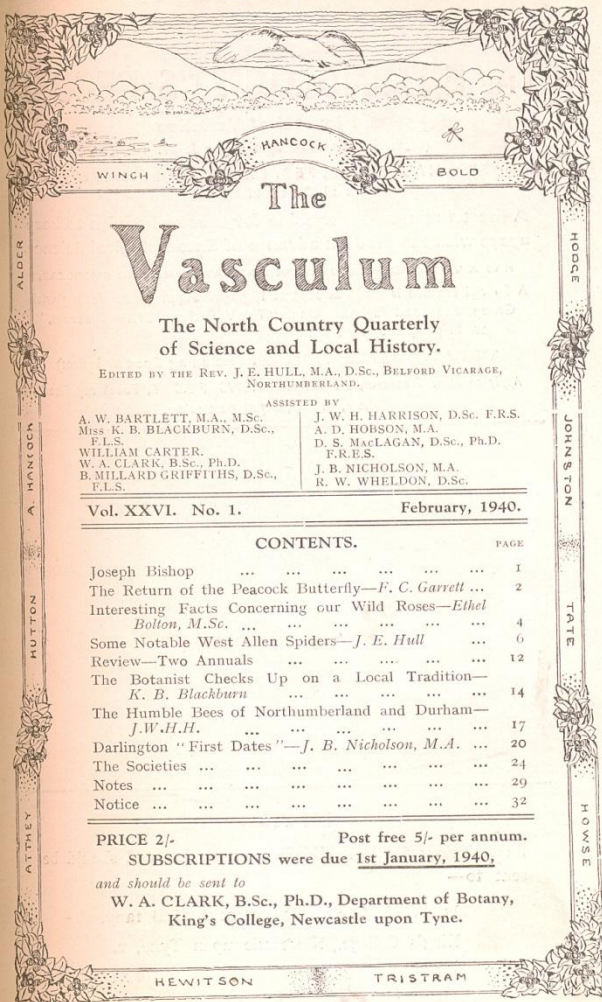


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WINCH HANCOCK BOLD

The Vasculum

The North Country Quarterly
of Science and Local History.

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THE VASCULUM

Vol XVI No. 1

February, 1940

JOSEPH BISHOP.

The death on November 13th, 1939, of Joseph Bishop, Bird Watcher for the Royal Society for the Protection of Birds at the Tees-mouth since 1931 is a source of deep regret to all who knew of his devotion to his work there.

Joseph Bishop's interest in birds was practically life-long. In his younger days he travelled extensively in England and Scotland with the object of familiarising himself with every British species. It was characteristic of him that, when serving in France in 1914-18, he usually chose to devote his periods of leave to the study of such species as the Golden Oriole in their native haunts.

Some of his ornithological observations have been recorded from time to time in *The Vasculum*. One recalls, in particular, his account of the red-letter day on which he watched three Avocets at Teesmouth (Vol. XVIII, p. 9). He also contributed much valuable information to the Ornithological Records of the Darlington and Teesdale Naturalists' Field Club and to the article on " The Birds of the Tees Valley " in the recent issue (Vol. I, Part 5) of the Transactions of the Northern Naturalists' Union. As lecturer and guide, also, his help was always most willingly placed at the disposal of local Field Clubs.

In the field his practical knowledge of bird life was at once evident, for he was an exceptionally quick observer. Equally impressive was his unconcealed enthusiasm for his subject — his eyes would fairly sparkle as he spoke, in vivid terms, of the birds which meant so much to him. Especially when he spoke of the birds of the Tees-mouth, for these ever held a special place in his affections.

In later years spells of unemployment left him with a good deal of leisure, and this he largely devoted to observing and safeguarding, so far as was possible, the bird-life of the estuary and the surrounding marshes. The birds of Tees-mouth have indeed lost a valuable friend and protector by his passing.

J. B. N.

THE RETURN OF THE PEACOCK BUTTERFLY.

F. C. GARRETT.

As that beautiful butterfly *Nymphalis io* seems to be reoccupying these North-Eastern counties after a very long absence it is interesting to study its history in our area. In 1760 the Rev. John Wallis wrote that " The peacock' s-eye Butterfly, called by a curious foreigner, The Queen of Butterflies, is often seen in fields and gardens in the warm summer months, and, in cold ones, in close retreats" (1). As he only mentions nine butterflies, knew that the Peacock hibernates, and described its larva and pupa, we may conclude that in his day it was one of the common ones, and envy him. That golden Age did not last, however, probably because this fly "seems to have a dislike to manufacturing districts " as Barrett says (2), and in 1858 George Wailes, who collected intermittently from 1826 to 1858, describes it as " generally distributed over both counties, but never very common " (3) Even this description did not apply for very long as twenty-five years later (1893) Barrett wrote " Mr. J. E. Robson describes how, thirty years ago, the larvae were to be found near Hartlepool on every bed of nettles. For twenty-five years past he has not seen a larva, and the butterfly, although an occasional visitor, has become very rare " (2). Robson himself says (1902) this really describes the position over both counties. " Up to 1860 it was common enough in most places " and further " I have scarcely seen the insect since 1860, until 1893, when it was not uncommon, and I have not seen the larva since the earlier date " (4). After his time its rarity increased, and in the first twenty-one volumes of *The Vasculum* (1915 to 1935) only five individuals* are recorded — two in 1918, one in 1919, one in 1925, and one 1931, but as the last was taken in New Bridge Street Station it seems probable that it came by train, possibly from afar. In any case, so few records in twenty-one years show that it was no longer a resident, but only a rare visitor, as Robson said.

But the Vanessids are a restless family and in 1936 *io* began to explore the North, single specimens being seen at Thirsk, Croft-on-Tees, and Barnard Castle, while in 1937 it was discovered at Sunderland, Riding Mill, Corbridge, and Wark-on-Tyne (5),

This overlooks *Vasc.* XIX, 149, where it is recorded in number.—ED.

and although 1938 was a bad season it appeared again at Corbridge and Sunderland, and was also discovered near Acklington (6). It looked as if the insect was returning here, and 1939 strengthened this hope, as, although it was again a poor season, and although the war reduced the number of observers, hibernated specimens were reported from Birtley (Durham) and Bamburgh, and in the autumn about a score of individuals were seen at eleven stations, from the Tees valley nearly to the Scottish Border. It would be rash to assume that the Peacock is once more a resident, for, we have to remember 1893 when it came and left again, but we may hope that it is, that this year it will be seen in large numbers, and that someone will be skilful enough, or lucky enough, to find a batch of larvae, a thing which does not seem to have been done since 1874.

The following is a complete list of the records reported for 1939
 DURHAM. In May several were detected at Birtley (J. W. H. Harrison).
 Barnard Castle. Two were seen on September 5th, and one on September 9th (J. P. Robson).

Bishop Auckland. One on October 20th (J. Greenwell).

Stanhope. One on September 8th (J. Greenwell).

Rowland's Gill. One on September 24th (C. Hutchinson).

NORTHUMBERLAND. In Newcastle one was seen by J. Watson* and another by C. Hutchinson, the latter on September 24th.

Stocksfield. Two on September 3rd (G. W. Temperley), and two at Newton Hall on the 22nd (H. Tully).

Corbridge. In September (R. B. Cooke).

Alnmouth. On five occasions from August 30th to September 30th; at least three individuals (F.C.G.).

Rothbury. One taken on September 25th (Lord Armstrong), and another examined on the 30th (Mrs. Carr Ellison).

Catcleugh (Below Carter Bar). One on September 9th, and another on the 16th (R. Craigs).

* An error. See the original record, *Vase*. XXV, 143.—ED.

Bamburgh. One worn one on June 4th, and a fresh one on September 15th (W. Wannop).

REFERENCES.

- (1) John Wallis, " The Natural History and Antiquities of Northumberland," 1. 357.
- (2) C. G. Barrett, " The Lepidoptera of the British Islands," 1. 140.
- (3) G. Wailes, " A Catalogue of the Lepidoptera of Northumberland and Durham." *Trans. Tyneside Nat. Field Club*, III.
- (4) J. E. Robson, (Same title.) *Nat. Hist. Trans. of Northumberland and Durham*.
- (5) Vasc. XXIV, 143.
- (6) Vasc. XXV, 34.

INTERESTING FACTS CONCERNING OUR WILD ROSES-
ETHEL BOLTON, M.Sc.

Only a few days ago, whilst I was turning over the pages of a newly-published biological text-book, my attention was attracted by a well executed drawing of a flower of one of the Common Dog-roses. To my amazement, I discovered that the drawing was introduced to illustrate the methods of pollination and fertilization prevalent amongst wild roses. I felt at once that, if such views represented the state of knowledge in the mind of a person capable of producing what was really a good text-book, then a short paper throwing light on the whole matter would interest, and be useful to, the ordinary field naturalist. Moreover, I believed that such a publication would also supply more correct ideas to teachers who are certain to use the book in question with their biological classes.

In this district we have a very rich rose flora which, for present purposes, we may regard as falling into several groups: (1) the Burnet Roses, *Rosa spinosissima*; (2) the Field Roses, *Rosa arvensis*; (3) the Common Dog-roses of the collective species *Rosa canina* and *R. dumetorum*; (4) the Northern Dog-roses included in *Rosa glaucophylla* and *R. coriifolia*, and (5) the Downy Roses appertaining to the two species *Rosa mollis* and *R. Sherardi*. Of these *Rosa spinosissima* forms are not rare, although somewhat local; *R. arvensis* is very rare, whilst the remainder are generally abundant wherever their respective ecological requirements are satisfied,

However, what I wish to discuss here is not the systematics or ecology of these diverse but equally beautiful plants but their reproductive processes. On that basis they break into two sections: (1) those reproducing sexually and then simply termed sexual species, and (2) those producing fruit and seeds without the intervention of sex and known technically as apomictic forms, or, to introduce the corresponding noun, regarded as displaying apomixis.. Of our roses, only the Burnet and Field Roses are sexual, the whole of the remainder, amounting to more than 99% of the bushes encountered in our counties, being apomictic. From this statement, it will be seen that the use of a Dog Rose flower to illustrate pollination and the attendant phenomena is very unfortunate, to say the least. It is true that the flowers make all of the usual advertising displays in the way of attractive petals, beautiful scent, " flavoured" stigmas and palatable pollen, but the whole elaborate mechanism is quite fraudulent. The merest casual observation will reveal that it works smoothly in the initial stages; bees, moths, butterflies, flies all come along to sip nectar and to take pollen, but despite the fact that the pollen may be, and is, taken to the stigmas of neighbouring flowers, the whole procedure may easily be proved, as far as the majority of plants are concerned, to be quite futile. If the pollen of a Dog-rose be dusted on a piece of paper, and examined by a strong hand lens, it will be found to lack the rounded, plump appearance of good functional pollen, and to be aborted and useless. Hence, fertilization in the true sense of the word cannot succeed pollination. How then, are the bountiful supplies of hips we are accustomed to see decking our Dog-rose bushes in Autumn produced? the exact answer to this question remains a mystery. However, these facts are known: (1) that some roses, especially our Northern " Dogs " and Downy roses need no pollination, and (2) that, in certain other Dog-roses, the presence of strange pollen on the stigmas, without bringing about fertilization, nevertheless stimulate development.

To illustrate the first point it is only necessary to cut the stigmas from a young flower, say of *Rosa glaucophylla* var. *stephanocarpa* and to enclose the bud in a paper bag. The development of the bud and seeds will proceed quite normally. On the other hand, certain Dog-roses, when so treated, refuse to set a full complement

of seed. If, however, rose pollen from any species whatever be placed on their stigmas development takes place, but the seeds so produced are not of hybrid origin. The resultant plants always resemble the mother plant. This occurrence is known as " Pseudogamy," and is met with in strawberries and various Potentillas. Under such circumstances, when the stimulation of pollen is necessary for development but not to secure fertilization, the floral mechanisms do play a definite, if unusual, role.

Although the Burnet Roses were dismissed above by attaching the label " sexual " to them, they are not without their peculiarities. They are completely self sterile, i.e. the pollen of any given plant has no effect when placed on stigmas of its own flowers. Pollen derived from other plants is absolutely essential. It is worthy of note here that this peculiarity is prevalent in many fruit trees, like apples, etc., belonging to the Rose Family, and has been provocative of much disappointment to fruit growers in the past who have planted trees belonging to one variety only in their orchards.

I hope in further papers to discuss similar points of interest exhibited by our wild roses.

SOME NOTABLE WEST ALLEN SPIDERS.

J. E. HULL.

The number of species of spiders on the British list is still far short of six hundred, but the additions made in recent years show pretty plainly that the total would soon reach that figure if a few diligent investigators could be found. It is significant that where-ever any district has been subjected to close enough scrutiny it has not failed to yield new British records and also in most cases one or two species new to science.

It may be interesting to illustrate this from results obtained in the early years of the present century when three of us were continuously at work, each in his home area. Dr. A. Randell Jackson,

from Delamere Forest and the Dee estuary, secured many good things including the new swamp spider *Baryphyma brittenii* and others new to Britain; while Mr. W. Falconer, working with him on a short visit, was the actual discoverer of the new *Maro falconerii*. On his home ground, near Huddersfield, Mr. Falconer had already taken *Maro minutus*, for which Mr. Pickard Cambridge set up the new genus *Maro*. Both Jackson and Falconer were similarly successful in holiday researches made year by year in various localities in England and Scotland.

For my part I was limited almost entirely to West Allendale; holiday excursions were usually impossible. I was more favoured than my colleagues, however, in the matter of altitude, and with the help of that factor accounted for four new species — *Hilaira pervicax*, *Hilaira nubigena*, *Diplocentria saxetorum* and *Lophocarenum lichenorum*. It is remarkable that not one of these has yet been found in any other locality.

There might have been a fifth but for an unfortunate happening. Here is the story. In the spring of 1906 I picked up a lone female *Leptyphantus*, more like *pallidus* than any other known to me. Failing to make anything of it, I sent it on to Pickard Cambridge in the following January. In acknowledging its receipt he called it "*Bathyphantes*, a very distinct species unknown to me"; but in 1908 he published what purported to be figures and description of it under the name of *Centromerus probabilis* sp. n. I was amazed and mystified, for they did not represent my spider at all but some other species at least twice as big. The following year he withdrew *Centromerus probabilis* and said (quite correctly, I believe) that the spider was really *Tmeticus warburtonii* (i.e. *Mengia scopigera*) — a spider which I never once saw in West Allendale. Evidently two spiders had been interchanged in returning them to their tubes after some previous examination or the same mishap had occurred with their labels. I had to "lie low and say nuffin" because I had already been pen-lashed by my good Mentor for suggesting that he had done the same thing with his typical specimens of *Hilaira frigida* and *H. montigena*.

I still possess my notes and sketches (eyes and epigyne) of the lost spider. Here are the notes:

Leptyphantes sp., female.

Near Ninebanks Vicarage, 11th March, 1906.

Total length 2.2 mm.

General appearance of *angulatus*. Cephalothorax reddish, slightly rugulose. Abdomen dull (but not dark) green; unusually slender for a female.

Legs paler than the cephalothorax, concolorous. One spine on metatarsus.

Eyes as in *angulatus*, but posterior centrals slightly larger than their laterals. (According to the sketch the eyes are all ringed with black, in the case of the two posterior centrals produced into a point behind.)

Epigyne (vertical view) wholly concealed. Pediment shorter and thicker than in *pallidus*.

There is no need to say anything further about *Diplocentria saxetorum* as I dealt with it in the November *Vasculum*. Nor have I much to say of *Lophocarenum lichenorum*. I first found it among lichen on the trunk of an ash tree. Later I turned up a solitary female when sifting Acari from a sparrow's nest blown down from a tall fir tree. It is a very small grayish-black spider and the genus cannot be absolutely certain till the male is discovered.

It should be explained that the civil parish of West Allen is the upper part of West Allendale, bounded on every side except towards Whitfield by the sky-line. All that has been said so far belongs to its lower zone for which the upper limit may be set at 1,000 feet. Let us now ascend by the Alston road to 1,400 feet where it enters the open fell and its boundary walls cease. On the right is a shepherd's cottage (locally "Herd's House") and behind it an enclosure filled with spruce except for one open corner. This sheltered nook, about a quarter of an acre in extent, has the aspect of an ancient swamp; but now it is criss-crossed with ditches, and if you can dodge them and don't mind a struggle with the free-growing heather, the going is quite dry in summer.

Only under the south wall does the heather give way to tussocks of grass, from which, if you are hardy enough to handle frozen snow, you may extract in the middle of winter some of the less common species of the Micro-Linyphiids. Here also, at the margin of the heather, are a few bushes, from which at my first visit I took *Leptyphentes obscurus*, quite a rarity in these parts. After that auspicious beginning I worked the place systematically for several years.

This snug retreat was as popular with our young folk as with myself. The fox knew it well, and so did stoat and weasel; even the rabbits found a way in, though how they passed the boundary wall I cannot tell. In their season, lesser things were there in myriads. Where the spruce boughs drooped over the western ditch to meet the heather the tiny gold-crest fixed its nest. When the sun grew warm hosts of burnished flies swarmed about the heather; and later, when it waxed hot, came the legions of bees, butterflies, beetles and dragonflies. Hardly a twig of heather would then be without a silk-swathed tip, the home of the pretty little spider *Dictyna arundinacea*. From May onwards the rift in the heather which marks the course of an unseen ditch is spanned in its widest places by the vertical net of *Epeira cornuta*, and elsewhere by the smaller horizontal snare of *Tetragnatha extensa*. The latter—slim-bodied, long-legged—keeps the centre of its web; the former, much heavier and rotund, conspicuously black and white, may occupy a like position but oftener keeps watch in its dome-shaped nest at the end of the main cable.

Such was the pleasant scene of much hard work in search of the more or less hidden spider population. It happened that where the trees came right up to the bank of the western ditch a sifting of pine needles at the base of a trunk disclosed a colony of *Porrhomma pallidum*, a tiny pale spider cut off from the rest of its genus by the oval posterior middle eyes. At the time I had no better name to give it than *P. oblongum*, but Jackson four years later cleared up the *Porrhomma* tangle and made it a new species under its present name. On the slope of the ditch was a saturated mass of *Polytrichum*, half smothered under a burden of pine needles and as densely packed as the pine needles themselves.

Without much hope of finding anything interesting I cut out a chunk of it and was amazed at the number of spiders cast upon my sheet. They seemed to be all of one species, however, and certainly all the samples examined were females of *Hilaira excisa* by far the commonest species in all the wet places of West Allendale. The male is quite a rarity, being on view only during a short period at the end of August and beginning of September.

The mating period seems to terminate his existence, but the female survives the winter and deposits her eggs in spring, when she may be found guarding one or two snow-white cocoons.

Further sifting of the Polytrichum revealed other species, characteristic inhabitants of wet places where Polytrichum, rushes, or similar cover is present—*Centromerus expertus*, *Hilaira uncatata*, *Mengia cristata* (*Mengia scopigera* of authors) *Centromerus arcanus*, and *C. silvatica*. The first two much prefer saturated herbage, but the rest are quite content and perhaps more at home in a harbourage merely moist. My next spell, among ordinary damp moss two or three yards away, yielded a spider much more interesting than any of the foregoing, *Leptyphantes angulatus* Cb. In 1870 a solitary male had been taken by Dr. James Hardy on Cheviot Hill and I had already taken one of the same sex nearer home; but now I had struck the right habitat and bottled both sexes with great delight, for this was the female's first appearance on any stage.

A return to the original Polytrichum in the month of October was still more thrilling, for with the females there were now several males, and they were decidedly not *Hilaira excisa*. Moreover, I presently satisfied myself that they did not belong to any other species then published. Unfortunately I blundered badly in assuming that the females taken with them must be of the same species though remarkably like the female of *H. excisa*. It was not till the following year that I began to suspect that the number examined had not been sufficient. In the autumn a new trial was made, and of some sixty specimens five were strangers and, obviously the true partners of the males I had named *Hilaira peticax*. In the years which followed I found that this spider inhabited the whole circuit of the dale wherever the right shelter existed at the right altitude (1,400- 1,800 feet).

Another favoured spot was a little cleugh the foot of which is bridged by the Allendale- Nenthead road close to the junction with the Ninebanks road. Harty Cleugh is the book name, but for us it was always Juniper Cleugh as junipers lined the steep banks on both sides of the ravine. The moss and detritus underneath them on the south, sunless and damp, serve as cover for a mixed assemblage of montane spiders, including with a few of those which also frequent wet places such things as *Diplocentria rivalis*, *Oreonetides firmus*, and *Dicymbium tibiale*. The opposite bank, facing south, is much drier but moist enough in spring to give a fine show of primroses, many of them in the red form. Here also I took *Evansia merens*, the spider which lives with the larger black ant, *Formica fusca*.

At the head of the cleugh the stream issues from a watery area called Hartley Mea (the "mere" of the O. S. maps is the perversion of an alien surveyor). Mea is the local term for a rushy tract, usually pretty wet, where rushes are periodically mown for thatching haystacks or bedding cattle. This was my only locality for the two rare spiders *Cornicula kochii* and *Walckenaeria nodosa*.

Between the road above Coalcleugh and the cairn of Killhope there lies a wide tract of low heather and *Rubus Chamaemorus* dotted sparsely with three species of *Vaccinium*. One summer day while prospecting at large over this region I found myself in a dry water-course and casually began to beat the scrubby heather which overhung the two-foot wall of bare clay which bounded it. Almost at once I struck a small colony of *Lophocarenum mengii*, a spider I had only once before seen. So encouraged I continued with still better luck, for presently I found in my tray a fat Hilairid female of very unfamiliar aspect. Although a Hilaira in such an arid spot was clean contrary to nature, I worked on till I was tired out, vainly of course. It was the end of my luck.

About that time I had adopted a new dodge for collecting spiders. Having noticed how they sometimes swarmed in heaps of mown grass which had been left lying for a short while, I thought it would be a good plan to make such heaps for myself where they would be most useful. One November, during a spell of favourable weather, I tried this method at Whetstone Mea, a

swamp on the north-west slope of Killhope Law. The shot was splendidly successful. At the first shake my sifting sheet was swarming with the swamp species named above, but among them were also half a dozen of the big unknown *Hilaira* female which I had long looked for. Obviously like the rest of its kind it was a swamp species; so I cut clump after clump of rushes in the hope of finding the male, but not even a female appeared. Perhaps I should have cut right down into the peaty mud; so down I got to the task of examination, kneeling on a bundle of rushes. In ten minutes I had a tube full of both males and females. And that is how I discovered *Hilaira nubigena*.

It belongs to an Arctic group in which the males have a brush of spines on the fore leg. Apart from that they are true *Hilairae*, though Strand has given them a genus (*Utopiellum*) of their own.

TWO ANNUALS.

THE LONDON NATURALIST: Journal of the London Natural History Society for 1938. 3s.6d.

LONDON BIRD REPORT: Supplement to the London Naturalist for 1938. 1s. 6d.

The account of the survey of Limpsfield Common is here continued and includes a comprehensive review of the vegetation with a useful ecological map of the whole area. R. S. R. Fitter: contributes the story of the introduction and spread of the Grey Squirrel in and about London with the aid of a dated sketch-map L. G. Payne tells the tale of the discovery of *Lastrea cristata* in West Surrey and supplies two fine photographs; and J. Ross discusses the status of the agamic Cynipid *Neuroterus Schlechtendali* Mayr. In addition there are notes and records of things archaeological and entomological. Under the latter head it is cheering to find a little space given to spiders. G. H. Locket records seven instances of ground spiders parasitized by the larvae

of Cyrtid flies (three species). C. H. R. Thomas kept a female spider under observation for a year and tells what he saw. He heads his paper " The House Spider: *Tegenaria atrica* Koch "; but for these islands *the* house spider is *T. derharnii*, and *T. parietina* within its narrow limits (from Suffolk to the Thames) is *a* house spider while *T. atrica* normally lives out of doors.

The Bird Report runs to 50 pp. It is some indication of the activity of this section that 673 birds were ringed in 1938 by no less than 18 ringers. Special reports are given concerning the Reed Warbler, Tufted Duck, and Turtle Dove.

J.E.H.

PROCEEDINGS, etc.. South London Entomological and Natural History Society, 1938-39 Ten plates, 11s.

Naturally this volume is strong in Entomology; five papers deal with Lepidoptera, two with Diptera, and only one is Botanical. In the last H. R. Hutchings writes at large of "British Orchids "" and some of their peculiarities, but why do some southern writers persist in ignoring records of the north of England? It is fifty years since I was shown an English specimen (then nearly twenty years old) of *Corallorhiza innata*; yet here it is roundly asserted that " *C. innata* is confined to certain parts of Scotland." A. W. Dennis contributes excellent photographs of white varieties of the Bee and Fly Orchis.

H. W. Andrews gives an account of the three Cyrtid flies listed by Locket as bred from British spiders (Lycosids and a Drassid) and on the authority of Verrall and others adds Avicularidae and Theridiidae (here twice written Theridae) as families providing hosts for these flies. Diagnoses and plates are supplied. Fruit-flies are discussed by M. Niblett, while three papers deal with field work — two with the use of light and one with some interest in Microlepidoptera. J.E.H

THE BOTANIST CHECKS UP ON A LOCAL TRADITION.**K. B. BLACKBURN.**

The King's College Expeditions to the Hebrides in 1937 included a visit to the Island of Soay, which lies just off the S.W. corner of Skye, separated from it by a narrow channel, called the Sound of Soay. In shape the island is rather like a cottage loaf lying S.W.-N.E. and the junction between the halves is only a quarter of a mile across. The land here is low and the islanders told us that, within the memory of man, there were two separate islands and they showed us sea shells from inland as proof. On the narrow low strip of the isthmus potatoes are grown in a soil that is obviously peat, so an attempt was made to get evidence from the peat to test the truth of the statement.

A boring apparatus, which gives samples of the peat at different levels, was put down in a disused part of the potato patch and the depth of peat there was found to be just over eleven feet. The top portion had obviously been worn away and wasted by cultivation but the disturbance did not go far down. To the N.E. of this area, just over a slight rise, is a lake, called Loch Mor, with swamps round its margin. A second bore was put down at the lake edge nearest the isthmus, for comparison. The tool struck bottom at ten and a half feet, but, whereas the previous sample was completely peat, here the deposits were of various kinds. The bottom nine inches consisted of little-decayed sphagnum peat with recognisable mosses of various sorts; the next foot and a half was a gritty grey clay followed by grey-brown mud for another foot and a half. Above this was a fibrous lake deposit gradually changing, towards the top, to another sphagnum peat.

Studies in post-glacial biology, in various parts of Britain, agree in indicating one particularly striking change of climate. An examination of the pollen grains preserved in peat shows this by a sudden alteration of the composition of the prevailing forests. In the earlier time the trees were chiefly birch and pine, with a rather large quantity of hazel just before the change; later the dominant tree was alder, with accompanying oak and elm. The

earlier period is referred to as Boreal and the later as Atlantic. By way of having a clear boundary, the transition in the peat is defined as that level at which the increasing percentage of alder grains equals the decreasing percentage of pine grains. This transition has been calculated to have occurred somewhere about 5500 B.C. and represents the onset of a more rainy period.

The isthmus peat shows at its base an extremely high quantity of alder pollen due, in part, to trees growing actually on the spot, since twigs were found in the peat and identified. The alder gradually becomes less, and, after various changes in composition, the pollen samples indicate a birch hazel mixture. This corresponds to the trees now present on the island.

The lake side peat is different from this. The small depth of peat at the base contains large quantities of pine, birch and hazel, whereas alder, absent at the bottom, only reaches eleven per cent. at the top of it. Clearly this peat belongs to the end of the Boreal period and is older than the base of the first, which is Atlantic in character. The gritty grey clay gives few clues, but the grey-brown mud provides a surprise, for it contains extremely large quantities of salt-water diatoms. Above this layer the diatoms gradually disappear and the return to fresh water conditions is indicated by the presence of desmids, algae which do not like salt. Pollen counts were obtained, with some difficulty, from the mud layers and there again alder was the dominant tree, falling off in quantity with the return of fresh water conditions. The upper peat layers are here better represented and they also show a gradual change to present conditions of tree population. Two points of interest were observed; firstly, pollen of beech, as far as five feet down, proved that the tree grew wild there in early times, and secondly, spruce near the top, showed which layers were produced after the period of planting of that tree in Scotland.

As the results were beginning to look hopeful, the Geological Survey account of the island were consulted. This states clearly that gravel deposits under the peat of the isthmus, indicate that the sea once divided the island at this point. The peat investigation, showing steady deposit back to Atlantic times, shows that the sea has not been there since, but does not actually prove that

it was there then, though it does indicate some marked change of conditions of drainage at that time. The geological map also gives several low-level raised beaches above the S.E. shores of the island and occupying a considerable portion of the south-east end of Loch Mor. Since these beaches are recorded as approaching thirty feet above present sea level, it is clear that the sea must have been much higher in relation to the land when they were formed. The evidence from the bore at the side of the lake takes us very much further, for it tells us that land producing peat was invaded by salt water at the end of the Boreal period and continued, under at least brackish conditions, throughout early Atlantic times. The piling up of storm beaches during this period was probably the cause both of the permanent increase of nearly ten feet in the level of Loch Mor and of the swampy conditions giving rise to peat across the isthmus. Exactly how much of this part of the island was covered by sea in early Atlantic time, cannot be stated with any certainty from the evidence available but a consideration of the position of the 50 ft. contour in connection with a series of photographs of the critical areas enables one to put forward a reasonable hypothesis. The harbour, at present, occupies more than half of the distance across the island and the low land of the isthmus is in a straight line with it, so, subtracting the 11 ft. of peat there now, the probability of a sea channel across it there seems great. Loch Mor now empties its waters both into a branch of the harbour and the opposite bay and the salt water probably took the same channels. In addition there may have been connections between the head of the harbour and the loch, and between the loch and the other end of the isthmus. The whole might be described as a channel, somewhat wider than the harbour, with a series of large closely-set islands up the middle. The deepest and widest part of the series of channels would undoubtedly be what is now the loch; this may be sufficient explanation of the completely undisturbed continuity of the sediments deposited in it.

In other parts of Scotland similar phenomena have been observed. The lower reaches of the rivers Forth and Tay have large areas of fertile "Carse Clays" which were laid down when the sea came much further up the channels than at present. By means of the pollen statistics method it has been shown that this,

also, was in early Atlantic times. Again in many other places this same high level sea has cut caves and rock notches and laid down beaches at 23-40 ft above the present shore level.

It has thus been shown that there is the greatest probability that Soay was divided in two in Atlantic times, but what of the possibility of a continuity of human tradition? Primitive fishermen of the Azilian race are the first known inhabitants of Scotland and they lived on the shores of this same " 23 ft. sea," no further off than Oban, and perhaps nearer too, but that such a relatively insignificant topographical feature would be of sufficient interest to be told down those thousands of years is well nigh incredible; even if we could prove continuity of habitation. Sad as it may be to have to take the glamour from the story, it seems much more probable that an intelligent guess at the state of affairs, based on observations of similar features on other islands, was embroidered, as to date, on the basis of the very fresh looking sea shells which could be dug out of the raised beach.

THE HUMBLE-BEES OF NORTHUMBERLAND AND DURHAM.

J.W.H.H.

In spite of the fact that the distribution of our Humble-bees is fairly well known, comparatively little study has been devoted to them. In fact, since Bold first discussed our Aculeate Hymenoptera (*Natural Hist. Trans. of Northumberland and Durham*, Vol. III, page 164, 1870) only the late Mr. Chas. Robson, Mr. J. E. Ruxton, Dr. P. N. Grinling, Dr. E. Smith and myself have interested ourselves in them. In this paper it is proposed to list them and their ranges under more modern nomenclature, and to indicate any changes in abundance, etc., since Bold ended his labours.

Bombus terrestris L. Listed by Bold as " Springly distributed." Most of us have found it quite common, more especially in bilberry areas.

B. lucorum L. Stated by Bold to be our most abundant species; this is probably the case still.

B. lapidarius L. Bold describes this as the common red-tailed "Bumler" of our district and gives its range as general. This statement held true of my younger days, but I am certain that its numbers are much less than a quarter of what they were. No nest has come under my notice for years.

B. pratorum L. Bold says "A universally distributed, but not a very abundant species with us." If that was a correct view of the position, and there are no reasons for doubting it, the insect is quite abundant now, especially where raspas are common.

B. lapponicus Fab. Not known to Bold, but captured by Ruxton, Grinling, Smith and myself at various points on the moors, especially in bilberry zones. Edmundbyers, Dipton Woods, Rothbury, Simonside, etc., may be cited as typical localities.

B. soroensis Fab. Bold gives Gosforth as his sole locality. Ruxton can add Hunstanworth and Robson and myself the Team Valley.

B. ruderarius Muller. This is the *Bombus derhamellus* of Bold who mentions it as occurring on Gateshead Fell, Long Benton and elsewhere, but "very sparingly." About the year 1900, it was quite common wherever any of us collected in the two counties. Here (Birtley) Mr. Robson and I found it the commonest "red-tail" on the east side of the valley. Now it is more or less a rarity.

B. hortorum L. Still as Bold said "a very common and generally distributed species."

B. subterraneus L. Still very local and rare.

B. distinguendus Mor. This is Bold's *Bombus fragrans* which he lists as "Sparingly distributed inland; rather more abundant on the coast between Sunderland and South Shields." During the early years of this century the situation had changed, and the species could best be described as not rare and well distributed. Now, with the exception of the fact that we would regard its coast distribution as more extensive, Bold's statement would fit the case.

B. sylvarum L. Bold says " Found throughout the district and by no means rare." Ruxton regards it as rare, Mr. Robson saw it once only, and I have taken it twice, once at Thorpe Thewles and once at Birtley.

B. agrorum race *septentrionalis* Vogt. This is, of course, Bold's *Bombus muscorum*, and very variable in colour. Our form as will be gathered from its name, is a special northern race.

B. muscorum, race *pallidus* Evans. The *Bombus senilis* of Bold of which he says " Found throughout our district, but nowhere in abundance." The first part of this remark is still true, but the second cannot suffice now. It is often quite common, especially on some moorlands.

B. scrimshiranus. Listed by Bold.

Psithyrus rupestris Fab. The first of the " Cuckoo " Humble-bees; stated by Bold to be somewhat rare and Sunderland, Marsden and Long Benton are given as stations for it. We regard it as very rare, but Ruxton, Robson and I have taken it in the Derwent Valley, Hexham and Birtley. I believe it to be a vanishing species.

P. vestalis Geoffrey. Bold says " Abundant," and this remains true.

P. barbutellus Kirby. Bold remarks " Also of common occurrence." We believe it to be well spread on the area, but not so plentiful as the preceding.

P. campestris Panzer. Of this Bold announces " Very common." Perhaps " Generally but thinly distributed " would be better at the present time.

P. sylvestris Lep. This species does not appear in Bold's work. Of it Ruxton writes (under the name *Psithyrus quadricolor*) " In the Derwent district this species appears to be much more common in the vicinity of the hills than it is on the more low-lying cultivated parts." My own experience is that it is general, but not very abundant. Mr. Chas. Robson gives as localities, Birtley, Jesmond Dene and Shotley Bridge.

DARLINGTON "FIRST DATES."

J. B. Nicholson, M.A.

For the past fifteen years (1925-39) the Darlington and Teesdale Naturalists' Field Club has acted as an observer for the Darlington district under the Royal Meteorological Society's scheme of phenological observations. Each year a record has been kept of the first dates of the flowering of certain plants, of the arrival and departure of certain migrant birds, of the appearance of certain insects and of other natural events. A summary of the data thus accumulated, together with some indication of the conclusions to be drawn therefrom, may be of general interest.

The most important outcome of such a series of observations is that it enables us to calculate, with a fair amount of accuracy, the average date of each event for the Darlington district. Such average dates are of great practical assistance to observers in future years in that they indicate the approximate time when each succeeding event may be expected; and those concerned with plant flowering are especially useful in enabling the observer to estimate, at any time, the earliness or lateness of the season. Incidentally, the course of any particular season (i.e. its varying earliness or lateness from month to month) may be demonstrated by graphical methods, once averages are available as a standard.

For present purposes our observations may conveniently be summarised in tabular form, showing the average date of each event, the earliest and latest dates recorded for it, the range (in days) between these two extremes and the average yearly variation from the average date. No event for which less than 12 years' records are available has been included in the Tables, the number of records used in each case being indicated in brackets

TABLE 1:—PLANT FLOWERING RECORDS

	Average Date	Earliest Date	Latest Date	Range Days	Average Variation Days
Snowdrop (13) (<i>Galanthus nivalis</i>)	Jan. 24	17/1/32	3/2/28	17	51/2
Winter Aconite (13). (<i>Eranthis hiemalis</i>)	Jan. 28	17/1/32	4/2/28	18	4
Hazel (female) (13) . (<i>Corylus avellana</i>)	Feb. 8	23/1/32	23/2/29	31	7
Yellow Crocus (12) . (<i>Crocus aureus</i>)	Feb. 17	3/2/38	10/3/29	35	81/2
Coltsfoot (15) (<i>Tussilago farfara</i>)	Feb. 22	30/1/32	15/3/31	44	101/2
Lesser Celandine (15) (<i>Ranunculus ficaria</i>)	Feb. 27	7/2/32	24/3/34	45	131/2
Wood Anemone (13) (<i>Anemone nemorosa</i>)	Mar. 25	12/3/38	4/4/31	23	51/2
Almond (12) (<i>Amygdalus communis</i>)	Mar. 29	9/3/38	17/4/29	39	11
Blackthorn (13) (<i>Prunus spinosa</i>)	Apr. 8	15/3/38	25/4/31	41	9
Garlic Hedge-Mustard (15) (<i>Sisymbrium alliaria</i>)	Apr. 25	7/4/38	9/5/29	32	61/2
Purple Lilac (14). — (<i>Syringa vulgaris</i>)	May 9	9/4/38	22/5/29	43	10
Horse Chestnut (14) (<i>Aesculus hippocastanum</i>)	May 12	16/4/38	22/5/34	36	61/2
Hawthorn (13) (<i>Crataegus monogyna</i>)	May 13	14/4/38	25/5/37	41	71/2
Laburnum (12) (<i>Cytisus laburnum</i>)	May 13	29/4/38	24/5/37	25	6
Ox-eye Daisy (12) (<i>Chrysanthemum leucanthemum</i>)	June 6	25/5/33	10/6/34	16	3
Dog Rose (13) (<i>Rosa canina</i>)	June 15	3/6/39	21/6/30	18	41/2

PLANT FLOWERING.

One of the most striking features of Table I (Plant Flowering) is the wide range and pronounced variability from year to year of the February- or March-flowering Lesser Celandine and

Coltsfoot. In marked contrast is the relative consistency of Snowdrop and Winter Aconite, both of which make their first appearance with great regularity in the latter half of January or the first few days of February. Intermediate between these two pairs of flowers in order of appearance, and also in variability, are the Hazel (female flowers) and Yellow Crocus. It seems probable that the extreme variation in flowering-date of the Celandine and Coltsfoot is correlated, to a considerable extent, to the very different weather conditions which February brings in different years.

March provides an interesting contrast between the comparatively-regular appearance of the first Wood Anemone and the widely-varying blossoming of the Almond. Similarly, comparison of the April-flowering Blackthorn and Garlic Hedge-Mustard also reveals a greater variability on the part of the shrub. These instances may possibly indicate a distinction of more general application as between woody and herbaceous plants.

It will be noticed that the " earliest dates " for the March, April, and May-flowering plants were all recorded in 1938. As a result of the " freak " weather of this abnormally-fine spring, the ranges of all these plants were considerably extended. Blackthorn, for example, was observed 13 days earlier than in any other year and 24 days in advance of its average date. Similarly, Purple Lilac, Horse Chestnut and Hawthorn were respectively 13, 20 and 21 days earlier than in any other year and 30, 26 and 29 days ahead of their average dates.

As we approach midsummer, we find that seasonal variations tend to diminish. Ox-eye Daisy and Dog Rose both yield most consistent results year after year, especially the former, which has only once been recorded outside the week June 4th—10th.

It would thus appear that the maximum variation in weather effect on flowering is experienced in the latter part of February, while January flowers share with those of June the greatest regularity. It would be interesting to know how far this conclusion is borne out by the experience of other observers in regard to the same and other plants.

TABLE II.—BIRD MIGRATION RECORDS.

	Average Date	Earliest Date	Latest Date	Range Days	Average Variation Days
SPRING ARRIVALS.					
Sand Martin (14) (<i>Riparia r. riparia</i>)	Apr. 13	31/3/33	25/4/36	26	7
Willow Warbler (15) (<i>Phylloscopus t. trochilus</i>).	Apr. 14	8/4/26	21/4/36	14	3
Swallow (15) (<i>Hirundo r. rustica</i>)... ..	Apr. 15	10/4/30	20/4/36	11	3
Cuckoo (15) (<i>Cuculus c. canorus</i>)... ..	Apr. 25	18/4/33	2/5/26	14	31/2
House Martin (15) (<i>Delichon u. urbica</i>)... ..	Apr. 26	13/4/33	9/5/37	26	6
Swift (15) . (<i>Apus a. apus</i>)... ..	May. 4	28/4/28	12/5/39	13	31
Corncrake (14) (<i>Crex crex</i>)	May 6	24/4/28	15/5/26	20	51
Cuckoo last heard (13)	June 26	18/6/37	3/7/27	15	4
Swift departs (15)	Aug. 19	11/8/32	30/8/30	18	41/2
Redwing arrives (15) (<i>Turdus m. musicus</i>)	Oct. 16	4/10/26	23/10/25	19	4
Fieldfare arrives (15) (<i>Turdus pilaris</i>)	Oct. 22	8/10/27	31/10/28	24	61/2

BIRD MIGRATION.

The relationship between migrant arrival-dates and the weather is of much too complicated a character to justify any attempt to draw conclusions thereon from Table II. One interesting feature, however, to which attention may be drawn, is the wide range of the arrival-dates of Sand Martin and House Martin, as compared with other spring arrivals. That this is not due to one or two abnormal records is indicated by the greater annual variation exhibited in these two species, i.e., 7 and 6 days, as compared with 3 or 31/2 days in most cases. It may be added that our records of other species, e.g., Tree Pipit, Sandpiper, Yellow Wagtail, Whitethroat and Wood Warbler, also point to an average variation of about three days.

TABLE III.—INSECT AND MISCELLANEOUS RECORDS.

	Average Date	Earliest Date	Latest Date	Range Days	Average Variation Days
Small White Butterfly (13) (<i>Pieris rapae</i>)...	Apr. 24	4/41'26	16/5/32	43	12
Orange Tip Butterfly (14) (<i>Euchloe cardamines</i>)	May 17	6/5/31	28/5/39	22	6
Meadow Brown Butterfly (12) (<i>Epinephile janira</i>)	June 30	16/6/25	11/7/37	25	5
Frogspawn (13) (<i>Rana tephoraria</i>)	Mar. 10	26/2/26	22/3/31	24	6

BUTTERFLY EMERGENCE.

A glance at Table III reveals the striking contrast in range and variability between the Small White Butterfly, due to appear in April, and the Orange Tip and Meadow Brown Butterflies, due in May and at the end of June respectively. The vagaries of April weather provide sufficient explanation of the erratic appearance of the first-named species. Although a much greater assemblage of comparable facts is required before any positive conclusions can be drawn, it is hoped that the foregoing data and notes will focus attention on some aspects of a topic of never-failing interest — our weather and its effects on plant, bird and insect life.

THE SOCIETIES.
NORTHERN NATURALISTS' UNION.

It has been decided to hold no meetings of the Union till further notice. During the dark days Members and others can help by sending any information in connection with the questions asked in the Notes for Workers No. 2, in the May issue of the *Vasculum*, (Vol.25, P.59)

G. L. DRURY, *Hon. Secretary.*

THE WALLIS CLUB.

On Saturday, December 9th, 1939, the Wallis Club held a successful meeting in the Bible Society's rooms in Pilgrim Street. Dr. K. B. Blackburn showed a very interesting series of Hebridean Pondweeds, and pointed out where they agreed and where they differed from local forms of the same species. She also discussed a remarkable hybrid fern from Pabbay, in all probability a cross between *Asplenium adiantum-nigrum* and *A. marinum*. Dr. W. A. Clark produced and gave some account of various bones, teeth and pottery he had secured from Bronze Age kitchen middens. Prof. Hobson exhibited a surprising series of southern sea urchins and Starfish which he had collected on the coasts of the Isle of Muck. Prof. Heslop Harrison had on view local (Northumbrian) specimens of *Linnaea borealis* as well as of the Tansy Plume moth (*Platyptilia ochrodactyla*), *Eupithecia innotata* and of the Solitary Ant, *Mutilla europaea*.

DARLINGTON AND TEESDALE NATURALISTS' FIELD CLUB.

September 30th, (Saturday).—The sixteenth annual Fungus Foray took place, attended by 20 members, in Gainford Great Wood, permission having been given by Lord Barnard and Mr. Claud E. Pease. Mr. J. B. Nicholson was leader. The afternoon was fine but fungi were not very plentiful. A meeting at-which 22 attended was held in the evening, at which the afternoon's gatherings were named and exhibited. Mr. J. B. Nicholson gave a short talk on some of the species, saying that fungi were scarce, probably owing to the recent dry weather and rather cold nights.

October 3rd. Mr. J. B. Nicholson reported on the Fungus Foray, stating that 51 species of fungi and one of the *Mycetozoa* had been identified. Spore prints of *Pluteus servinus* (Schaeff) and *Armillaria mellea* (Vahl), dated 1915, were exhibited.

Mr. P. Humble reported that on Sunday, September 23rd, great numbers of swallows, twenty-five or more House Martins, Grey, Yellow and Pied Wagtails (the last about a hundred), were seen in a distance of about 250 yards by the Wear at Bishop Auckland; and a Corncrake was heard on October 1st, near the river at Witton Park.

October 10th. Mr. C. P. Nicholson read some notes on the Teesdale and other Durham and Yorkshire Limestone Caves. Mr. R. H. Sargent read from "Nature," October 7th, 1939, a quotation from an article in "The Gentleman's Magazine," October, 1839, on a buried forest at South Stockton.

Miss N. B. Glendinning reported on a walk taken on Saturday (October 7th) by a party of members from Richmond past Hartforth by Jagger Lane to Kirklands. A quantity of Orange Elf-cap, Beefsteak and other fungi were found, also two Primrose flowers and Harebell and Foxglove flowers were seen in Gilling Wood (V.C.65).

October 17th Miss B. N. Glendinning reported on a walk taken on Saturday, the 14th, by eleven members, from Gainford, via Selaby Park to Staindrop. A large number of wild fruits were gathered and exhibited at the meeting. Mr. C. P. Nicholson gave two notes on Darlington pioneers— (1) John Wilders, Darlington's first Postman, 1814-1826; and (2) Robert Wilson, Darlington's first Elementary School-master, 1812-1820.

October 24th. Mr. J. B. Nicholson gave the first of the Phenological Reports (Flowering Plants). He said that *Ranunculus repens* Linn. (Creeping Crowfoot) was reported in flower on January 9th. Snowdrop first recorded on January 21st, and Winter Aconite on January 25th, each 3 days ahead of the average date. The female flowers of the Hazel were reported on January 30th, 9 days earlier than usual. *Ranunculus Ficaria* Linn. (Lesser Celandine) reported in flower on February 5th, 3 weeks early, in a sheltered spot, other reports on February 9th and 11th.

February 7th brought the first Yellow Crocus, 10 days early, also reported on 10th and 11th. On February 9th *Tussilago Farfara* Linn. Coltsfoot appeared a fortnight ahead of its average time; thus showing how comparatively mild weather in February brings on plant life apace. The Almond first noted in blossom on March 15th, a fortnight early. *Sisymbrium Alliaria* Scop. Garlic Mustard was reported in flower 12 days early, on April 12th. On the same day Horse Chestnut reported in leaf, while Oak and Ash were both reported in leaf on May 6th, an unusually early date. Hawthorn and Horse Chestnut seen in flower on May 14th.

Rosa canina Linn. Dog Rose and *Sambucus nigra* Linn. Elder, both reported in flower on June 3rd. *Chrysanthemum Leucanthemum* Ox-eye Daisy on June 4th. This is the earliest date we have ever had for the Wild Rose, which as a rule varies less in its appearance than any other plant on our list. Miss N. Smith reported on a walk taken by 18 members, on Saturday, 21st, mainly by field-paths from Piercebridge to Aldborough and Newton-Morell.

October 31st. Mr. A. E. Taylor reported on a walk taken on Saturday, 28th, by 13 members from Heighington to Killerby and Summerhouse, the Dipper and Brown Owl were seen.

The second of the Phenological Reports (Insects) by Mr. J. E. Nowers, was read in his absence by Mr. A. E. Taylor. It was remarked that a new and very long list of insects for observation had been published this year for the first time. Many of these insects are not likely to be found by any one but an entomologist working regularly throughout the year. The year 1939 was not a good butterfly year; only one Red Admiral was seen, on August 12th; and not one spring immigrant or hibernated (?) specimen.

A few hibernated Small Tortoiseshell butterflies were seen in the spring, and the new brood was not particularly plentiful (first seen on July 23th). The Meadow Brown butterfly was very common (first seen on June 26th). The Small White butterfly has been in great numbers all the season (first seen on April 11th).

The Large White has been in great numbers, the larvae doing enormous damage to all kinds of cabbage; they were still to be found in December. There appear to have been very few of the ichneumon (*Apanteles glomeratus*) that usually keeps them in check. The Orange Tip butterfly has been fairly plentiful (first seen on May 23rd). The Small Heath butterfly has been fairly plentiful (first seen on May 29th). The Common Blue butterfly appears to be getting less common in the district.

The Large Skipper butterfly has been found near Darlington during the summer. Many other species were mentioned in the report.

November 7th. Mr. C. P. Nicholson read a short paper on "The South Durham Canal," describing a map, dated 1768,

showing the proposed canal from Stockton to Darlington and neighbourhood. The map was exhibited by Miss Watson.

November 14th. Mr. A. Stainthorpe gave the third of the Phenological Reports (Birds). This was followed by a short talk on migration and some examples of bird calls. The President exhibited a jelly-like fungus *Tremella* sp.

November 21st. Miss F. Spencer gave a report on a visit on Saturday (18th) to Bowes Museum, at which seventeen members were present. The party were conducted round the period rooms by Mr. S. E. Harrison, the curator. Mrs. Harrison had arranged a very interesting display of Victorian dresses, as worn in 1840, 1850, 1860, 1870, four Barnard Castle ladies acting as mannequins.

Mr. C. W. Murray submitted the fourth of the Phenological Reports (Farm Crops), which was read by Mr. J. B. Nicholson. Wheat and Barley both very good crops. Oats rather light crop. Sugar Beet, Turnips and Mangolds all a good crop.

The President exhibited specimens of and gave a short talk on a number of garden "pests," including Woolly Aphis, Red Spider, Mussel Scale and Big Bud of currant trees.

Holly was reported in flower on November 20th.

November 28th. Mr. A. E. Taylor gave a talk on Star Constellations. Mr. J. B. Nicholson reported that he had found 47 species of plants in flower between November, 18th and 23th, including Red Campion, Honeysuckle, *Erophila verna* Mey. (Whitlow Grass), *Geranium Robertianum* Linn. (Herb Robert), *Calystegia sepium* BR. (Large Bindweed), Wild Strawberry and Meadow Sweet.

December 5th. Mr. J. B. Nicholson gave a talk on Mycetozoa, explaining their curious life history.

December 12th. The President gave a talk on Spiders and the use of their webs in optical instruments. Bats were reported having been seen on December 10th at Cotherstone and in the Cleveland Hills.

December 19th. Mr. C. P. Nicholson read a paper on "The Founder of Polam School, Darlington." Mr. W. W. Allen exhibited and talked about a Death's Head Hawk Moth taken this autumn

JOHN E. NOWERS, *Hon. Secretary.*

NOTES.

The Long-eared Bat (*Plecotus auritus*) in North Durham,

On September 25th, I had brought to me for inspection a fine specimen of the Long-eared Bat. It had been taken at rest in a house in The Avenue, Birtley. When brought, it was lively, strong and even vicious, snapping at and biting objects presented to it and retaining a firm grip thereon. This morning, October 1st, I found it dead in its box although it was lively enough yesterday and had, since I received it, eaten a few house flies with which it had been supplied, as well as sipped or extracted moisture from soaked bread.—C. R.

A Few Records from the late Mr. T. Robson's Diary.

Last year we recorded a remarkable early occurrence of *Carex incurva* near Tynemouth, where it was collected by Mr. T. Robson in the "seventies" of last century. The following plants noted by the same gentleman will surprise many present-day botanists. He took them in Scotswood Dene: Lily of the Valley, 1848, Spindle Tree, 1848, White Saxifrage (*Saxifraga granulata*), 1846 and 1847, Common Enchanters' Nightshade, 1849 the Common Daffodil, 1847 Goldilocks, 1846.

Humble Bees at Harebell Flowers.

In this district the Common Harebell for some unexplained reason seems to lack a constant supply of insect visitors, a few beetles and thrips forming the bulk of its patrons. However, it can be recorded that the Earth Humble bee *Bombus terrestris* probes it quite freely in some stations.—C. R.

Herb Paris in Northumberland and Durham.

I have only seen Herb Paris at Styford, Bothal and High Force, and I have obtained the impression that the species is of marked decreasing frequency. Clearly, Mr. T. Robson was able to find it much more widely distributed than we can. He reports it from Netherwitton 1843 Scotswood Dene 1847 Team Valley, Durham, 1848, Anick Bank 1870. The Team Valley record seems very noteworthy for I have worked most of the woods along the Team very closely without encountering this interesting plant. However, as I have not closely investigated the very likely looking ground between Urpeth Hall and the Drift near Beamish it may occur there.

Notes on the Small Clouded Brindle Moth and the Dismal.

With reference to Professor Heslop Harrison's notes about *Hadena unanims* and *Dyschorista fissipuncta* I should like to add that the

larvae of the former used to occur plentifully on Ribbon-grass between Swalwell Station and the Stepping Stones. Once I saw the larvae of *D. fissipuncta* swarming under the bark of willows at Prestwick Carr.—GEO. NICHOLSON.

Notes on Wasps sipping Nectar.

Perhaps the appended observations on the visits of wasps to various flowers will interest those interested in general natural history. To make them more useful the sexes are discussed separately.

Vespa rufa: Queens, Wood Anemone, White Saxifrage, Gooseberry Figwort; Drones, Thistle; Workers, Thistle.

Vespa austriaca: Queens, Bilberry.

Vespa vulgaris: Queens, Sallow Catkins, Gooseberry, Arabis, Hawthorn buds, calyces of Dead Nettle, Hedge Parsley; Workers, stipule glands of Common Tare.

Vespa germanica: Queens, Gooseberry, Rhododendron.

Vespa sylvestris. Queens, Gooseberry, Figwort, Rasp, Angelica, London Pride; Drones, Bramble; Workers, Snowberry, Convolvulus, calyces of Dead Nettles, Rasp, Willow Herb, Bramble, Figwort.

Vespa norvegica: Workers, Garden Leek, calyces of Dead Nettle.

—J. W. H. H.

Distinguishing Marks of *Vespa rufa* and *Vespa austriaca*.

In differentiating this pair of closely allied species, of which the second is parasitic on the first, use is often made of the " anchor " mark on the clypeus. In *V. rufa* workers this appears generally as a well developed anchor and in *V. austriaca* as three dots. In local examples of *V. rufa* it is not rare to find the " anchor " reduced to three dots similar to those of *V. austriaca*.—C. R.

The Common Grass Snake in Durham.

Of recent years I have never heard of this snake's having been taken anywhere in our counties. However, when I was a boy at school here boys who came from the west side of the Team Valley occasionally brought them to school. Later, when I was more interested in such things, I could never obtain one. Nevertheless, they must have persisted, for just before the last war Mr. Chas. Robson had a fine specimen brought to him for examination which had been captured in the same localities as had produced the examples of my early days. Discussing the matter with older people, they uniformly told me that snakes had always been known to occur along Urpeth Bottoms in the 1860's and 1870's.—J. W. H. H.

Newts in the Team Valley.

These animals have always been more or less abundant in this district. In my younger days we always distinguished the "Wet Ask" and the "Dry Ask." The former included the Common Newt and the Great Crested Newt, whilst the latter term covered Newts and Lizards. As we became more sophisticated, we talked of the Common Newt and the Crested Newt, the latter being the genuine article and the former being a composite of the Smooth and the Palmate Newt. At the present all three species are much less common, although the Smooth Newt cannot be considered really rare. In all probability I could with certainty produce samples of the Smooth and Palmate Newts if and when required in the breeding season. On the other hand, although I used to see the Crested Newt within a couple of hundred yards of this house, I could not guarantee any pond to produce it now.—J. W. H. H.

Method adopted by larvae of the Large White butterfly (*Pieris brassicae*) in climbing glass window panes.

During September, 1939, larvae of the Large White butterfly were very abundant on the nasturtiums in the flower bed on the platform at Washington railway station, and several fully fed caterpillars were observed climbing up the window panes of one of the offices. They were progressing rather slowly, their heads moving from side to side as they spun a long narrow network of silk on which to climb. There were quite a number of these narrow silken tracks up the windows, but none of the caterpillars appeared to avail themselves of the paths made by previous travellers.—C. J. GENT.

A Ringed Sanderling at West Hartlepool.

It may interest you and the readers of "The Vasculum" to know that a Sanderling with a broken wing was picked up on the beach here on the 7th of October, 1939.

It was ringmarked "Stavanger Mus. Norway, 835751" and I have heard from Mr. Schaanning, of the Ornitologisk Stasjon, Stavanger Museum, that it was ringmarked by himself at Joeren, about 30 Km. south-east of Stavanger, on the 24th September, 1939—J. A. LOUIS DOWNEY.

Bird Photography Exhibits at Glanton.

The following notes about an exhibit at the Bird Research Station, Glanton, Northumberland, may be of interest. It concerns a method of collecting specimens photographically, by photographing birds under conditions accurately controlled for measurement and colour. Different methods of arriving at the dimensions of birds, from photographs specially taken for the purpose, are shown; and a method of checking any imperfection

of colour rendering by the inclusion of a colour standard in each photograph is demonstrated. Amongst the species used to illustrate the exhibit are the Mealy Redpoll, *Carduelis flammea flammea*, (Measurement), and two sub-species of Shore Lark, *Otocoris alpestris alpestris* and *Otocoris alpestris hoyti* (Colour).

I have completed my efforts to familiarise myself with a section of North American bird life, and am now putting up a permanent exhibit of North American bird life as seen in the zones I worked in, that is, prairie, forest and tundra (Transition, Canadian, Hudsonian and Arctic zones).

It is intended in time, after a series of sojourns in different parts of the world, to arrange photographic exhibits at the Station, illustrating bird life of each of the major regions of the world, and it is hoped that eventually these will include both sound and moving pictures, in addition to the still pictures.—NOBLE ROLLIN.

NOTICES.

For the duration of the war *The Vasculum* will appear in February, July and November.

It is particularly requested that Notes and Records should be cast exactly in the form used in *The Vasculum* and sent to Prof. J. W. Heslop Harrison, King's College. Records falling under different heads should be written on separate sheets, and Notes should be separate according as they relate to Vertebrates, Invertebrates, Botany and Varia.

All other MSS should be sent direct to the General Editor, The Rev. Dr. J. E. Hull, Belford Vicarage, Northumberland.

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THE VASCULUM

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THE BLACK-HEADED GULL IN NORTHUMBERLAND AND DURHAM.

GEORGE W. TEMPERLEY.

In the summer of 1938 the British Trust for Ornithology instituted a survey of the breeding colonies of the Black-headed Gull in the British Isles. The report on this survey has now been published ("*British Birds*" Vol. XXXIII, pp. 202-221 and 230-244) setting forth some of the interesting results which have been obtained.

For the purpose of this survey, the Ornithological Section of the Natural History Society undertook to collect information with regard to the colonies in Northumberland and Durham; this being the first time that any systematic attempt has been made to enumerate the local gulleries. To locate and visit, in one breeding season, all the gulleries in a county containing such wide stretches of remote moorland as Northumberland is no easy matter and there is no doubt that on some of the outlying moorlands and fells, which it was found impossible to explore, there may well be gulleries of which there is as yet no record. That the Northumbrian survey is as complete as it is, is chiefly due to the indefatigable zeal of two of our members, Messrs. C. S. Graham and S. B. Hewitt.

In Northumberland the total number of occupied gulleries was found to be 22. In addition there were four sites, which, though usually occupied, were not definitely proved to have been used in 1938, and six sites, which, though well known to have been in regular use in the past, are now temporarily or permanently deserted. However, taking 22 as the total number of Northumbrian colonies in 1938 and comparing it with that of other counties in England and Wales, we find this figure was only exceeded in one other county, namely Yorkshire. Adding the three Ridings together, Yorkshire could boast of 29 occupied gulleries (West Riding 20, North Riding 8, East Riding 1). Next in order came

Cumberland with 19, Norfolk with 10, and Cardigan with 7. Two other counties had 6 each, two 5 each, five 4 each, six 3 each, two 2 each, and seven had only 1 each. In addition there are seven counties which had, at one time, one or more gulleries, but all these are now deserted. Amongst those with only two occupied gulleries was the County of Durham. The total number of occupied gulleries in England and Wales was found to be 158 (England 124, Wales 34). Figures for Scotland were too incomplete to be reliable for purposes of comparison, but out of a total of 145 colonies counted, 25 were in Perthshire, 21 in the Outer Hebrides, 16 in Shetland, 11 in Aberdeen and the remainder divided in smaller numbers amongst twenty-four other counties.

Of the English and Welsh gulleries relatively few are actually situated on the coast or on coastal marshes and nearly 40% of the total are 20 miles or more from the sea. Nevertheless it is the counties having a sea-board that contain the larger proportion of the gulleries. Inland distribution tends to coincide with moor-land. In Northumberland and Durham only one colony is on the coast, this being at Holy Island Lough. For the most part the local gulleries are more than 20 miles from the sea; the reason for this being that only in the west are to be found those moorland loughs, mosses and flocs, which, from their character and from their relative remoteness from human habitations, provide that degree of safety necessary for a successful breeding colony. Fifteen of the local colonies are at well-known loughs, five more on smaller ponds and two on mosses which may or may not be partially flooded according to the season.

There is some reason to think that our local colonies are less permanent now than they used to be. Colonies have recently been formed where they were previously unknown and, on the other hand, some well-known sites have been deserted. Plausible reasons may be suggested for the desertion of some of them. The drainage of Prestwick Car made that site no longer a safe one. Pallinsburn, at one time the largest and certainly the most renowned of the gulleries in the north, has probably been deserted on account of the growth of trees around the lough. Other sites have been rendered unsuitable, perhaps only temporarily, by

changes in the water levels due to floodings, droughts or improved drainage. The effect of such temporary changes is well illustrated by the history of the Hallington Reservoir colony in the summer of 1938. The East Reservoir normally surrounds a large grassy island where gulls have bred regularly for many years. On May 7th, 1938, there were about 200 birds and 6 or 7 nests on this island. Owing to a long continued drought the water retreated, the island was joined to the mainland, the nests were robbed and the colony was deserted. Later in the year, however, the reservoirs were still further depleted and an island appeared in the West Reservoir which had never been laid bare before. Although late in the season, a large number of gulls resorted to it, eggs were laid and some young successfully reared. The encroachment of a growing human population, the coming of the motor-car with its attendant extension and improvement of roads, have caused some of the older sites to be too dangerous for habitation. One recorder reported that on visiting a gullery he found a party of roughs pelting one another with eggs, which they snatched from the nests; another reported seeing people gathering eggs by the basketful for human consumption, and a third quite definitely attributed the desertion of one or two sites to repeated molestation by man. The eggs of the Black-headed Gull are not protected in the County of Northumberland, so it is impossible to prevent such occurrences. It may be due to these disturbances that it has become increasingly common to find a few pairs of gulls nesting away from the main colonies, on mosses or river gravel-beds.

The data collected during the survey with regard to the total population of breeding birds in the British Isles and the size of individual colonies are much less dependable. It is extraordinarily difficult to assess the size of a colony, as anyone who has attempted to do so will agree. Let us suppose that we visit Linsheels Lough, Northumberland, with such an end in view. As we travel up the Coquet valley Black-headed Gulls are never out of sight. Singly, in pairs or in groups of threes and fours they fly along the river, quarter the moors or stand about on the fields. Over the Barrowburn they are still more plentiful and the dark heathery slopes are flecked, as far as the eye can reach, with their gleaming

white forms. Which of these hundreds of wanderers belong to the Linsheels colony? Obviously many of them must do. Are we therefore to include them in our census? As we show ourselves over the crag above the lough many hundreds of birds rise from beneath us with beating wings and clamorous voices. They appear as numberless as the flakes in a snowstorm and nearly as dazzling. After repeated attempts we estimate that there are from 1,000 to 1,250 birds present in the flock; no more accurate count is possible. We now proceed to count the nests. Below us, in the water, lie two or three small, low, reedy islands. The vegetation on them has been partially trodden down by the birds and we can count 50 nests, 40 of which contain eggs; there is no room on the islands for more. On the lake shore are the remains of many destroyed nests and a large number of broken eggshells, showing that the colony has tried to extend and failed to do so. Seldom, if ever, are young reared from nests on the shore and, unless the water-level falls, no more than 50 pairs of gulls can breed on the islands. What are we to call the size of this colony- the 100 successfully nesting, the unknown number attempting to nest, the 1,000 to 1,250 circling over the lough or a still greater number which shall include the birds on the neighbouring moorland?

Bearing these difficulties in mind we return to the Report of the survey. It is there estimated, from the returns received, that the breeding colonies in England and Wales in 1938 consisted of from 75,000 to 80,000 pairs of birds. Of these, nearly 50,000, or almost two-thirds of the total, breed in the colony of Ravenglass in Cumberland. No other colony approaches this one in size; but five English colonies and two Welsh ones have over 1,000 pairs each. The largest colony in Northumberland in 1938 was at Blackaburn Lough, where nearly 1,000 pairs were counted. Durham's largest held about 100 pairs.

The Report states that, comparing the figures obtained during the 1938 survey with those obtained on previous partial surveys and with still older records, it is probable that the Black-headed Gull as a breeding species - " was widespread in England and Scotland in the seventeenth and eighteenth centuries, but that in

at least some areas it was more numerous 100 years ago than it is to-day. A great decrease occurred during the nineteenth century, but re-colonization had begun by the end of the century. In England and Wales between 1899 and 1938 about 175 sites have been recorded as colonized and about 70 deserted. There are others whose dates are not known".

At some future time it may become possible to organise a more complete local survey and to extend our knowledge still further. Every outlying moorland tract should be thoroughly explored and each colony discovered should be visited several times during the breeding season, so that changes in its numbers could be observed and the actual number of young birds reared should be counted. This work would require a large band of observers; but there must be a sufficient number of keen ornithologists in the two counties to undertake it successfully when other circumstances render it possible to consider it.

OBSERVATIONS ON THE CADDIS FLIES OF PLESSEY WOODS.

P. J. DEORAS, M.Sc., LL.B. (NAGPUR).

Zoology Department, King's College, Newcastle upon Tyne.

During the year 1939 comparative morphological and ecological studies of certain adult caddis-flies occurring in Northumberland were undertaken. The following gives an account of some of the ecological observations made in the course of the work.

The insects were collected in Plessey Woods, about ten miles north of Newcastle. The collecting ground was limited to a distance of about three-quarters of a mile along the banks of the River Blyth* where the vegetation consists of shrubs, trees and patches of tall grasses. The river is fairly deep and flows slowly, but there are several swift-flowing channels. For collecting purposes visits were made weekly from May 18th to October 26th, 1939, between 10 a.m. and 12 a.m. All the collections were made from the swarms that were hovering over the water, or by sweeping the herbage. The following seventeen genera of *Trichoptera*,

* From Stannington Bridge to the railway bridge further down.

belonging to ten different families, were studied during the above period.:-

1. <i>Anabolia nervosa</i> Curt.	Family Limnophilidae.
2. <i>Stenophylax stellatus</i> Curt.	F. "
3. <i>Rhyacophila dorsalis</i> Curt.	F. Rhyacophilidae.
4. <i>Hydropsyche pellucidula</i> Curt.	F. Hydropsychidae.
5. <i>Leptocerus cinereus</i> Curt.	F. Leptoceridae.
6. <i>Mystacides nigra</i> , and <i>M. longicornis</i>	F. "
7. <i>Polycentropus flavomaculatus</i> Pict.	F. Polycentropidae.
8. <i>Goera pilosa</i> F.	F. Sericostomatidae.
9. <i>Lepidostoma hirsutum</i> F.	F. Lepidostomatidae.
10. <i>Psychomyia pusilla</i> F.	F. Psychomyiadae.
11. <i>Melatype</i> Sp.	F. Psychomyiadae.
12. <i>Cyrnus</i> Sp.	F. Polycentropidae.
13. <i>Sericostoma</i> Sp.	F. Sericostomatidae.
14. <i>Molanna</i> Sp.	F. Molannidae.
15. <i>Odontocerum</i> Sp.	F. Odontoceridae.
16. <i>Philopotamus</i> Sp.	F. Philopotamidae.
17. <i>Wormaldia</i> Sp.	F. "

The identification of the first ten genera has been confirmed by Mr. Moseley, of the British Museum of Natural History. Harrison (1916) and Walsh (1916) have made important contributions to the study of the Caddis-flies of Northumberland and Durham, and use has been made of their work.

The ecological observations were made in the field, and one species was reared in the laboratory.

ECOLOGY.-Table 1. gives the different genera of insects caught, their period of occurrence, and the approximate numbers. It is seen that different genera appeared in different months. The genus *Rhyacophila* was the first to emerge, and occurred through-out the collecting season. Insects of the genus *Anabolia* were the last to appear. It was further observed that in nearly all the genera an overwhelming number of males was caught. The females thus seem to be scarce, but this may simply be due to the fact that they lie concealed in obscure places. The number of insects caught on a warm and sunny day was greater than that caught on a cloudy, cold or rainy day.

The flow and depth of water, and the shade of the river bank, appear to have much to do with the presence or absence of different genera. On this basis three distinct divisions can be made.

(1) Small insects belonging to the genera *Polycentropus*, *Cyrnus*, *Psychomyia*, and *Melatype* were obtained from the localities where the stream was deep and the water flowed slowly. Such places were usually well shaded by the overhanging branches of trees.

(2) Large insects belonging to the genus *Anabolia*, *Stenophylax*, *Rhyacophila*, *Molanna*, *Odontocerum*, and *Hydropsyche* were caught at places where the stream was shallow, and flowed swiftly. At such places the vegetation did not overhang the stream, and consequently the locality was well illuminated. Of these six genera, *Rhyacophila*, occurred in the swiftest flowing waters.

(3) All the medium-sized insects belonging to the genera *Goëra*, *Sericostoma*, *Lepidostomum*, *Philopotamus*, *Leptocerus*, and *Mystacides* were collected at places where the conditions of flow and light were intermediate between the above extremes.

PROTECTIVE RESEMBLANCE .-Insects belonging to the genera *Polycentropus*, and *Psychomyia* were invariably found hiding among dried weeds and debris like themselves of deep brown colouration. They were caught by shaking the material into the net. Insects of the genera *Rhyacophila*, *Hydropsyche*, and *Molanna*, have a greenish abdomen whilst the wings are brown, these features blending with the grasses and brownish debris of their resting places. When not in flight, insects of the genera *Leptocerus* and *Mystacides* rested on the rocks or earth by the side of the stream, where they assimilated closely to their surroundings. The genus *Anabolia* was generally captured on branches of trees hidden amongst the leaves. The colour of these insects is brown. *Stenophylax* was found among debris of pale brown colouration.

ACTIVITY.-In nature, the activity of these insects was most marked in warm and sunny periods. Members of the genera

Leptocerus, *Mystacidcs*, *Goera*, and *Sericostoma* were seen spinning over the stream on such days. *Polycentropus*, *Cyruus*, *Psychomyia*, and *Melatype* are hardly seen to move about at all. The genus *Anabolia* was the most sluggish, and could be caught by the fingers when at rest on trees.

FOOD OF THE ADULTS.-A sugar solution was kept in the same cage as these insects in the laboratory, and the only genera which responded by trying to suck it were *Anabolia*, *Rhyacophila*, and *Polycentropus*.

Some uncontrolled experiments were done to obtain a rough estimate of the longevity in captivity and the results were as follows:- *Anabolia* existed 18 to 20 days, *Stenophylax* 8 to 10 days, *Rhyacophila* 6 to 8 days, and the others for varying periods of 1 to 4 days.

OVIPOSITION.-Only insects of the genera *Anabolia* and *Stenophylax* oviposited in the laboratory. The eggs of *Stenophylax stellatus* duly hatched, and the larvae are thriving well. The period of copulation was more than 24 hours. After copulation the female moved about in search of a suitable site for oviposition. In captivity, the eggs were laid in two masses of gelatinous secretion on wet blotting paper, and were later transferred to a jar of water which was continuously aerated. The number of eggs in each mass was more than a hundred. The gelatinous material swelled in contact with water, and the eggs looked round, white, balls.

Eighteen days after oviposition one egg yielded its larva, which made sluggish movements inside the gelatinous mass. After 32 days one larva wriggled its way out, while it took 90 days for all the larvae to come out. The larvae immediately started making cases out of bits of sticks and weeds, which were preferred to stones. These were held by the front legs before being placed in position. The front end of the case remained open, and through this the larva protruded its head and thoracic legs. The first ecdysis occurred after three months, the second one after another month, and the third four weeks later. The larvae are now in the

fourth instar, and are creamy white in colour, with patches of reddish brown colouration all over the body. They were given the following weeds for feeding: *Elodea canadensis*, *Lemna trisulca* and *L. minor*, *Chara* sp., *Oedogonium* sp., and *Rhizoclonium* sp. They seemed to prefer *Chara* sp. the best. In the absence of any food they prey upon each other.

ACKNOWLEDGMENTS.-The above observations were conducted under the guidance of Dr. D. Stewart MacLagan, to whom the author owes a deep debt of gratitude. I am also indebted to Prof. A. D. Hobson for the necessary laboratory facilities. Miss Ethel Bolton kindly identified the food plants of the larvae.

LITERATURE QUOTED.

Harrison, J. W. H. (1916), "The Trichoptera or Caddis-flies." *Vasculum*, Vol. II, no. I, p.12 (1916).

Walsh, Geo. B. (1916), "On the rearing of Caddis-flies." *Vasculum*, Vol. II, no. 2, p. 51 (1916).

TABLE I.

Showing the season of occurrence of different genera of Caddis-flies.

No.	Genus	First seen on.	Last seen on.	Total	Male	Female
1.	<i>Rhyacophila dorsalis</i>	15/5/39	26/10/39	26	21	5
2.	<i>Polycentropus flavomaculatus</i>	24/5/39	11/9/39	139	121	18
3.	<i>Goera pilosa</i>	6/6/39	14/8/39	18	18	0
4.	<i>Molanna</i> Sp.	6/6/39	17/6/39	3	0	3
5.	<i>Leptocerus cinereus</i>	17/6/39	14/8/39	48	40	8
6.	<i>Odontocerum</i> : Sp.	17/6/39	7/8/39	3	0	3
7.	<i>Philopotamus</i> Sp.	17/6/39	20/9/39	6	5	1
8.	<i>Hydropsyche pellucidula</i>	17/6/39	14/8/39	7	4	3
9.	<i>Mystacides nigra</i>	25/6/39	7/8/39	116	109	7
10.	<i>Wormaldia</i> Sp.	2/7/39	once only	1	0	1
11.	<i>Cyrnus</i> Sp.	17/7/39	11/9/39	4	2	2
12.	<i>Psychomyia pusilla</i>	24/7/39	7/8/39	8	5	3
13.	<i>Melatype</i> Sp.	24/7 / 39	7/8/39	4	4	0
14.	<i>Sericostoma</i> Sp.	14/8/39	once only	4	4	0
15.	<i>Lepidostoma hirutum</i> .	5/4/39	11/9/39	5	5	0
16.	<i>Stenophylax stellatus</i>	5/9/39	26/10/39	26	19	7
17.	<i>Anabolia nervosa</i>	20/9/39	November	44	34	10

OUR LOCAL ROSE-LEAF CUTTER BEES.

A.O.N.

Most of us who have kept our eyes open when indulging in a country walk in June or July must have observed common wild rose bushes, especially those with glabrous foliage, with the leaves cut into a series of weird patterns, consisting of holes sometimes perfectly circular, and at other times more or less rectangular, with rounded angles. Moreover, like every naturalist of an enquiring mind, we have speculated as to the agent responsible for the damage. The answer is a very simple one; the holes have been cut in a really systematic fashion, by Leaf-cutter Bees, or, as we prefer to call them in our counties, Rose-leaf Cutter Bees. It is these bees I propose to discuss now.

If one has the spare time, it is quite possible to observe the operations of our little friends. It is only necessary to stand guard, at the correct season of course, on an affected rose colony when, sooner or later, the bees will put in an appearance to renew their operations on the favoured bushes. These insects live in colonies, and as their flight range is limited, they must revisit the same plants on numerous occasions.

We, therefore, commence our vigil, and soon we detect a blackish bee, about half an inch long, clothed with a reddish brown pubescence alighting on the leaves. Although flatter, and with a proportionately bigger head, it distinctly recalls the hive-bee worker. Then, with a display of gymnastics with its feet, and a skilful use of its mandibles, it cuts the leaf, with a dexterity one little expects, into the regular shapes we have already described.

Keeping our eyes closely fixed on it, we soon see it tuck the leaf fragment along the ventral side of the abdomen and, holding it there tightly, to fly vigorously away. We follow it, and soon it approaches a sandy bank-side, a railway embankment, or the top of a wall covered with turves where the colony has its head-quarters. What a scene of activity we see of coming and going in and out of the burrows! There are certainly enough specimens

about to assure us that the species involved is *Megachile circumcincta*- a species very common indeed in Northumberland and Durham, but scattered and quite local in the country as a whole.

But what is that bee occurring in sparser numbers, slimmer in appearance, and with a much more pointed abdomen? Surely that is not a Leaf-cutter bee? And there is no mistake; it is a bee called *Coelioxys elongata*, parasitic on various species of *Megachile*.

Just as we followed the bees from the rose bushes, let us track down a series of bees as they leave the burrows, and see where they go. Some, naturally, return to the roses, but others go to very different bushes indeed. Oaks, birches, ashes, brambles, beeches, blackthorns, poplars, willows and even docks are pressed into service, thereby indicating that the name Rose-leaf Cutter Bee is not wholly appropriate. Still, it cannot be denied that the rose is the favoured shrub.

However, not all our bees go to leaves; some, if we watch sharply, will be found visiting flowers to collect nectar and pollen. Various abstruse text books, which discuss our little friends on a rigidly formal, scientific basis, insist that they prefer such flowers as Bird's-foot Trefoil, Clovers, Thistles and so on. Our colonies must be very perverse, for they will persist in burying themselves in a mass of bramble stamens in search of pollen. Let us catch a bee as it leaves the flowers on its return journey. We will soon discover that its abdomen on the lower surface is laden with creamy coloured pollen. As we hold the struggling creature, we observe further that the abdomen can be moved back-ward and upward until it appears to be almost at right angles to the thorax. In this manner it is noted that the abdominal brush divides into four sections corresponding to the four more clearly emphasised abdominal segments.

If the brush be struck by a fine thorn or a needle, the pollen will be found to be carried in a perfectly dry condition since it flies off as a cloud of light-coloured dust. As we carry out this operation, or even when the bee is caught, a strong honey-like odour is exhaled by the struggling insect.

Our observations must now be carried to the burrows themselves, although they would be best postponed for a week or two to obtain a series of cells at different stages.

Carefully removing the friable soil from one of the burrows, we soon strike a series of thimble shaped cells, about half an inch in length, marvellously constructed from the various leaves cut and collected by the female bees. These, in general, consist of a series of three cells although occasionally fours and fives may be noted.

Taking a very fresh looking one out, we find it packed with food for the larva. Apparently, the pollen as brought dry is inserted in the cell in one layer, and then nectar disgorged on it, the whole process being repeated until the cell is full. In most cells the contents will be found to be quite dry. Later, however, whether due to fermentation or heat, owing to the situation of the cells in sunny banks where they are subjected to intense insolation, the mass liquefies. On the top of this is deposited the quite large, whitish egg, practically straight and not curved as in the case of many Aculeate Hymenoptera, which hatches in a very short time.

Turning now to the cell itself, let us dissect one. It is perfectly obvious that the more rectangular pieces form the sides, and the circular scraps the lid. Of the sides the more outward portions are simply inserted in the burrow, and not glued together. On the other hand, the inner pieces are firmly cemented together. Similarly, the circular "door" of the cell may consist of up to five layers although, for the most part, four is the rule. All of these are cemented together, some by the whole of their surfaces.

Curiously enough, there is uniformity in the deposition of the leaf fragments. In the cap, the underside of the leaf is invariably placed to face outward, whilst on the lateral strips the underside lies on the inner side.

After the larvae hatch, they proceed to feed on the then liquefied portion of the food mass until the half grown larvae is left with a firm, dry lump of a kind of "bee bread" upon which to finish their feeding up - a process that is completed before winter.

As soon as growth is completed, the larvae spin, and lie until late spring, when the transformations are completed, and the whole of the life cycle of the colony recommenced. Although the genus *Megachile* may be regarded as one of the largest of bee genera, for over 1,200 species are spread over the various continents, only fifty of these inhabit Europe, and only nine are to be found in England. Of the British species I have only seen two, the species I have just considered and *Megachile centuncularis*, and I am sorry to say I can hold out little hopes of many other species turning up with us except as distinct rarities.

RAINFALL AND INSECT LIFE.

GEO. B. WALSH, B.Sc.

Every naturalist knows that the high rate of reproduction of the smaller animals is a necessary corollary of their extremely high death-rate. They are surrounded by dangers of many kinds, both animate and inanimate. It is probable that all these are in some way or other more or less directly connected with the weather, either of the immediate season, or in some cases of preceding years. Prominent among the weather conditions which affect insect life is the rainfall, and it would seem profitable to discuss for a short time the possible effects of (a) a wet season, and (b) a dry season.

WET SEASON.

I. The most obvious danger here is that of drowning, although it is usually far more difficult to drown an insect than a warm-blooded animal. A man is almost certain to die if his brain is deprived of oxygen for more than about ten minutes, but many insects can survive submersion for a period far exceeding this. Drowned lepidopterous larvae which have been under water for 24 hours can not infrequently be resuscitated by placing them in blotting paper in a draught. In Wicken Fen, pupae of the Swallow-tail Butterfly (*Papilio machaon*) are often submerged for weeks on end. In many cases, doubtless, the air within the cocoon of some species of moth will be quite sufficient for respiration during the period of immersion, but at Wicken cocoons of the Emperor Moth

(*Saturnia carpinii*) are frequently spun at the tops of willows above flood level, although it is unlikely that water is able to enter such a compact cocoon.

2. It is probable that in many cases, especially of lepidopterous larvae and heteropterous nymphs, the risk of the removal of the immature insect from the food-plant by a sudden heavy shower is greater than that of swimming. Harrison has explained the scarcity of the Painted Lady Butterfly (*Pyrameis cardui*) in Northumberland and Durham in a year when it was common further south by the fact that a series of heavy thunderstorms in the two counties coincided with the extrusion of the young larvae from the ova. Larvae in many cases avoid the danger by spinning leaves together, by hiding below the leaf, etc., but that the danger is a real one is shown by the fact that occasionally many larvae may be found dead under their soaked food plant.

Every coleopterist who has examined flood refuse must have been amazed at the enormous quantity of small life that it often contains. Even in the winter it is surprising, but a flood in June sweeps away countless myriads of small animals from their homes, and in many cases they will be destroyed unless they can find a similar habitat to their original abode. In some cases, it is suggested that floods may have caused the extinction of certain species, for example, the Large Copper Butterfly (*Chrysophanus dispar*) in both Britain and Holland, although South questions this. In my own experience, the weevil *Anoplus ruboris* was almost if not quite wiped out by floods in its only known Yorkshire locality.

3. As rainy years are usually both cold and sunless, these influences adversely affect the adult insects as well as the larvae. Low temperature lowers the vitality of the imagines, and they fail to pair; it numbs the clasping organs of the early stages so that they may fall from the food plant; and the two causes together cause a low nectar-flow so that bees, butterflies, etc., are deprived of food.

4- It frequently happens that wet years are very favourable to fungoid growth plants, especially rusts, etc., on leaves. Many larvae will not eat leaves contaminated in this way; for example, I have found that larvae of the Puss Moth (*Dicranura vinula*)

will not eat the portions of willow leaves affected by willow rust. These rusts have been blamed for the diarrhoea to which some larvae are subject.

Finally, in this connection, in wet seasons leaves tend to become too soft and sappy, with consequent evil effects on the digestion of the larvae.

DRY SEASON.

The results of a prolonged dry season are not nearly so immediately obvious as are those of a wet season. It is obvious that all the results of a wet season will be negated at least, and in many cases, especially with the aculeate Hymenoptera, the conditions will on the whole be decidedly advantageous. But now a new danger reveals itself, that of desiccation. According to Dervitz and Muttkowski, the integument of insects is permeable to gases, and in addition there is loss of water vapour during respiration through the spiracles. In the case of the beetles with which I have experimented, the rate of loss of water for any individual insect is constant for equal time-intervals, begins to increase as the insect becomes moribund, and for a short time increases still further just after death. It is increased by wind, by rise of temperature and by increased dryness of the air. Thus we see that in a hot dry year, and especially a breezy one, there is likelihood of there being such a loss of water vapour as to be inimical to the life of the insect. This is actually the case; there is a great rush of beetle life in England in late May and early June. In a dry year this spate lasts for a much shorter time than in a normal year. This is true even for beetles which live on trees and low vegetation, and can renew their supply of body water, and it is much more obviously the case for ground beetles.

In the Coleoptera there is a marked adaption to the environment. Beetles living in damp shingle either die during drought or come down closer to the stream; sand hill species seem to be adapted to the dry conditions, but even they seek out the dry places. Moreover, those with abbreviated elytra can bear drought condition much worse than can those with normal elytra,

Now the ratio of surface area to body volume increases with diminution of insect size, so that the smaller the insect body the greater the risk of death from lack of water.

The only way in which the structure of the body seems able to modify the rate of loss of water vapour is by the thickness of the integument and the character of the elytra, especially by their size and their degree of approximation to the sides of the body. In the case of lepidopterous larvae, there is a certain amount of evidence that the occurrence of hairs, as in the larvae of the Tiger Moth, does in the case of some species reduce the rate of loss of water vapour.

On the whole the evidence, both from experiment and from observation in the field, seems to show that both very wet and very dry seasons are inimical to insect life; and that the ideal is a year with plenty of sunshine and warmth with sufficient rainfall to keep the ground fairly damp.

**THE CORN-BUNTING *EMBERIZA CALANDRA* L. AND ITS STATUS
IN NORTHUMBERLAND AND DURHAM.**

C. J. GENT.

When I first commenced to take an interest in bird-life I was puzzled for some time as to the identity of a rather stoutish bird which used to perch on the telegraph wires in the country to the north of Gosforth uttering a short jangling song. Eventually a glimpse of the spotted breast was obtained and the bird identified as the Corn-Bunting from the rather apt description of the song given in the late T. A. Coward's "*Birds of the British Isles and their Eggs*," viz., "after two or three preliminary notes, 'chi, chi, chi.' resembles the sound of a bunch of keys vigorously shaken." Since that time I have taken an interest in its distribution locally.

The late G. Bolam, in his "*Birds of Northumberland*" (1932), says: "A resident, common along the coast, but only locally distributed inland," and, in a recent paper in the "*Transactions of the Northern Naturalists' Union*," "*The Birds of the Tees Valley*," Messrs. Almond, Nicholson and Robinson state:

"Resident, much less common than formerly, decreases being reported from all parts of the area." In an area of 8 square miles to the north of Gosforth 15 individual males were heard in song in 1932 and 16 in 1933, and its distribution seems to be approximately the same at present; although its numbers must undoubtedly begin to decline as building activities are rapidly spreading into the area. From this data one would be tempted to assume that the distribution in the country immediately to the north of Gosforth was approximately two pairs per square mile; but Lieut.-Col. and Mrs. Ryves (*British Birds*, Vol. XXVIII, p. 2) have shewn that in North Cornwall the Corn-Bunting is polygamous, one cock under observation breeding with three hens. I have recorded the Corn-Bunting from a number of points along the coast of Northumberland, and from the following inland localities - in the Tyne Valley at Wylam and Bardon Mill, on the Wansbeck near Bothal, and on the Tweed near Cornhill. I have not visited County Durham quite so frequently as Northumberland, but I have recorded the bird at the following inland localities - near Greenside and Winlaton, in the vicinity of Durham and Shincliffe, and at Stanhope and St. John's Chapel. It is also fairly plentiful in the neighbourhood of Usworth and Washington. I have also an odd record from Norton-on-Tees.

Witherby (*Handbook of British Birds*), under the heading of "Habitat," states: "In breeding season, arable and grasslands with hedgerows or bushes, grassy commons or downlands and scrubby wastes, especially near coast (though also in stone-wall country to 800 to 900 feet in Midlands), but ordinarily avoids areas much dominated by trees." This appears to be equally descriptive of the areas frequented by the Corn-Bunting in our two northern counties,

THE SOCIETIES.
NORTHERN NATURALISTS' UNION.

The activities of the Union, in abeyance during the autumn, were resumed at the Annual Meeting held in Newcastle on March 16th. The Union enjoyed the hospitality of the Hancock Museum, which was specially opened for the occasion. The President, Mr. Charlton, reported that, since the last meeting, Mr. Drury had retired from the secretaryship and that the Council had, regretfully, been obliged to fill his office. The Members then proceeded to elect the officers for the year and ratified the election of the new secretary. When the business part of the meeting was over Miss H. Heslop Harrison gave a lecture on "Local Folk Lore" which was much enjoyed. The company then adjourned to another part of the Museum where the Wallis Club had arranged light refreshments and an interesting collection of exhibits.

Three excursions have been planned for the summer, to easily accessible places. The first, to Shincliffe and Croxdale, will be over before this appears. A good number of people have already signified their intention to be present and we look forward to a very pleasant afternoon.

KATHLEEN B. BLACKBURN, Secretary.

THE WALLIS CLUB.

Field Meeting.

The first field excursion was held in Lambton Woods, by kind permission of Mr. Gray, on Saturday, May 18th, when, taking advantage of the very fine weather, a large number of members took part.

We assembled on the Great North Road near the entrance to the park and took the drive toward Picktree. On our journey through the lower woods, we were struck by the enormous quantities of the usual spring flowers like Bluebells, Red Campions, Cowslips, etc., which were present, many displaying a wide range of colour forms. However, amongst the rarer plants observed was quite a number of the Alpine Currant (*Ribes alpinum*), here generally supposed to be a genuine native.

After we passed Picktree, a change in the vegetation took place for now Bugle, Germander Speedwell, Mountain Speedwell began to occur commonly whilst insect life became much more observable. Of the latter queens of *Bombus agrorum* at Bugle and Ground Ivy and *Bombus hortorum*, with a sprinkling of *Bombus terrestris* and *B. lucorum* at Azaleas, raised a merry hum. Curiously enough, more of these bees than usual were patronising the Cowslips and Primroses. Here a single specimen of the False Oxslip or Primrose-Cowslip hybrid was detected.

Striking down the deep slope to the streamlet draining to the Wear, we noted an abundance of the usual plants proper to such places like Angelica, Hairy Bitter Cress, Moschatel, Golden Saxifrage, Celandines, Great Pendulous Sedge, and so on. As to be expected, here white butterflies became prevalent. We had imagined all would be the Green Veined White (attached to the Cardamine hirsute). Many, nevertheless, were the Common White (*Pieris rapae*) and most significantly a very large proportion belonged to the species *Pieris brassicae*, utterly out of place in such stations. This provided more than a hint of a spring immigration of the Large White, and may spell trouble to farmers and gardeners later.

At this point too, huge fertile spikes of the Great Horse-tail abounded and many found homes in our vasculums.

Turning along the river, we encountered a veritable sun-trap with countless flowers of species already collected, amongst which huge spikes of the Giant Bellflower, not yet in blossom, occurred freely. These flowers were supplying food to crowds of butterflies and bees. Amongst the former we were delighted to see the Orange Tip, obviously depending upon the Jack-by-the-Hedge growing on the Wear banks. At some points, these were growing mingled with endless Balsams, Butterburs and similar plants. Within the Wood *Ribes alpinum*, the Wood Forget-me-not, Garlic, the Wood-Stitchwort attracted our attention, whilst the presence of a fair number of *Morchellas* was considered quite noteworthy. However, the chief find was quite a new locality for Toothwort, which grew in some plenty. This station is on the opposite bank of the river from the usual Lumley habitat two miles away.

Retracing our steps, we left the woods but still pressed along the river banks where we rested for our meal. Precisely where we sat down, there grew a colony of the Field Stitchwort (*Cerastium arvense*), stretching some hundred yards along the river, and easily the largest colony we have seen in our counties.

As we set out on our homeward way, a promising bankside tempted us by its abundance of bees and butterflies to search it more closely. It produced little except forms of *Viola Riviniana*, the Great Wood Rush, the Field Wood Rush, Earthnut and the Adder's Tongue Fern - certainly not common with us. Before we left the woods, we found an additional and much stronger colony of the same species, growing in a meadow higher up. At this stage of our journey the Wood Avens and Cowslips became very common, but at no point did we find the Water Avens which seems so rare or absent hereabouts.

It was now time to hurry homeward and the party broke up at Picktree after a very successful day.

ANNUAL MEETING OF THE CONSETT AND DISTRICT NATURALISTS' FIELD CLUB.

There was a large and enthusiastic gathering of members of Consett and District Naturalists' Field Club at the 43rd annual meeting.

Mr. George Guy, Vice-President, presided. A report of the year's activities, with thanks to officials and members for their co-operation, was read by the Secretary, Mr. W. Ellerington. Mr. A. Robinson, Auditor, presented the financial statement revealing a credit balance of over £21. It was decided to publish the year's transactions together with a Natural History guide. Messrs. J. J. Robson and D. Scott were appointed editors. It was also agreed to hold the annual social, and a small committee was chosen to carry out the arrangements. The President, Mr. Clarence D. Smith, "Loughbrow," Hexham, and the Vice-Presidents, Sir Edward George, Mr. J. Scholes, Mr. J. E. Ruxton, Dr. F. C. Garrett, Mr. H. Bradley, M.Sc., Mr. W. Aubrey Vivian,

B.Sc., Miss R. Henderson, L.L.A., Mr. Thos. Hutton, Mr. G. Guy, Mr. W. J. Dixon, Miss H. D. Ball and Miss C. Hudson, were re-elected. Miss H. Heslop Harrison, M.Sc., and Mr. Horswill Jackson were added to this list. Mr. T. H. Maud, Treasurer, resigned, after one year of office, owing to his business position. He followed Mr. J. E. Ruxton on his removal to Alnwick. Mr. Ruxton was Treasurer for Consett Society for many years, and to mark his leaving, the Field Club presented him with a drawing room chiming clock suitably inscribed; this was handed over by the oldest member of the Society, Mr. Harry Scott. The Treasurer appointed was Mr. J. J. Robson. Other officials elected were Assistant Treasurer, Mr. H. Scott; Auditor, Mr. A. Robinson; Organiser of Field Meetings, Mr. T. Hutton, with Messrs. J. J. Robson and D. Scott, Assistants; General Secretary and Curator, Mr. W. Ellerington; Lanternist, Mr. J. Horn.

At a later meeting of the committee and officials, a list of Field Meetings were drawn up, and, including those of the N.N.U. and a Dawn Song Expedition, there will be twelve.

DARLINGTON AND TEESDALE NATURALISTS' FIELD CLUB.

January 9th-Mr. C. P. Nicholson read a short paper on Darlington's first Trams. Miss C. Watson reported a white Blackbird on Grange Road. Mr. M. Ferguson reported Goosander on the Tees at Dinsdale Fish Locks.

January 20th (Saturday). On account of the black-out, the annual Conversazione took place in the afternoon instead of the usual evening. The President (Miss R. E. Dowling) delivered her address entitled "Making the Best of Things"; this was illustrated by a large number of lantern slides and specimens showing the various devices of nature for the protection of animals, insects and plants. Among the exhibits were:-Fossils and Lepidoptera from the late E. O. D. Sibson's collection, four species of minute parasitic Hymenoptera, *Apanteles congestus*, parasitic on larvae of lepidoptera; *Hemiteles fulvipes* and *Gelis instabilis*, both hyper-parasites; also a *Chalcid* (genus and species?), a hyper-parasite on any of the above; all hatched from one batch of

cocoons made-up on a plantain stem. They were named by Mr. H. Britten, late of Manchester Museum, who considers them a most interesting batch.

Tea was served by a committee of lady members.

January 23rd. Mr. A. Stainthorpe spoke of the effect of the severe weather on bird life, saying that most small birds had suffered severely, particularly, Wren, Redwing, Treecreeper, and Gold-crest. Many birds gather in stack-yards; several hundred finches were seen in one last Sunday. Mr. J. E. Nowers gave an account of the temperatures from January 1st to date, taken at 4 ft. above ground level and about 210 feet above O.D.-Mean Max. 32.5; Mean Min. 20.6; Mean 26.6; lowest reading 2 on 20th; highest 44 on 8th; Min. below 32 on 20 days.

Last year for the same period, Mean Max. 40; Mean Min. 31.5; Mean 35.7; lowest reading 16 on 5th; highest 53 on 8th; Min. below 32 on 9 days.

January 30th. Mr. C. P.N. icholson read a paper on Darlington's Industries of the Past. Mr. H. Sowerby reported Snow Buntings in Baldersgate on Sunday, 28th.

February 6th. Miss M. C. W. MacLeod, B.A., gave a lecture entitled "Things Seen and Heard in Turkey."

February 13th. Miss Davis gave a lecture entitled "Two Months on Bardsey Island." Mr. A. E. Taylor mentioned that there was a large quantity of "Pack-ice" on the Tees at Low Coniscliffe during the week-end.

February 20th, Miss E. M. Clegg, B.A., gave a lecture entitled "Ancient Manuscripts." Among those dealt with were: "The Book of Kells" and the "Lindisfarne Gospels." Mention was made of the beautiful handwriting in these old documents, a great contrast to that of the present day.

February 27th, The President gave a talk on Mosses, describing their life history and methods of reproduction.

March 2nd, (Saturday.) A Moss Foray took place at Billybank Woods, Richmond, V.C.65. Twelve members were present, and about 20 species of moss were gathered.

March 5th. Mr. J. B. Nicholson reported on last Saturday's Moss Foray. He said that 21 species had been named by Mr. J. E. Nowers and were on exhibition. A number of Liverworts were also collected and among other things seen were:-Toothwort (*Lathraea Squamaria* Linn.). Woodruff (*Asperula odorata* Linn.).

Mr. A. Stainthorpe reported Thrush, Missel Thrush. Blackbird. Wren. Greenfinch. Chaffinch and Hedge Sparrow in song on February 27th. Golden Plover and Curlew seen in Swaledale on March 3rd. Miss Spencer reported Primrose in flower near Marske V.C. 65. on March 3rd.

March 12th. Dr. W. Crichton Fothergill, M.D exhibited about 100 Dufaycolor lantern slides of local and Swiss views and flowers. The lantern was operated by Dr. Wicksteed, M.D.

March 19th . Mr. A. E. Taylor reported on a walk taken on Saturday 16th, at which 9 members were present. The route was by Gilling Moor, Aske Park to Kirklands. Trees in their winter state were examined and specimens of a number in bud were exhibited. Mr. J. E. Nowers reported on the temperatures for February. Mean Max. 37; Mean Min. 30.2; Mean 33.6; lowest reading 11 on 15th; highest 54 on 24th and 27th; Mean for January and February. 1940. 30.6; 1939. 37.5.

April 21nd. Mr. A. Trobridge gave a very interesting lecture on Brazil.

April 9th. Mr. A. Stainthorpe gave a lecture on "Yogi Philosophy of Physical Well-being."

April 10th. Miss C. M. Evans reported on a walk taken by a number of members on Saturday. March 30th. through Streatlam Park to Staindrop. giving a minute description of the remains of the old castle at Streatlam. Mr. C. P. Nicholson reported on a walk taken by a number of members from Piercebridge by Eppleby and Forcett to Aldborough; also on another taken by 14 members from Croft to Halnaby. Barton to Aldborough, on April 6th and 13th respectively.

Mr. J. E. Nowers reported that Mr. Norman Ord had told him that a large number of birds were found dead in the stack-yard at

Firtree Farm near Brafferton. Blackbirds, Thrushes, a few Chaffinches and Robins, with one or two Great Tits; they were all starved to death, many had scarcely any flesh on their bodies.

April 23rd. Mr. A. Stainthorpe reported on a walk taken by a number of members on Saturday, 20th, from Richmond through Aske Park by Skeeby to Kirklands, thence to Scotch Corner. Among the birds observed were Grey Wagtail; Willow Warbler; Sandpiper; Swallow, Sand Martin and Chiffchaff.

Mr. Nowers reported that Mr. R. Luck caught a Cuckoo on April 17th, in his garden on Staindrop Road, flying only a bout 2 feet from the ground. It was quite uninjured but in a very exhausted condition.

April 30th. Annual General Meeting, at which the report of the Council on the work of the Club for the past year was read by the Hon. Secretary, stating that the excursions had been carried out according to programme with two exceptions, but the attendance had fallen off. Two new features have been instituted, a Grass Foray and a Moss Foray. A large number of walks had been arranged by the Topographical Section. Owing to the outbreak of war, no autumn programme was issued but meetings were carried on; a spring programme was issued, attendances at meetings fell by about 50%, doubtless owing to the "black-out."

Miss Ruby E. Dowling, M.Sc., F.L.S., was again elected President, and most other officers were re-elected. A new section, Astronomy, was formed with Mr. A. E. Taylor, M.Sc., organiser.

May 4th. (Saturday). A second Moss Foray took place near Aske (V.C.65). 16 members attended.

May 7th. Mr. J. B. Nicholson reported on last Saturday's Moss Foray, 20 species of moss had been identified by Mr. Nowers, and were exhibited.

Among the birds noted were: Swift, Garden Warbler, and Wood Wren.

An astronomical telescope lent to the Club by Mr. B. R. Lucas was on view.

Mr. J. E. Nowers reported that a Grasshopper Warbler was seen and heard on 5th, in Catkill Lane (V.C.66).

May 18th-19th. The thirteenth all-night walk at which 20 members were present, took place at Gretadale (V.C. 65). It was a fine night with sharp frost at dawn. The number of birds recorded was 20, between 3.25 and 5.25. Sky Lark in full song at 3.25; Woodcock calling at 3.30; Song Thrush in full song at 3.35; Robin singing at 4.0; Blackbird singing at 4.5; Wren singing and Wood Pigeon calling at 4.10; Great Tit singing at 4.20; Garden Warbler at 4.21; Blue Tit and Chaffinch at 4.30; Dipper calling on the river at 4.32 and Spotted Flycatcher at 5.25; were among the birds recorded.

May 21st. Mr. J. B. Nicholson reported on the botanical side of the all-night walk. Elm trees were very full of fruit, Beechseen in flower, Lesser Celandine (*Ranunculus Ficaria* Linn.) was found with bulbils in the axils of the leaves. He spoke of finding the Bladder Elfcap (*Peziza vesiculosa* Bull.) growing on sand bags used for A.R.P. in several parts of the town; Coltsfoot, Charlock and Pignut have also been seen in the same situation.

May 28th. Mr. J. B. Nicholson reported on the N.N.U. Field Meeting at Croxdale, the previous Saturday, at which four of our members were present. He described the flora of the district and exhibited specimens, among which were:-Hemlock Water Drop- wort (*Oenanthe crocata* Linn.); Great Water Dock (*Rumex Hydrolapathum* Huds.) and Wood Club Rush (*Scirpus sylvaticus* Linn.). He also reported on a Botanical Section Walk taken on Thursday evening, 23rd, along the Tees side at Low Coniscliffe. This walk was for the purpose of examining and naming common flowers. It was noticed that the Gorse had suffered very badly from the severe winter; most of the bushes were still brown with very little flower.

Mr. C. P. Nicholson reported on a walk taken by 30 members on Saturday, 25th, to High Coniscliffe, where the Church and Hall gardens were visited.

Mr. Nowers exhibited an uncommon moss, *Orthodontium gracile* Schwaeg., gathered on the Aske moss foray (the name had been confirmed).

JOHN E. NOWERS, *Hon. Secretary.*

NOTES AND RECORDS.

NOTES.

Flowers of the Moschatel.

In one head I picked recently, the uppermost flower had three sepals to the calyx as had three of the four lateral flowers. The fourth lateral flower had an additional fourth sepal. Another plant bore an upper flower with the usual two sepals provided with a supernumerary third but smaller one, whilst still another head had flowers with three equal sepals throughout.-C.R.

Starlings and Milk Bottles.

In the case of two adjacent houses in the Avenue, Birtley, considerable trouble has been caused by the fact that, after the milkman left the milk as usual in the morning, the lids of the bottles were removed. For some time the cause of this remained undiscovered until a watch revealed the fact that starlings were the culprits. After fiercely pecking at the cardboard lids, the birds finally made a hole in them, pulled them out and flew away with them.

The Discovery of Two Cists near Birtley.

Recently, for obvious reasons, there has been a considerable development in sand and gravel pits in the Urpeth area. In one of the former a stone cist was unearthed in which a skeleton, lacking several bones and a part of the skull, had been buried in a very cramped position. Early a mile south of this, a very similar cist was struck by a plough; its contents were much the same as those of the first.-J.H.H.

The Flora of a Disused Sandpit

Not far away from the sandpits to which reference has just been made, was a pit long since disused; this has just been filled up with rubbish. In this way several noteworthy plants have been destroyed. These included *Cerastium arvense*, *Taraxacum laevigatum*, and *Erodium cicutarium*. The nearest local colonies for the first named are those along the Wear, and for the other two those on the sand dunes on the coast.-J.W.H.H.

Wagtails following the Plough.

In early April, whilst in South Durham, I was surprised to see some strange-looking birds, mingled with the rooks, following the plough in a field by the road side. The car was stopped, and I found that the birds which had attracted my attention were Pied Wagtails,

A Gynandrous Sallow and its Catkins.

The gynandrous *Salix Capraea* to which attention has often been drawn was closely trimmed on its western side last year and left untouched on its western exposure. This year all the catkins open to the west are wholly male, whilst those facing east were strongly intersexual.

The Present Spring in the Team Valley.

This season has produced a curious crop of inconsistencies in its phenology, no doubt owing to the long spell of frost in the early part of the year. Nevertheless, the first oak was observed in leaf on March 29th, in Urpeth Woods. The first humble bee, *Bombus hortorum* was noted on Easter Monday followed by *B. terrestris* on April 6th. It was not, however, until May 10th that *B. agrorum*. and *B. muscorum* seemed to put in their initial appearance. After that, all of our local species became more or less abundant. In fact, their numbers exceeded expectations based on the poor summer and autumn of last year.

The first sallows (*Salix Caprea*) were observed in full catkin on March 30th both in Durham and N. Yorks, whilst our local *Salix atrocinerea* were over by April 6th. *Salix aurita* lingered long, for bushes were in full flower near Hurworth on May 12th.

Viola odorata was at its best on April 5th, whilst its congeners *V. hirta*, *V. Riviniana*, *V. sylvestris* and *V. canina* were in splendid order on May 12th, in Mid Durham. In the latter cases, the flowers were being probed freely by queens of *Bombus terrestris*.

Of the white butterflies the first *Pieris napi* was seen on May 11th, as well as the first *P. rapae*; *P. brassicae* came along on May 18th.

Rhodites rosae and Rosa coriifolia.

One does not often observe this Gall wasp on *R. coriifolia*; none the less, a colony of the Cynipid was found attached to this rose near Wylam.

J.W.H.H.

RECORDS.**INSECTA.**

LEPIDOPTERA. Butterflies and Moths.

Sesia formiciformis Esp. Ruby Clear-wing. 67On *Salix purpurea* near Wylam. -J.W.H.H.**Euchloe cardamines** L. Orange Tip. 66

In Lambton Woods.

HYMENOPTERA. Bees, etc.

Andrena fulva Schr. 66

In a field near Urpeth.

Diastrophus rubi Hartig. 66Common on *Rubus suberectus* on the Wear banks in Lambton Woods.- J.W.H.H.

FLOWERING PLANTS.

- Cerastium tomentosum L.** 66
A large patch, clearly an escape, on the sea cliffs south of the Blackhalls.
- Viola sylvestris** Lam. Dog Violet. 66
In quite a large flowered form near Strawberry Hill, as well as near Quarrington Hill. In the latter area hybrids with *V. Riviniana* were common.
- Viola canina** L. Dog Violet. 66
Near Quarrington Hill, providing a new and inland station for this local species.
- Gagea lutea** L. Star of Bethlehem. 69
The Hyning in S. Westmorland.-J.W.H.H.
- Lathraea squamaria** L. Toothwort. 66
A fine large series of clumps between the River Wear and the Picktree Road.-ARTHUR BOLTON.

NOTICES.

It is particularly requested that *Notes* and *Records* should be cast exactly in the form used in *The Vasculum* and sent to Prof. J. W. Heslop Harrison, King's College. Records falling under different heads should be written on separate sheets, and *Notes* should be separate according as they relate to Vertebrates, Invertebrates, Botany and Varia.

All other MSS should be sent direct to the General Editor, The Rev. Dr. J. E. Hull, Belford Vicarage, Northumberland.

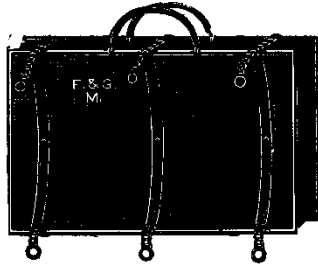
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