as a variety of *bicincta* (Koch). *B. bicincta* was also recorded from Winlato Mill by Bagnall (4). The second species is *Smithurinus albus* Schäffer which Bagnall recorded from Wooler(6). I have found no information on this species.

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THE BRYOPHYTES OF THIRLWELL BANK, SUNDERLAND
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Gilbert (1968), investigating the bryophytes of the Newcastle area recorded that, after three years search, he had only been able to find 16 mosses and two hepatics in the Central area. This low total he ascribed to SO₂ pollution. Certain circumstances however permitted pollution intolerant species to penetrate further into the city centre. These included shelter, the presence of alkaline substances, and dampness. In Jesmond Dene, which represented a favourably sheltered site, he was able to add another 12 species to his list for the city (Table 1).

He noted that plerocarpous species are particularly intolerant of pollution, which also has the effect of inhibiting production of sporophytes,

Gilbert used *Grimma pulvinata* as an indicator species for demonstrating degrees of aerial pollution as it will not tolerate winter SO₂ levels of more than 50µm/m³

He indicated at, at the time of writing, a *Grimma pulvinata* desert extended to the south of the Tyne, into County Durham.

Central Sunderland in 1968 presumably had pollution levels very similar to those existing in Central Newcastle. However, figures supplied by the Department of Public Health in Sunderland demonstrate that there has been a progressive decrease in both SO₂ and smoke levels since 1976. Observations on the bryoflora tend to confirm this.

Thirlwell Bank (NZ388.584), a small area of waste land, lies on the north bank of the Wear, in Southwick, Sunderland. It is close to areas of inner city housing, in which clean air zones have not yet been established, as well as to major industrial complexes. It is therefore likely to be as polluted as anywhere in the town.

Until recent reclamation work, which has buried most of the site under a coating of top soil, a great variety of substrates existed, including Magnesian Limestone grassland, basic walls, acid railway ballast, and small wet flushes.

It is a minor tragedy that this site should have been destroyed by such insensitive "reclamation" as, in addition to its bryological interest, it housed no less than 19 species of vascular plants which, according to Graham (1979) could be classified as uncommon or rare in C. Durham as a whole. The most spectacular member of this assemblage was a splendid colony of Northern Marsh Orchids (*Dactylorhiza purpurella*), a plant we can ill afford to lose.

With a little thought and consultation the site could have been reclaimed in such a way as to enhance its natural history interest, as well as improving it aesthetically. Such an approach would also have been a great deal cheaper, leaving valuable funds to be spent in areas where they are more needed.

A total of 48 species (Table 2) were found on this site. If one discounts all those species peculiar to habitats which were not found by Gilbert in Central Newcastle i.e. acid, basic and wet habitats, then one is left with a residue of 27 species of "ubiquitous" bryophytes.

This may not seem like a very marked improvement on the 18 species of Central Newcastle. However, whereas many of the species found by Gilbert were present only in small relict colonies, the vast majority of these species were abundant and healthy. Moreover there is a much higher percentage (33% against 12%) of pleurocarpous species present, and a high percentage of the species present (38%) were fruiting.

These figures suggest that despite differences in variety of habitat present there were real differences between the bryoflora of Central Newcastle in 1968 and that of Central Sunderland in 1980. These differences may be reasonably ascribed to reductions in levels of SO₂ pollution during the intervening years.

Acknowledgements

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TABLE 1

Bryophytes from Central Newcastle

Barbula convoluta
Barbula tophacea
Brachythecium rubebutum
Bryum argenteum
Bryum bicolor
Bryum caespiticium
Bryum capillare
Ceratodon purpureus
Dicranella heteromalla
Encalypta streptocarpa
Eurhynchium praelongum
Funaria hygrometrica
Leptobryum pyriforme
Pohlia annotina (agg)
Tortula muralis
Lophocolea heterophylla
Marchantia polymorpha

Jesmond Dene

Atrichum undulatum
Brachythecium populeum
Calliergon cuspidatum
Dicranoweissia cirrata
Hypnum cupressiforme
Mnium hornum
Plagiommium undulatum
Rhizomnium punctatum
Rhynchostegium confertum
Rhynchostegium murale
Rhytidadelphus squarrosus
Lophocolea sp.

(Nomenclature revised according to Smith (1978))

TABLE 2

Bryophyte Species from Thirlwell Bank

Aloina aloides var *ambigua* +
Amblystegium serpens +
Barbula convoluta +
Barbula cylindrica
Barbula fallax
Barbula tophacea
Barbula trifaria
Barbula unguiculata +
Brachythecium glareosum
Brachythecium populeum
Brachythecium rubebutum +
Brachythecium velutinum +
Bryum argenteum +

C	<i>Bryum bicolor</i>	
	<i>Bryum caespiticium</i> +	
	<i>Bryum capillare</i>	
	<i>Bryum pseudotriquetrum</i>	W
	<i>Calliergon cuspidatum</i>	W
	<i>Campylium stellatum</i>	W
	<i>Campylopus introflexus</i>	A
	<i>Ceratodon purpureus</i> +	
C	<i>Cratoneuron filicinum</i>	W
	<i>Ctenidium molluscum</i>	
	<i>Dicranella heteromalla</i>	A
	<i>Dicranella varia</i> +	W
	<i>Encalypta streptocarpa</i>	

<i>Eurhynchium praelongum</i>		<i>Polytrichum juniperinum</i>	A
<i>Eurhynchium striatum</i>	C	<i>Polytrichum longisetum</i> +	A
<i>Eurhynchium ""Iftzii</i>		<i>Polytrichum piliferum</i>	A
<i>Fissidens bryv._cs</i> +		<i>Pseudoscleropodium purum</i>	
<i>Fissidens cristatus</i>	C	<i>Rhynchostegium confertum</i> +	
<i>Fissidens taxifolius</i>		<i>Schistidium apocarpum</i> +	C
<i>Funaria hygrometrica</i> +		<i>Tortula muralis</i> +	C
<i>Grimmia pulvinata</i> +	C	<i>Cephalozella cf hampeana</i>	
<i>Hypnum cupressiforme</i> var		<i>Leiocolea badensis</i>	C
<i>cupressiforme</i>			
<i>Mnium hornum</i>		<i>Riccardia pinguis</i>	W
<i>Polytrichum formosum</i>	A	<i>Riccardia sinuata</i>	W

+ = fruiting

C = Calicicolous species

A = Acidophilous species

W = Hydrophilous species

Nomenclature follows Paton (1965) and Smith (1978))

**SOME OBSERVATIONS OF THE PHENOMENON OF PEAT DEPOSITION DURING
UPPER CARBONIFEROUS TIMES IN THE PONTOP PIKE AND SURROUNDING
AREA OF
NORTH' WEST DURHAM
GEORGE EVANS
8 Dipwood Way, Rowlands Gill, Tyne and Wear**

Pontop Pike is better known today as the site of the television mast and broadcasting station which serve most of northern England.

In former times it was well known for the rich seams of coal which were worked to supply industry and the home with some of the best coal ever produced in this country. It is said that on top of the Pike, which is approximately 330 metres above sea level, there was formerly a circular earth mound which was thought to be the site of a pre-historic burial, or the grave of a person belonging to the long headed race which inhabited this country during the Neolithic or Stone Age Period before the Christian Era. From the neighbourhood flint arrow heads have been found.

The geological formation of the area is very simple, being entirely that of the Upper Carboniferous Period. Some of the most productive coal seams in Durham have been worked in the strata of the Pike, the quality of the coal being second to none. Approximately 11 seams of coal have been worked from shafts and drift mines in and around the Pike.

The topmost seam was named the Crow Coal and was found at a depth of approximately three metres from the surface. As it was only 23 cm. thick it was never worked. The bottom seam to be worked (omitting the Victoria seam which was very little worked) was the Brockwell seam. It occurred in the South Medomsley shafts at a depth of about 192 metres.

It is not my intention to describe all the coal seams that were worked beneath the Pike, but only to deal with what I would call three horizons of peat deposition when certain coal seams were laid down.

In my paper on the "Presence of Torrent Courses of Upper Carboniferous Age", (*Vasculum* 64, 3, pp. 42-51). I described in my observations variations in the thickness of coal seams and how this could have been caused. Using similar methods of deduction I will try to describe certain phenomena which I have noticed in several seams at three periods of peat deposition in the Pontop Pike and Surrounding neighbourhood of North West Durham.

During my working life in the mines of North West Durham, I have walked and sometimes even crawled many thousands of kilometres in the strata of 13 coal seams, also the intervening strata between the seams when driving what we called cross-measure stone drifts. I have always tried to be observant in my work, and any peculiarity which I saw was further investigated for a possible explanation. I have worked coal seams which were so close together they could be worked as one. I have also seen seams separate to such an extent that they were worked as separate seams with different names.

The two lowest seams in North West Durham that were close enough together to be worked as one were the Top and Bottom Busty seams. These two seams were worked as one in the Pontop, South Medomsley and Medomsley areas, all areas of comparatively high ground at the present time. At Hamsterley Colliery in the Derwent Valley these two seams were worked separately, the distance between them being approximately eight metres. These two seams outcropped on both sides of the valley in the Chopwell and Hamsterley areas. They were also worked separately at High Spen and Blaydon Burn except for one small area on Barlow Fell where I saw them worked as one seam when I was employed at Blaydon Burn Mary Drift in 1923. On the eastern side of Pontop Pike these two seams start to separate and become thinner.

There seems no doubt that after the deposition of the peat which eventually became the Bottom Busty seam, the area became submerged and this halted further peat growth. It is possible that subsidence took place in the whole of the area where the two seams were worked separately. The peat of the Bottom Busty' then became covered with mud and sand which eventually formed the shales and sandstones now found above the Bottom Busty seam. This did not happen in the area where the two seams were found close together, therefore that area must have been at a higher altitude, possibly covered with very shallow water which did not allow vegetation to grow to form peat. Proof of this could be that during the whole of the period when sands and shales were being laid down, no peat deposition whatever took place between the two seams in the double section area until the whole area became a peat swamp when the seat earth was formed, that is over both single seam and double

seam areas. What could be some proof of this is that the seggar clay (seat earth) is identical in single seam areas and double seam areas. It was only suitable for the making of common bricks, whereas that beneath the Bottom Busty was of much better quality.

After the formation of the peat which eventually became the Top Busty seam the peat growth was halted, probably by subsidence again, which caused the whole area to become inundated by water. The water brought in sands which covered the whole area of the peat swamp. These sands became the roof of the Top Busty seam.

The next stages followed a fairly even system of the deposition of the strata. The Tilley seam followed by the Hodge seam, the latter being too thin to be worked in most parts of Durham, were then laid down. These were followed by the Harvey better known as the Towneley seam and the Main coal of the Pontop area. The Main coal was actually the well known Hutton seam of most parts of Durham.

These beds were followed by another double section seam which became known as the Hutton seam in the Pontop area and was often referred to as the Pontop Hutton. It consisted of two seams of coal with a thin band of shale between them which was only about 7cm. thick at Medomsley Colliery. Although this double seam became well known as the Hutton seam it was in fact the Maudlin and Low Main seams of other parts of Durham.

East of Pontop Pike the Maudlin which is the top section of the Pontop Hutton divides into three seams separated by thin bands of shale and seggar. Further east the top section suffers impoverishment and is not the Maudlin so well known in East Durham whilst the bottom section becomes the Low Main of East Durham but is outside the scope of this work.

The Pontop Hutton was found at a depth of approximately 30 metres in the shaft area of Medomsley Colliery. The seam outcropped on all sides of Medomsley Village and was denuded in the Pont and Derwent Valleys. This denudation continued right across to the Tyne Valley where a small area was preserved in the Crawcrook area by the downthrow of the Ninety Fathom Fault. Another small area was preserved on the south side of the Tantobie Fault in the Chopwell area.

In the Crawcrook area these two seams were known as the Main coal and the Low Main, and the latter was sometimes called the Crow coal. It is of some interest that the thickness of the strata between these two seams in the Crawcrook area had increased to approximately 20 metres.

The Pontop Hutton occurred in the Delight pit on the Dipton side of the Pike at a depth of approximately 116.3 metres, South Medomsley Annie pit at approximately 109 metres, Pontop Colliery at 122.5 metres, and at East Pontop at approximately 121 metres. It was a good gas and house coal with an average thickness of just under 2.5 metres.

Having described two horizons of the strata where thick double seams have been worked in the higher ground of the Medomsley and Pontop area, my observations show that it happened a third time, but in this case only in the Pontop area.

After the formation of the Hutton seam, the next peat deposition was the formation of the Brass Thill seam followed by the Five-quarter and Shield Row seams, the latter being the topmost seam to be worked in the Pike area. The Brass Thill seam had an average thickness of just under 1.5 metres and the Five-quarter an average thickness of just over 1.5 metres.

It is remarkable that the Brass Thill and the Five-quarter were close enough together to be worked as one seam in the Pontop Pike area from the following pits- East Castle which was situated on the southern slope of Pontop Pike, Pontop Colliery on the east side of the Pike, and the Old Moor pit or East Pontop Colliery which was also situated on the east side of the Pike. There were also hundreds of drift mines which worked the double section seam on the slopes of the Pike from as early as the 17th century.

The intervening strata between the two seams rapidly increases as you get further away from the Pike. This was noticeable in the sinking of the Delight Colliery at Dipton where the Brass Thill was passed through at a depth of just over 60 metres, and the Five-quarter at a depth of 64.6 metres.

The question is, what caused these rich coal seams which were suitable for coking, gas, steam and the home, to be so rich in thickness and quality beneath and sometimes adjoining Pontop Pike?

Conclusions

1. There seems to be no doubt that the period of peat formation was far longer for the seams under the Pike than for the same seams found away from the Pike in the three horizons described.

2. This suggests that during the time of peat deposition the Pike area was an area of high ground compared with the surrounding area. The best indication of this is in the Busty seams where there seems to be no doubt that after the peat was laid down which formed the bottom section (named the Bottom Busty) the whole area became inundated which brought to a halt any further peat growth.

The water which stopped peat growth would be very shallow in the Pontop Pike and Medomsley areas. Some evidence in support of this is the seven metres or so of sediments surrounding the Pike. These were not laid down on the Pike itself and no peat deposition took place there until the mud was laid down across the whole area. This mud formed the seat earth, as the seggar clay is sometimes called, on which the peat growth took place to form what eventually became the Top Busty seam.

3. It is possible that there was something which caused fluctuations of the level of the surface during the periods of peat formation of the three horizons referred to.

4. Is it just a coincidence that even today Pontop Pike is an area of comparatively high ground?
5. Some evidence in support of uplift of the strata in the Pike area, is the presence of several geological faults in the strata of the Pike. The largest of these faults is the Tantobie Fault which runs from Tantobie to Chopwell where it joins the Ninety Fathom Fault.
6. Could it be possible that magma movements beneath the Weardale granite, which extends across the country from Weardale to the Pontop Pike area, has had some effect on the rise and fall of the strata in the Pike area?
7. Due to the extraction of so many seams of coal beneath the Pike, it is my opinion that the ground of the Pike will continue to subside for a number of years, therefore surface levels will not provide reliable information as to whether earth movement caused by the magma beneath the granite is having any further effect on movement of the strata.
8. Because of the extraction of 11 seams of coal with a total thickness of over 13 metres the land will take a long time to settle. In my experience it is not so much the coal that is extracted that causes instability, but the coal that is left in that causes most of the surface damage.

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BY THE WAY

Secretaries of Societies and other contributors to the "Vasculum" are invited to send their notes to the Editor before 15th March 1982.

BUTTERFLY YEAR

The issue of a special set of four postage stamps in May 1981, marked the beginning of a programme of butterfly events, displays, lectures, press and radio reports that are planned to last into late 1982. The purpose of all this publicity is to alert the public to the serious decline in numbers of most of our butterfly species.

Promotion of awareness of butterflies and their needs is one of the most important of all aspects of conservation. It is most important to stress the need to conserve the habitats, not just the butterflies. Butterflies are probably the first creatures to suffer if a habitat is changed, so they are indicators of how all other creatures are surviving or suffering.

We would not deny the farmer and forester his needs, but it must be borne in mind that their first concern will always be efficiency and in pursuing this aim many have overlooked the possibility of leaving certain areas suited for wildlife which might not necessarily prejudice their aim for greater production. One of the Large Blue colonies was unwittingly destroyed by the plough and there is little doubt that many other good habitats have been eliminated in the same way. This is where awareness is needed.

In passing, it may be just as well to mention that individual farmers are often not to blame. They cannot all be expected to be expert students of ecology. We would, however, take issue with the Ministry of Agriculture, Fisheries and Food. Their advisory leaflets on the treatment of land for improvement take little account of the requirements of wildlife. We feel that there is considerable room for much overdue discussion between Government agencies if we are to make the officers of M.A.A.F. aware of the damage they are causing by their inflexible policies.

SEAWEEDES

Dr. F. G. Hardy is currently compiling a new check-list of the marine algae to be found along the Northumberland and Durham coasts. The last complete lists were published as long ago as 1860 (Brady) and 1889 (Batters), and obviously a hundred years will have seen changes which must be recorded.

We realise that seaweeds are not the most popular of plant groups but it is in the least worked groups that most spectacular discoveries are most likely. Perhaps some ornithologists and geologists may be able to identify some of the more common species.

Records to Dr. F. G. Hardy at 11 Windsor Avenue, South Gosforth, Newcastle upon Tyne, NE31PS.

CREEPY CRAWLIES

In the past we have made appeals in these pages for the younger members to take up the study of the less well-known groups of invertebrates. Already some of our up-and-coming entomologists have begun to tackle groups like the Hemiptera and the Neuroptera.

More recently, Noel Jackson and Brian Eversham have started to look at our slugs, not only in the north-east but in many other parts of the country also. As we predicted, extremely important discoveries have already been made. In the Durham City area, a slug either completely new to science or a new sub-species has come to light. At the present moment it is still without a scientific name but for the purposes of recording is being referred to as the 'Durham Slug'. In addition, Mr. Jackson has also turned his attention to other creepy crawlies like centipedes and millipedes, woodlice, spiders and harvestmen together with insects like earwigs and ground beetles, all of which share the same micro-habitat, namely that found under old logs and stones. He has prepared a very useful information sheet (with explanatory drawings), which has been printed by Tyne and Wear County Councils Museums Service. Copies are free of charge from Noel Jackson at 74 Thomas Street, Craghead, Co. Durham or from any of the Tyne and Wear County Council's Museums. If you ask for one through the post, please remember to provide sufficient in postage stamps to cover postage and packing. We can thoroughly recommend the leaflet.

THE SOCIETIES

NORTHERN NATURALISTS' UNION

The 159th Field Meeting was held on Saturday, 4th July, 1981, in Rainton Park Woods near Leamside, Co. Durham.

Mr. Dennis Hall led a dozen members into the National Trust property, the date unfortunately co-inciding with the finals of the Wimbledon Tennis Championships.

The timing was perfect, however, for the flowering of the wild roses, mainly *Rosa canina*, with an occasional specimen of *Rosa sherardii*.

In the birch/sessile oak wood there were many galled male ferns, the fronds looking as if they had been tied in knots. The culprit, *Chirosia parvicornis* is a tiny grey Dipteron. Several oak trees had been infected with Mottled Umber moth caterpillars which had rolled the leaves when they had pupated on them. In the dry sessile oak wood, the sparse ground flora included Heath Hedstraw (*Galium saxatile*), Wood Sedge (*Carex sylvatica*), Wood Avens (*Geum urbanum*), Tormentil (*Potentilla erecta*), Grater Stitchwort (*Stellaria holostea*), with good growths of Wavy Hair grass (*Deschampsia flexuosa*), around the tree bases. Other ground flora were Buckler Fern (*Dryopteris dilatata*) and Bracken (*Pteris aquilinum*) as well as Herb Robert (*Geranium robertianum*), Catsear (*Hypochaeris radicata*), Red Campion (*Melandrium dioica*) and Betony (*Betonica officinalis*). Nearer the river, where the soil was deeper and damper the flora included Dutch Rush (*Equisetum hyemale*), Wood Millet (*Milium effusum*), Dog's Mercury (*Mercurialis perennis*), Hedge Woundwort (*Stachys sylvatica*), Enchanter's Nightshade (*Circaea lutetiana*), Greater Woodrush (*Luzula sylvatica*) and Guelder Rose (*Viburnum opulus*). Beside the riverside path we found Wood Stitchwort (*Stellaria nemorum*), Sweet Cicely (*Myrrhis odorata*), Ground Elder (*Aegopodium podagraria*), Giant Hogweed (*Heracleum mantegazzianum*), Dame's Violet (*Hesperismatronalis*), Giant Fescue (*Festuca gigantea*), Hairy Brome (*Zerna ramosa*), Tufted Hair Grass (*Deschampsia cespitosa*), and Wood Sanicle (*Sanicula europaea*). In the river mud were rooted Reed Canary Grass (*Phalaris arundinacea*), Branched Bur-reed (*Sparganium erectum*), Himalayan Balsam (*Impatiens glandulifera*), Great Willow Herb (*Epilobium hirsutum*) and Butterbur (*Petasites hybrida*).

Tea was taken on the dry heights above the river amidst the Heather (*Calluna vulgaris*), Common Heath (*Erica cinerea*) and Bilberry (*Vaccinium myrtillus*).

On the return journey we encountered sprawling clumps of the field rose (*Rosa arvensis*) as well as wayside plants such as Goatsbeard (*Tragopogon pratensis*), Creeping Cinquefoil (*Potentilla reptans*) and Silverweed (*Potentilla anserina*), whilst in the nearby Moorhouse Wood we saw Hornbeam (*Carpinus betulus*) and Turkey Oak (*Quercus cerris*) together with many more clumps of the field rose.

The 160th Field Meeting took place on 12th September 1981 at West Dipton Mill Woods, near Hexham, in almost perfect weather. Some 40-50 members and friends gathered at the Mill Inn to be led off along the public footpath through the woods by Mr. and Mrs. Houchin. This was essentially a well grown mixed deciduous and evergreen valley woodland with trees of varying age and a wide diversity of species. In spite of the recent spell of dry weather the woodland floor was very wet.

The most prominent feature in the woods as a whole was the abundance of ant colonies, the huge mounds being built up mostly of pine needles in spite of the fact that pine trees formed only a very small percentage of the total tree population. Dr. Davies sent some of the ants to Mr. C. Collingwood for detailed examination since there were doubts amongst the entomologists as to their true status. They proved to be *Formica lugubris* Zeil., the species one would expect in South Northumberland and in northern England as a whole. Apparently it is now known that this is our usual mound making ant, the one we used to know as *Formica rufa* L. This latter species is now known to be much more of a southern insect although it does reach as far north as Northumberland.

Dr. Davies also took a number of Muscidae by the stream but commented that the best time for these had passed, so there were only a small number. They were *Coensia*

aleni Fonseca, one female of a rather uncommon species; *Mydaea ancilla* Meig., one female, an uncommon species; *Phaonia errans* Meig., one female, a common species; *Helina laetifica* Desv., a very common fly; *Hydrotaea militaris* Meig., one male, a common species. He also noted one Carabid beetle, *Calathus micropterus* Duftsch, which is predominantly a forest species with records for all of South West and Northern England, Wales, Scotland and Ireland. ;

Much beating by the other entomologists produced surprisingly little in the way of Lepidoptera, although Mark Walker disturbed an adult *Gortyna flavago* D. & S. Noel Jackson and his co-workers turned up an interesting lot of creepy crawlies such as the Millipedes; *Cylindroiulus punctatus* (Club-tailed millipede), which was common under bark; *Omatoulus sabulosum* (Striped millipede), 3 specimens; *Tachypodoiulus niger* (Fast black millipede) abundant everywhere; *Glomeris marginatus* (Pill millipede), common; the striped or variegated centipede, *Lithobius variegatus*; the following woodlice: *Pocellio scaber* (Scabby woodlouse), frequent under stones; *Oniscus asellus* (Shiny woodlouse), frequent; *Trichoniscus pusillus* (Chocolate woodlouse); and *Philoscia muscorum* (Meadow or Moss woodlouse).

Several harvestmen were beaten from bushes and the following were identified: *Opilio parietinus*, *Nemastoma bimaculatum*, *Mitopus mono*, *Phalangium opilio*, *Leobunum rotundum*, and *Oligolophus tridens*.

The bumble bees *Bombus lucorum*, *B. agrorum* Fab. (syn. *B. pascuorum* Scop.) and *B. lapidarius* were noted on the flowers of Black Knapweed in a small grassy clearing at one point.

Other observations of interest were the obvious tell-tale holes in dead trees caused by the Greater-spotted Woodpecker and the sight of Dippers on the stream. Some members were fortunate enough to observe a pair of red squirrels playing about in the tree tops near the bridge over the stream. Evidence of moles was everywhere and the well-used runs with a few hairs and footprints of badgers were also detected.

Meanwhile the specialists in Mollusca had a very satisfying afternoon. Their lists will eventually appear in the records section of this journal.

The Autumn Junior Meeting which always takes the form of a Fungus Foray was held on September 26th in Hollinside Woods. In spite of a continuous downpour, Mr. Hall and about 15 hardy souls managed to find the following species, by which time all were soaked to the skin and almost ready to dissolve: (a) On wood— *Nestria cinnabarina*, (Coral Spot), *Stereum hirsutum*, *Heterobasidion annasum*, *Daedalia quercina*, *Coriolus hirsutus*, *Coriolus versicolor*, *Dacryomyces deliquescens* and *Hypholoma fasciculare* (Sulphur Tuft).

(b) In litter— *Collybia peronata*, *Laccaria amethystina*, *Clitocybe nebularis*. *Phallus impudicus* (Stinkhorn), and *Scleroderma aurantium* (Earthball).

(c) Mycorrhizal species— *Amanita citrina*, *Amanita rubescens*, *Russula nigricans*, *Russula cyanoxantha*, *Russula mairei*, *Lactarius turpis*, and *Boletus (?) erythropus*.

(d) On leaves— *Rhytisma acerina*, tar soot on sycamore.

NOTES AND RECORDS

NOTES

Immigrant Insects. This year, 1981, must go down as the worst for a very long time, for the non-arrival of insects from abroad.

Only two records are of any note. Mr. P. Davies writes of a Death's Head Hawk moth having been brought into the Hancock Museum from Newburn-on-Tyne on 7th June, and there is a note from Michael Mann of a single Red Admiral butterfly seen in Chester-le-Street Park in September.

Apart from these examples, two Silver-Y moths (*Autographa gamma* L.) arrived in the trap at Chester-le-Street, one on 15th September and one on 26th September. This is a minute fraction of the usual number. T.C.D.

An unusual visitor. On Sunday November 1st at about 10.30 a.m., we had a hoopoe here in our garden at Rothbury. It was unmistakable as we could see it quite clearly from our kitchen window about 10-15 feet away in the rockery. The pinky-beige part of it was not quite so vivid or dramatic as our bird book depicts but its crest and striking striped wings and tail, and the beak and size were quite unmistakable.

My friend and I saw hoopoes flying and heard them calling in May in Andalucia, Southern Spain, but we did not have so clear a view of them on the ground as we had here in our garden. We were very thrilled.

Joan Hendry and Catherine Russell.

The Vapourer Moth. A note in the Vasculum, December 1964, referred to the fact that although the Vapourer Moth, *Orgyia antiqua* L. would, at one time, have been reckoned a common moth in our North Eastern counties, at that date it appeared to have become extinct as there were no records for over 50 years. It had been known from Billingham Bottoms, Castle Eden Dene, Waldrige Fell, Satley, Chopwell, Tyne Woods, Corbridge, Blanchland, Pigdon and Barnard Castle. It is with some pleasure, therefore, that Robert Woods has rediscovered a small colony in one of its old haunts, Waldrige Fell. Perhaps this discovery will stimulate further searches in others of its likely habitats.

T.C.D.

The Edible Mushroom, *Psalliota campestris* L. For many years the mushroom has been missing from most of its old pastures in our countryside. This year, however, there has been an absolute glut in the Medornsley district and I have heard of a similar outburst in many other part of our county. It was during the late weeks of September that they first appeared and they have continued to make good fruit through the greatest part of October. Can anyone explain this sudden and spectacular recovery?

R. Pirt.

We can confirm the same thing in the District Council's Riverside Recreation Fields at Chesterle-Street. These are adjacent to the built-up area in the town and an unlikely place for such an occurrence. The local population enjoyed the free harvest and many could be seen early each morning picking their free breakfast. Ed.

The Durham Argus, *Aricia artaxerxes* Fabr. ssp *salmacia* Steph. Far from being a threatened species in Durham County, this butterfly has been spreading during recent years. The sunny, dry summers of 1975 and 1976 gave it an impetus to increase its range. Thus in 1976 it was found to have spread north to Hawthorn Hive and to the coast further north between the Hive and Seaham.

This year, in the company of three other members of the N.N.U., a single specimen was found in the disused Warden Law Quarry between Houghton-le-Spring and Sunderland. A good photograph was secured. This sighting, the furthest north so far recorded, represents a further increase in its range.

T.C.D.

Holy Island Notes. I spent a week on Holy Island from 29th September until 6th October. The weather was foul with four days of rain out of the seven. The wind was North North West early in the week so no migrants were seen until the rain eased and the wind changed to South East on Friday evening. By Saturday many migrants had fallen on the island. The telephones must have been busy as several birdwatchers arrived on Saturday 3rd and Sunday 4th October. The feature of the fall was the large number of blackcaps. They were in every tree and garden. Other birds seen were red-breasted flycatcher, pied flycatcher, spotted flycatcher, redstart, and odd goldcrests, white throats, bramblings, fieldfares and redwings, as well as all the ordinary small birds.

The shore line had goosander, godwit, a large flock of oyster-catcher and many wigeon were on the Fenham side of the oyster sacc, but were being shot over by punt gunners.

Over many years of visiting Holy Island, I have seen the pattern of migration change a lot. Some years ago migrants could be seen in April and in September no matter which way the wind blew. Now, to see migrants on the island, the wind must be South South East, confirming my contention that the wind has a lot of influence on migration. In fact they are blown off course and on to the island to rest against head winds.

The migrants were very restless and when the wind changed on 5th October many of them moved out on the N.N.W. wind leaving only a few tired birds to watch.

L. P. Hird.

Pugs. The pugs are a group of Geometrid moths of comparatively small size and similar shape which amateurs find rather difficult to identify. Many lack prominent distinguishing features and the tendency of captured specimens to be damaged either before capture or in the net add to these difficulties. Yet it is desirable to make correct identifications of these wild specimens in order to determine their distribution.

A recent publication by a number of members of the British Entomological and Natural History Society has admirably filled the gap in most of the standard books on moths. This is "An Identification Guide to the British Pugs" and it is published by the Society. The descriptions are extremely full and accurate together with the four colour plates which include most of the known forms and subspecies to be encountered in the British Isles, all help to avoid the possibility of making mistakes.

We have just received a record of the Marsh Pug from Billingham Bottoms, from R. T. McAndrew. Robson's catalogue could not cite any firm record for this species from our counties although he was of the opinion that it ought to be present. It is now recorded in the national distribution records as widespread and locally common in Britain from South Wales and Norfolk to the Orkneys. We suspect that Mr. McAndrew has benefitted from a copy of the guide mentioned above. T.C.D.

The Wall Brown Butterfly. On 29th August, 1981, I was surveying the plants on urban wasteland in Newcastle and found the Wall Brown common on all the sites visited from Benwell, east through central Newcastle to Byker and Walker. I had also noticed it feeding on thistles at Great Whittington, just north of Corbridge, the previous day. I have never seen it in Northumberland before, so this would seem to be a true northern extension of its range. Recent numbers of the Vasculum have recorded it as having crossed the Tyne but what I saw was an invasion. There were dozens of specimens without even looking for them!

Oliver Gilbert.

Parasites of the Magpie Moth. In June we collected a few caterpillars of the Magpie Moth (*Abraxas grossulariata* L.) from the garden and persuaded our daughter (aged 6 years), to take care of them and follow their transformations. Instead of producing adult moths as they ought to have done, only two moths out of ten managed to complete the cycle. When the other caterpillars were full grown they produced parasite pupae of two kinds. Some gave several specimens from each caterpillar and these were eventually identified by Dr. M. Shaw of the Royal Scottish Museum, as the Hymenopteron *Hyposoter tricolor* (Ratzeburg), a common and host-specific parasite of the Magpie Moth which seems to be commoner in gardens etc. than in true countryside. The other larger pupae, only one of which emerged from each infected caterpillar, were seen by Mr. T. H. Ford of Sheffield who pronounced them to be Tachinid flies *Phryxe nemea* (Meigen) and he further added that the Magpie Moth appears to be one of the favourite hosts of the fly although it has been bred from many other Lepidopterus larvae and pupae.

Eden and Diana Buckham.

Butterflies from Burnhills, 1981. The following list of butterflies was compiled from several visits to Burnhills near Winlaton, NZ 157623. It was very pleasant to see such large numbers of butterflies in one relatively small area and especially the Small Heath and Dingy Skipper, the latter of which there were hundreds.

Large White, several 19th June, many 23rd August.

Small White, several 19th June.

Green-veined White, several 19th June, 2 or 3 23rd August.

Large Skipper, several 19th June.

Orange Tip, several 19th June.

Small Copper, several 19th June, about 20 on 23rd August.

Wall Brown, 3-4 on 19th June, many on 23rd August.

Dingy Skipper, very many 19th June.

Small Heath, one or two 10th July, 25 on 23rd August.

Meadow Brown, many on 10th July, many 23rd August.
Common Blue, many females 10th July, many 23rd August, mostly males.
Small Tortoiseshell, one or two 17th July, two on 23rd August.

D. McCutcheon.

RECORDS

FLOWERING PLANTS AND FERNS

- Berberis vulgaris* L. Barberry. 53/1 68
In the hedge of the main road opposite Way-to-Wooler, GR 46/001286. Given in Baker and Tate (1868) and known to me for 50 years but apparently not re-recorded recently. On 2nd September 1981 it narrowly escaped obliteration in a hedge fire caused by straw-burning which was extinguished' by firemen when only 50m. away.
- Epilobium alsinifolium* Vill. Chickweed Willow-herb. 254/12 68
In 1963 Fred Wade noted finding on Hart Haugh near Wooler a plant which he called Alpine Willow Herb, and the Editor (J.W.H.H.) suggested the desirability of more precise identification (Vasculum 48.3 p. 22). My attention being drawn to the note by Professor G. A. Swan, at his suggestion I searched the area on 10th September 1981. In a boggy patch close to where the track emerges from the Watch Hill Forest, GR 36/961260, I found a group of plants which I identified as *E. alsinifolium*. Associated species included *E. palustre*, *Montia fontana* and *Potamogeton polygonifolius*. Professor Swan has confirmed and remarked upon the unusually low altitude (259m.) for this latitude.
- Humulus lupulus* L. Hop. 329/1 68
Occupies 40m of the roadside hedge on the eastern outskirts of Wooler GR 999278. Known there locally for c. 50 years.
- Helianthemum chamaecystus* Mill. Rockrose. 118/1 68
College Valley, 36/899234. Abundant on scree slopes of Coldburn Hill near Dunsdale and descending to roadside below crags nearby, 29.6.81.
- Euonymus europaeus* L. Spindle-tree. 177/1 68
College Valley, 36/904287. A solitary but flourishing plant on the old West bank of the Burn, now some distance from the present bank, 350m N.E. of the footbridge at Hethpool Linn, 15.6.81. One of the two Cheviot stations given by Baker and Tate (1868). Search has so far failed to reveal any other surviving specimens and I know of no recent record of it here, but in 1958 G. A. Swan recorded its survival in the other Cheviot station, Humbleton Dene (Vasculum 43.1).
- Vicia hirsuta* (L.) Gray. Hairy Tare. 206/1. 68
College Valley, 36/908302. Roadside at Westnewton Bridge and in several places nearby, 22.6.81. (Has also appeared in a hedgerow in my garden (990279) for the first time, 25.6.81).
- Rosa pimpinellifolia* L. Burnet Rose. 225/4 68
College Valley, 36/899234. On screes of Coldburn Hill near Dunsdale, 26.6.81. More plentiful and flourishing than when I first saw it here in 1939.
- Prunus avium* (L.) L. Wild Cherry. 226/4. 68
College Valley, 36/899231, 892240, 888259, 900285. Near farmhouse at Dunsdale and Coldburn, and near roadbridge at Whitehall; perhaps planted. Also by Hethpool to Westnewton path between the wicket gate and Hethpool Linn, 2.7.81, 14.7.81, 13.8.81.
- Populus tremula* L. Aspen. 342/3 68
College Valley, 36/897234. Several small trees on Dunsdale Crag, Coldburn Hill. Seen 29.6.81. Confirmed by climbing the crag 18.7.81.

J. T. B. Bowman.

AVES -BIRDS

<i>Ardea cinerea</i> . Grey Heron	67
Five on Gostorth Park Lake, October 20th.	
<i>Botaurus stellaris</i> . Bittern	67
One on Gosforth Park Lake, July 13th.	
<i>Anser anser</i> . Greylag Goose	67
Two Gosforth Park Lake, October 20th.	
<i>Tringa nebulosa</i> . Greenshank	67
One July 13th, five August 20th, one September 7th, Gosforth Park Lake.	
<i>Larus canus</i> . Common Gull.	67
79 on Broadway West playing fields, Gosforth, November 5th.	
	C. J. Gent

ORTHOPTERA -GRASSHOPPERS ETC.

<i>Chorthippus brunneus</i> Thun. Common Field Grasshopper.	67
Widespread on urban wasteland in Newcastle even on sites only 3-4 years old (demolition sites), hopping on the busy pavements as well as in the centre of the sites.	
	O.L. Gilbert.

ODONATA - DRAGONFLIES AND DAMSELFLIES

<i>Aeshna juncea</i> L. Common Aeshna	67
Several hawking over the Big Waters, Seaton Burn, August 1st and 2nd.	
	C. J. Gent

LEPIDOPTERA BUTTERFLIES AND MOTHS

<i>Epiblema foenella</i> L.	66
In the Rothamsted trap 23.7.81. The first record from Chester-le-Street. Meyrick comments that it is local in its distribution, not present in Scotland, the larva feeding on the roots of <i>Artemisia vulgaris</i> A further specimen taken by Michael Mann appeared in his trap at Sacriston and later brought to me for identification, August 1981.	
	T.C.D.
<i>Eupithecia pygmaea</i> Hubn. Marsh Pug.	66
Several flying in mid-afternoon in one of the few uncultivated areas remaining on Billingham Bottoms, 5.8.81. R. T. McAndrew.	
At this late date, this may well represent a second brood, which sometimes occurs after a prolonged warm spell of weather such as we had this year. Ed.	
<i>Cilix glaucata</i> Scop. Chinese Character	66
As above, fairly common.	
<i>Euxoa nigricans</i> L. Garden Dart	66
As above, common.	
<i>Euxoa tritici</i> L. White-line Dart	66
As above, common.	
<i>Agrotis exclamatoris</i> L. Heart and Dart	66
As above, extremely common.	
<i>Agrotis ipsilon</i> Hufn. Dark Sword Grass	66
An immigrant, two in 1976.	
<i>Diaris brunnea</i> D. & S. Purple Clay	66
As above, abundant.	
<i>Diaris mendica</i> Fabr. Ingrailed Clay	66
As above, abundant.	
<i>Diaris rubi</i> View. Small Square-spot	66
As above, abundant.	
<i>Ochropleura plecta</i> L. Flame Shoulder	66
As above, two in 1976.	
	R. Henderson.