



TRANSACTIONS  
OF THE  
CARLISLE  
NATURAL HISTORY SOCIETY.

---

VOL. II.

—  
1912.

---

CARLISLE :  
JAMES BEATY & SONS, PRINTERS, LONSDALE STREET.



TRANSACTIONS

OF THE

NATURAL HISTORY SOCIETY

VOLUME II

1861-1862

# CARLISLE NATURAL HISTORY SOCEITY.

## PATRONS

Sir BENJAMIN SCOTT, J.P.  
R. HEYWOOD THOMPSON, Esq., J.P.  
F. P. JOHNSON, Esq., J.P., M.B.O.U.  
G. B. ROUTLEDGE, Esq., J.P., F.E.S.  
W. I. R. CROWDER, Junr., Esq.

## PAST PRESIDENTS

H. A. MACPHERSON, M.A., M.B.O.U.  
E. C. STOWELL.  
G. B. ROUTLEDGE, F.E.S.  
LINNÆUS E. HOPE.  
D. LOSH THORPE, M.B.O.U.  
FRANK H. DAY, F.E.S.  
BENJAMIN JOHNSTON.  
JAMES MURRAY.  
HAROLD CARR.  
Rev. Canon R. BOWER, M.A.

## OFFICERS FOR 1911-12 :

### *President :*

T. SCOTT JOHNSTONE.

### *Vice-Presidents :*

HAROLD CARR.  
G. B. ROUTLEDGE.

### *Council :*

G. B. ROUTLEDGE.  
B. JOHNSTON.  
J. W. BRANSTON.

### *Editorial Committee :*

F. H. DAY.  
L. E. HOPE.  
J. MURRAY.

### *Hon. Secretary :*

FRANK H. DAY, 26 Curtock Terrace.

### *Hon. Treasurer :*

LINNÆUS E. HOPE, The Museum, Carlisle

CHURCH OF THE HOLY TRINITY

Worship Service  
at 10:00 A.M.  
on Sunday, June 12, 1911

At 11:00 A.M.

At 1:00 P.M.

At 3:00 P.M.

At 5:00 P.M.

At 7:00 P.M.

At 9:00 P.M.

At 11:00 P.M.

At 1:00 A.M.

At 3:00 A.M.

At 5:00 A.M.

At 7:00 A.M.

At 9:00 A.M.

At 11:00 A.M.

At 1:00 P.M.

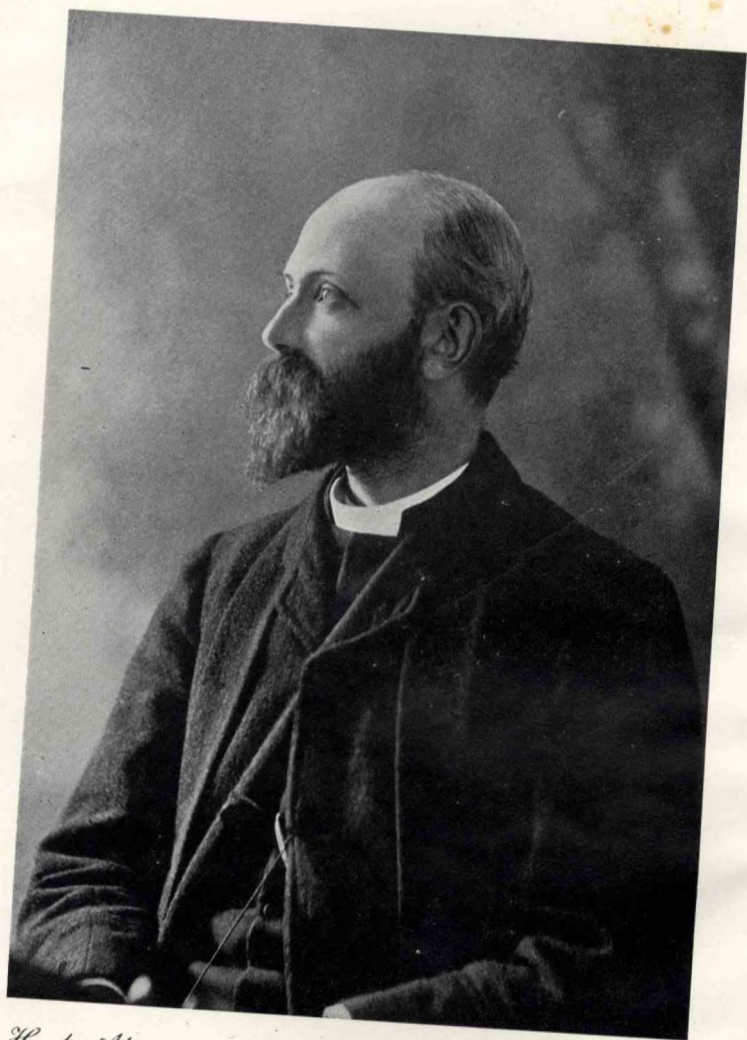
At 3:00 P.M.

At 5:00 P.M.

## CONTENTS.

---

	<i>Page.</i>
1. H. A. Macpherson, M.B.O.U., A Memoir, by Linnæus E. Hope .. .. .	1
2. The Minerals of Cumberland, by Jno. W. Branston ..	14
3. The Arachnids (Spiders, &c) of Cumberland, by H. Britten.. .. .	30
4. Plant Life around Carlisle, Part II., by Thos. Scott Johnstone .. .. .	66
5. The Natural History of the Peregrine Falcon, by Eric B. Dunlop .. .. .	89
6. The Lepidoptera of Cumberland (Part II., Moths), by George B. Routledge, F.E.S. .. .. .	94
7. The Ducks and Geese ( <i>Anseres</i> ) of the Solway, by Linnæus E. Hope .. .. .	184
8. The Coleoptera of Cumberland, Part II., by Frank H. Day, F.E.S. .. .. .	201



*Hugh Alexander Macpherson, M. A., M. B. C. U.*

## H. A. MACPHERSON, M.B.O.U.

---

### A MEMOIR.

---

BY LINNÆUS E. HOPE.

---

*(Read March 17th, 1910).*

"Hugh Alexander Macpherson, Born February 9th, 1858, Died November 26th, 1901. An eminent Naturalist, for many years resident in this City, who devoted his leisure to the study of bird life, and to whose zeal this institution owes much."

So runs the inscription on a silver medallion in the Carlisle Museum, erected by the Free Library and Museum Committee of the Corporation of Carlisle as a slight acknowledgement for benefits received at the hands of this gifted student of nature. If this institution appreciated the efforts he made in recording the history of the fauna of the Lake District, how much more so ought we, who live after him, and also study nature according to our light, for the clear, interesting and pleasing manner in which he has placed such information before us, valuable knowledge gained after much toil and research into the secrets and ways of wild nature, researches pursued with that energy and keenness which only a lover of nature possesses.

The advent in Carlisle, in 1882, of the Rev. H. A. Macpherson, marks an era of the study of Natural History in Cumberland and the Lake District, for from that time the bulk of our knowledge of the birds, mammals, reptiles, and fishes of the district dates. It was just a little over one hundred years previously that an earlier well-known local Naturalist, Dr. Heysham, came to Carlisle, in 1778, "to practice surgery upon the natives." The study of the local Fauna, however, soon made claims upon his attention, and he published, in 1797, a "Catalogue of Cumberland Animals."

His work was continued by his son, Thomas Coulthard Heysham, who appears to have had wider interests in the study of

Natural History, and more time for their pursuit than his father, but for all that, little of his actual work, or of the information he collected during the 40 years or so of his studies, was published, doubtlessly owing to the many difficulties experienced, including the heavy cost of publication. From Heysham's time, until the arrival of Macpherson in Carlisle, the fauna of the district appears to have been neglected.

True, Carlisle had its Ornithologists ; some of great repute, but their fame does not appear to have reached far beyond the limits of the city in which they lived, and their contributions to the bibliography of the subject are meagre.

Hugh Alexander Macpherson was born at Calcutta, India, on February 19th, 1858. His father, William Macpherson, was at the time an Official of the Supreme Court at Calcutta, but afterwards well-known as Editor of the "Quarterly Review." His mother was a niece of The Right Hon'ble Sir John Macpherson Macleod of St. Kilda, and from her he inherited his small estate at Glendale, Isle of Skye.

At an early age Macpherson was sent to England for education, and in 1872 he was at Haileybury College. In 1878, he was an undergraduate at Oxford, and in 1881 took his Bachelor's Degree. He was ordained in 1882, and became Curate of St. James' Church, Carlisle, with the Rev. T. Goss, who was then Vicar of the Parish. In 1885 he resigned this curacy, and went to London, where he held two successive curacies in the short space of three years, at Holloway, and at Holy Trinity, Paddington. The work and drudgery of a city parish was not, however, to his liking, he longed for the freshness of the Cumberland hills and dales, and for the mosses and flows of the Solway Firth, and when opportunity offered at the end of 1888 he accepted the curacy of St. Cuthbert's Church, Carlisle, with the Rev. Canon R. Bower, but shortly afterwards, on the resignation of the Chaplaincy of Her Majesty's Prison by the Rev. James Wilson, he was appointed to that post. The Chaplaincy of a Gaol was not quite the office suitable to one of Macpherson's gentle and kindly nature, though there was no doubt ample scope for the exercise of his sympathy and charity, and may be he received in return valuable information of a certain nature from some of his

"parishioners," who were from time to time under Her Majesty's care for indulging too carelessly their sporting proclivities; yet it was no surprise to those who knew him, when he decided, in 1897, to resign that post.

In 1897, he married Miss Jean Comrie, of Gourock, and was shortly before appointed to the living of Allonby, in Cumberland.

Allonby, from its position on the Solway, is an ideal place for one of his tastes and pursuits, and it had the additional charm of being the place of capture of his chief ornithological prize, the Isabelline Wheatear. Here, in the quiet and repose of a country parish, he performed some of the best of the literary work which is his monument to posterity, but for some reason he became dissatisfied with his surroundings, and at the end of 1899, he left Allonby to take charge of the Episcopalian Church, at Pitlochry, in Perthshire.

There can be no doubt that he was, to some extent, moved to this step by a desire to study more closely the birds of the Western Highlands, and wished to be nearer to that area and to his beloved Island of Skye. He had some years previously succeeded, on the death of Sir John Macleod, to estates in Skye, and to these estates he paid frequent visits during his Chaplaincy at the Gaol. It was his expressed and cherished desire to write the History of the Fauna of the Island of Skye and the Western Highlands, a desire, however, which he unfortunately did not live to realise.

In 1886, just four years after his first arrival in Carlisle, Macpherson's first work, "The Birds of Cumberland," appeared, with the late William Duckworth as joint author. This book, despite its imperfections, was superior to any history of the fauna of the district yet produced. In it was evidenced Macpherson's energy and thoroughness of research. In the short space of four years a vast amount of information had been collected and compiled. Two hundred and fifty species of birds were enumerated against the one hundred and sixty-seven in Dr. Heysham's Catalogue of Cumberland Animals, published one hundred and eleven years earlier. Old records had been investigated with infinite pains, breeding haunts and colonies visited, and the assistance of interested persons invoked in all parts of the County. The chief changes in the avi-fauna

of the district are noted, the White-tailed Eagle no longer bred in the rugged precipices of the Lake District, the Marsh Harrier had left the flows and mosses of the Solway, and various other birds had disappeared or were disappearing, but on the other hand, the Starling, the Stock Dove, and the pretty Pied Flycatcher, were increasing by leaps and bounds.

Four years is but a short time in which to study the fauna of so large a district, and it was not surprising that Macpherson soon wished to improve and enlarge upon this work. He had left Carlisle for London before its publication, but he maintained an unabated interest in all that pertained to the Zoology of the district. Whilst he was in London, the Isabelline Wheatear, a specimen unique amongst British birds, turned up at Allonby, and this, together with the desires of his many Cumberland friends, induced him to return to Carlisle in 1888, when he renewed his researches amongst the vertebrata of the district with added zest.

The time of his return to Carlisle coincided with the eruption in Europe of that curious Eastern bird, Pallas's Sandgrouse, and Macpherson was immediately absorbed in the investigation of this phenomenon, collecting information respecting its occurrence and distribution, and studying the birds themselves.

He contributed a report of these researches in the Transactions of the Cumberland and Westmorland Association, and later he published a pamphlet on "The Visitation of Pallas's Sandgrouse to Scotland," having collected much valuable information on the subject in that country.

In 1891, he wrote a useful little book of British Birds for the "Young Collector" series, and in 1892 he published his monumental work, "The Fauna of Lakeland," the book in which his name and work will be handed down to posterity. We must not forget that Macpherson was not a Cumbrian, which makes his work, and his undoubted love for the district, all the more remarkable.

Shortly before the publication of the great work, he wrote (amongst his MSS. notes):—"During the last fourteen years I have spent many delightful days in studying bird life, on the Fiords and in the valleys of Western, and in the birch-woods of

Eastern Norway, among the pine forests of the Bernese Oberland, on the marshes of the Rhone and the great forests of the Rhineland, among the beechwoods of the Western Pyrennees and the volcanic hills of mountainous Auvergne:—At home I have studied the Ornithology of the eyats of the Thames and Isis, the Suffolk marshes and on the Surrey downs, on the sandy shores of Moray, and the rocky islands of our Western seas, but nowhere have I gained so much insight into bird life as on the salt marshes, sand flats, and wild moors of the N.W. coast of England. Here, wandering season after season, the landscape has become endeared to me, and no effort or thought is longer needed to locate every species of bird which visits our faunal area. Hence it is not unnatural that the task of describing the fauna should fall to my lot. Gladly would I have postponed the task, but the more materials accumulate the more unmanageable they become."

It is somewhat remarkable that, as a rule, Ornithologists, in their early days or in the beginning of their study, are apt to think that all is known that can be learnt about British birds. They, however, find, as they become more enlightened, that there is still much to explore in the Ornithology of these Islands. Macpherson was no exception to this rule, as the following passage in his MSS. notes shows, referring to his work in the "Fauna of Lakeland,"—"When I was an undergraduate at Oxford, I used to fancy that Britain was played out, and, consequently, though I never lost an opportunity of making an observation, I had not as much heart in the work as I ought to have had. When I came north, and found how little was accurately known in some parts of England and Scotland, I altered my views; and though these pages may, and probably will, owe their interest chiefly to the fact that so little has been done before I came, that the faunal area was really not known; I venture to believe that some of the observations contained herein are both new and original. If such should be the case, it should be encouraging to younger men, who, with larger means and more leisure, may accomplish far better results in actual research."

This passage is true to Macpherson's nature, he was one of the most modest of men, but no apology is needed for the "Fauna of Lakeland,"; no one could have done more or better work in the

time. Macpherson, unfortunately, was not a wealthy man, nor was his time ever wholly his own, but he was an ideal ornithological author, as his work in the "Fauna" shows, accurate and painstaking in research, keen and enthusiastic in field work, and with a rare gift of expressing his impressions in writing, in a manner which never failed to interest his reader. The "Fauna of Lakeland" gives evidence of all these attributes and it is a source of pleasure to the student of the Lake District fauna who reads it, to find that many of his observations have been anticipated, and this fact awakens a sense of grateful fellowship with the author.

The extent of the faunal area of Lakeland is defined in a preface to the book by the late Chancellor R. S. Ferguson, and is identical with the Diocese of Carlisle, plus the Parish of Alston, which is in the Diocese of Newcastle, but in the County of Cumberland. Within this area Macpherson records, fifty species of Mammalia including extinct forms, 262 species of birds, all good species, with the exception, perhaps, of the Polish Swan, which is not generally accorded specific rank. Two species of birds new to the British list are recorded, one of which, the Isabelline Wheatear, still holds its place as an unique example, whilst an additional example of the Frigate or White-faced Petrel is on record.

Four species of Reptiles, and six Batrachians, are mentioned, the Natterjack Toad being the best species.

The Fishes enumerated are ninety-five, including marine and freshwater forms, and exclusive of three species of Cyclostomes or Lampreys. The catalogue of fishes can scarcely be considered as complete, except as regards the freshwater forms, which in Lakeland are well represented by such species as the Vendace, Gwyniad, and Char.

Though interesting enough, the mere recording of rare stragglers, or identification of hitherto uncertain species, is the lightest part of the work in such a volume. The investigation of ancient records of species which have ceased to exist in the area, or only now occur as migrants or stragglers, such as the Lakeland Eagles and Ospreys, Bitterns and Harriers, entails an extraordinary amount of pains and perseverance, also the poring over parish registers and other ancient documents, sometimes almost un-

decipherable and often with meagre results. But these results are lasting, and none the less interesting, whereas the record of a new species is interesting at the time, but the interest may decrease if the species becomes common, whilst the work of recording changes still goes on.

If Macpherson had been still in our midst, no doubt he would have considered the time ripe for a second edition of the "Fauna." The occurrence of Whooper Swans on the River Eden, at Carlisle, would have furnished him with a great store of materials, and there have been many other interesting occurrences since the publication of the book. Even before the book was fairly out of the printers' hands the following postscript to the Prolegomena was inserted:—"Since the foregoing passage was printed, I have performed the melancholy task of disinterring the remains of a Ruddy Sheldrake from the bottom of a manure pit. This fine bird was shot on the River Wampool, July 18th, 1892, and thrown away as useless; it was one of a pair, and undoubtedly of wild origin."

Immediately the "Fauna" was in the hands of his subscribers, Macpherson's attention was turned to another work which he had long desired to publish, "A History of Fowling and Devices for the Capture of Wild Birds," he set to work to arrange his already extensive materials for this work, and to acquire additional information.

In the meantime, some smaller works occupied a portion of his time. He wrote the Natural History chapters on game birds and mammals for several of the "Fur and Feather" series of books, including Red Deer, in which he referred specially to the Martindale herd, the only existing remnant of the vast herds of deer which once roamed in the Royal Forest of Inglewood; also the Hare, the Grouse, the Pheasant, and the Partridge.

In 1894, in order to obtain further information respecting European methods of bird-catching and trapping, Macpherson visited France, Switzerland, and Italy. In the latter country he was the guest of Count Camozzi Vertova, at Bergamo, and of Professor Giglioli, of Florence. In addition to the insight into Italian methods of bird catching which he obtained, Macpherson appears to have greatly enjoyed this visit, and it was a source of

great regret when his medical adviser curtailed his stay in Italy, owing to the relaxing effect of the climate. His health had given way some time before, but he had hopes that this trip would do him good. The hospitality and kindness of these Italian gentlemen was most pleasing to him after his long railway journey, and somewhat consoled him for the loss of his luggage. This he had purposely made as light as possible, so that he might always have it in his personal charge, but it was not the first time he had lost his personal effects on an Italian railway, and his single holdall fared no better than his boxes. He had a very poor opinion of Italian railway porters, though he seldom spoke ill of either class or person.

Many of his MSS. notes refer to this visit, and record the birds seen in both a wild state and in the markets. In the Paris market, on October 10th, 1894, he saw bunches of Thrushes of various species, Quail, Pheasants, and some Little Bustards. He purchased two of the latter and sent them partly skinned to the Carlisle Museum but on arrival they were in too far advanced a stage to save. He also "enquired for *Rana esculenta*, but was only shown some tit-bits on wooden skewers, a sad illustration of the Frog that would a-wooing go."

At the Jardin des Plantes, he visited the houses of Buffon and Cuvier, the great French naturalists, which stand in the grounds. He says:—"We gazed with mingled awe and reverence at the house in which the great anatomist (Cuvier) had lived and worked and thought out his recondite systems of classification."

Most who have read Macpherson's work receive the impression that he possessed an artist's mind, and this is well exemplified in some of his descriptions of the scenery through which he passed on his journey. In Switzerland he wrote:—"Two hours before we reached Basle, the colours of the trees and foliage, in the first freshness of early day, were wonderful for their individual richness of tone, as well as for their rare variety. The whole landscape seemed to have been touched up afresh by the hand of a master painter. We went the following day to Zurich, enjoying the magnificent views of river scenery. These were at first of the Rhine, and latterly of its tributaries. The graceful turns of the river, the deep blue colour of the rushing waters, the wooded

banks and rounded hills ; all these mingled together in glorious harmony, and filled our minds with a flood of graceful impressions. On the 14th we journeyed to Milan, glorious scenery, high mountains, lakes of inimitable beauty, wooded hills, narrow gorges, dashing cascades, distant snowfields, all crowded confusedly together." At Milan he records many kinds of small birds offered for sale in the markets—Corncrakes, Blackbirds, Thrushes, Skylark and Woodlark, Tree and House Sparrows, Tits, Warblers, Redstart and Black Redstart. At Bergamo, and also at Florence, he notes the number of small birds in the markets, tied up in bunches to be sold for food, even the Gold and Fire-crested Wrens, and the Common Wren, were thus done up for human food ; tiny things, with bodies divested of feathers, scarcely bigger than a pea. He especially notes *Ruticilla titys*, the Black Redstart, and sent examples of this species also Woodlark and White Wagtail to the Carlisle Museum. Near Milan, he noticed that "a great number of plain wooden boxes were fixed up outside the houses for the Sparrows to nest in, so that the people may eat the young."

In 1895, Warne's Royal Natural History was published, edited by R. Lydeker, an extremely useful work, for which Macpherson wrote the chapters on the *Passeres* or Perching Birds. This work evidences his wide knowledge of the birds of the world, and was a work in which he took a keen pleasure, although it savoured a little of drudgery, inasmuch as he more than once referred to the difficulty of writing a history of birds to fit a set of illustrations already determined on. If this work does not show Macpherson in his best vein, it is probably due to that cause.

In 1897, Macpherson married, and obtained the living of Allonby, and in the same year published his other great work, the "History of Fowling." He was full of hope that this work would, as it really deserved, be a great success, but it is not in man to command success. The book did not appeal to the wide circle he expected. Yet it is interesting alike to sportsman, naturalist, or ordinary reader. Traps, Snares, Nets, and every kind of implement or device for catching birds, from all parts of the world, are described, and many of them figured. He made a large collection of these things.

He had correspondents in nearly every country, and in some instances he had to engage the services of a translator, but whenever possible, his letters and information were written in English. This sometimes turned out rather amusing, especially in the case of two Japanese correspondents. Some parts of a letter from Mr. Yokoyama (who was a student at Tokio) have already been quoted, but they are too good to pass :—

“ The answer asked of the Catching Bird.—In Japanese the manner of catching bird is variety, and the object is separated to two parts, the amusement and the occupation.

The amusement part is maken by the bird gun, branch of tree, butcher bird, falcon and trap. The occupation is maken by pole, owl, horned-owl and net.....The manner by branch of tree is very complicate to explain, but I will explain it. We go to a place where many birds seemed to come, with a decoy bird in a cage, we hang (upon a) branch of tree and place properly around, up or down of the cage, branches of the tree, attaches bird-lime to other birds, visit him and sit upon it, then we take a refuge and steal a sight. this manner is especially amusing.....

The manner by owl is assimilated to ‘ by branch of tree,’ &c. Finally Mr. Yokoyama says :—

“ You may not do all understand me, for my pen do not accord to me.”

Another Japanese correspondent, Mr. Fukushima, says :—

“ The subject of bird-catching is divided into two classes .....These catchers are not only made by first-class of mankind, but by second-class, and the next.....The sparrow is caught by the pole armed with bird-lime to its point, or by the arrow of an air gun. This catcher wants to be up in the catching, and may catch it for their duties.

The method of catching the bird is general as the flying pheasant is caught by sudden fire, and the pigeon is fired by aim.”

In 1898, Macpherson wrote the History of the Order *Tubinares* for “ British Birds, their Nests and Eggs,” published by Messrs. Brumby and Clarke, of Hull, and illustrated by F. W. Frohawk. This difficult order of birds he dealt with in a very clear manner,

considering the amount of knowledge extant respecting this extremely pelagic group. He notes the occurrence of the two examples of the Frigate Petrel, the second being obtained at Colonsay, and being in the Royal Scottish Museum, Edinburgh.

In his account of the Levantine Shearwater, he says :—" As long ago as 1888, I pointed out that a Shearwater, which Mr. Howard Saunders had described as the young of the Manx Shearwater, belonged to some other species which occasionally visited British waters." It is now known that the Levantine Shearwater, which breeds in the Mediterranean visits the East Coast of England fairly regularly.

In addition to writing the history of the *Tubinares* for this work, Mr. Macpherson read and revised the greater part of the proof sheets, and footnotes by him are scattered over the work. A note by the publishers occurs at the end of the last volume :—" The publishers sincerely acknowledge their obligation to the Rev. H. A. Macpherson for his valued services in revising the proof sheets of this work."

About this time the series of Victorian County Histories were being compiled, and that for the County of Cumberland was in hand. Macpherson was asked to furnish the chapters on Natural History. He wrote the account of the Vertebrate Animals, but deputed to Mr. F. H. Day and others the task of cataloguing the invertebrates and plants. I say catalogue advisedly, because in a work of the scope of a County History, modelled on the ancient type of County History, such chapters can be little more, a fact which gave great dissatisfaction to Macpherson. The first volume of the Cumberland Victorian County History was published in 1900, about the time when he left Allonby to take up his charge in Pitlochry.

It was his avowed intention to write the history of the Fauna of Skye and the North-west Highlands and he was engaged collecting materials for this work during the year he lived at Pitlochry. He died on November 26th, 1901, but the materials collected for this have fulfilled their purpose, being embodied in a book " The Fauna of the North-West Highlands and Skye," under the joint authorship of J. A. Harvie Brown and Macpherson, published in 1904, three years after his death. This posthumous work gives

all Macpherson's rough notes referring to the area, clearly, as they were written, without alteration or embellishment by the editor, a fact which speaks volumes for the respect he was held in by, and the kind consideration of, his co-author.

Throughout the whole of the time during which he worked at the Fauna of the Lake District, and up to the time of his death, Macpherson was a frequent contributor to various Ornithological Journals, including the "Zoologist," "Ibis," the "Annals of Scottish Natural History," and the "Field." To enumerate his writings, articles, notes, and letters, to these and other journals, would take up the whole of a paper of this kind. He was a most voluminous writer, and never seemed so happy as when describing his experiences for the benefit of others. He was an interesting conversationalist, though his pen seemed readier than his tongue, and a pleasant companion to one who shared his hobby, never tired of discussing birdy matters over a pipe of tobacco; at such times his pipe used to be frequently forgotten, and he consumed an immense quantity of matches.

He was long connected with the Carlisle Museum, both before and after its adoption by the Corporation, and it was greatly due to his enthusiasm that a Natural History department was included in the Corporation's scheme. He had a burning desire to see a representative collection of British Birds in the Carlisle Museum, and when Mr. J. W. Harris, of Cockermouth, offered his collection to the Corporation, he strongly recommended its acceptance, in the hope that this might induce the authorities to consider his idea of making a County collection of birds. That he was successful in so doing, is evidenced by the present collection. He was very keen on acquiring for this collection any rare or interesting bird, and was most anxious to show the changes in plumage of birds, both seasonal and gradual, also variations of plumage, and he was terribly chagrined if he found it impossible to secure any local specimen which he desired for the collection. On one occasion he visited Silloth with a friend who wished to see some of the Solway birds, and stayed over the week end at an hotel in the neighbourhood. On the first day of their stay (Saturday), a local gunner brought him some Wigeon to look at, one of which it appeared was an interesting variety, which he

purchased along with another, intending to bring them to the Museum, but having no place to keep them, he summoned the housekeeper of the hotel, and gave the ducks into her charge, saying : " take care of these, we shall want them before we go home." At the end of their stay he asked for his ducks, and to his dismay was told that they had already had them. The " daughter of Beelzebub " (to use his own words), had construed his words into an instruction to cook them, and they had dined sumptuously off Macpherson's cherished variety of Wigeon, the only one, as he plaintively remarked, he ever saw " with a breast barred like a Sparrow Hawk." This reminds one somewhat of a tale he was fond of repeating in reference to an incident which occurred during a visit to Spain with a party. They had a little Spanish boy who acted as a carrier for them, and during the early part of their stay caught a young Owl, in which the boy took a keen interest. When they were leaving, the Owl was impedimenta, and one suggested it should be given to the boy. On being asked if he would care for it, the boy smiled and said : " I would like that Owl; I have wanted that Owl since I first saw it ! " " Well, what will you do with it if we give it to you ? " he was asked ; " I would eat it " was the reply.

Macpherson's interest in the Carlisle Museum was maintained up to the time of his decease, and he added the whole of his large collection of skins to the collection, also many rare and interesting birds, mammals, and fishes. His last donation was in 1901, a Sooty Shearwater, obtained on the Yorkshire Coast in that year.

Macpherson's early death was a great loss to this Institution. He was a kind and generous friend, a delightful companion, a true lover of nature, equalled by few, surpassed by none ; as such let us always keep a place in our memory for him and his work.

He was interred in Carlisle Cemetery by his expressed wish, in the district where he had performed his labours of love. He was followed to his last resting place by many of the members of the Carlisle Natural History Society, a Society to which he was greatly attached, and of which he was first President.

## THE MINERALS OF CUMBERLAND.

By JNO. W. BRANSTON.

(Read March 3rd, 1910.)

Although Cumberland does not take a prominent position in the general mineral market at the present time, it offers, nevertheless, in my opinion, a greater variety and opportunity to the mineralogist than will be found in any other mining district in Great Britain. Owing to the rugged nature of the Cumbrian mountains, and consequent large exposure of the rocks the student is given an extensive field for the search not only for ores of economic value, but also for those isolated occurrences of the rarer minerals which add so much interest to the subject. The large variety of different rocks which the county possesses is responsible to a great extent for a total of over 100 different minerals which have already been found, in large or small quantities, and there is every reason to hope that this number will be increased when the study of mineralogy becomes more common.

There does not seem to have been much attention given to this subject locally in recent years, due no doubt to the fact that very few mines have been working, except in the West Cumberland iron fields, and also because no new mines have been opened.

The greatest variety of minerals are generally found when a shaft is being sunk on an outcropping vein, due to the alterations which have taken place from atmospheric influence, whilst on the other hand the number of crystallographic examples of the various minerals usually become less as the workings are carried deeper.

A great many of the best specimens in the Carlisle Museum local collection may be considered valuable to ourselves, since they were evidently found under circumstances which, unfortunately, do not show any immediate signs of recurring.

There are four distinct mining fields in the county, the foremost of which, commercially speaking, is the West Cumberland

Hæmatite group. The next most important district is found on Alston Moor, where large quantities of lead and zinc ores are mined. The principal mines in this field are those at Nenthead, which are worked by a Belgian Company, principally for the zinc ores, which after being dressed at the mines are sent to Leige for smelting. The Caldbeck Fells constitute another distinct mining field, but, owing principally to the difficulties of transport, this district has not been worked to any extent for many years. Roughtengill mine was the most important in this group, and has yielded large quantities of lead and other ores at different times. There are also the Redgill, Haygill, Driggeth, Sandbed, Drygill and Brandygill mines, all of which have been worked for lead, zinc, and copper, with more or less success. The whole of this property was taken four or five years since by two Companies one of which re-opened the Driggeth mine on High Pike, but for some reason do not seem to have done anything beyond erecting a concentrating plant. The other Company has been mining the tungsten bearing minerals, Wolfram and Scheelite, in Brandygill, and has raised a considerable quantity of these valuable minerals. There is every reason to suppose that the Caldbeck Fells are rich in minerals, and if a light railway was carried round the northern base of the fells, as often proposed, there is no doubt that development of the mineral deposits would be encouraged.

The district lying immediately to the south of the Caldbeck Fells contains several mines, the bulk of which have been or are being worked in the Skiddaw Slates. The Blencathra mine, which is situated on the southern side of Saddleback, consists of several levels, one of which has been driven for over a mile into the mountain. This mine has yielded large quantities of lead and zinc ores, and is, I think, being worked at the present time. The Thornthwaite mine, on the southern shore of Bassenthwaite, is another productive lead and zinc mine, which has been working for several years. The old Force Crag mine, situated up the valley about 2 miles south of Braithwaite, has been re-opened, and a new dressing mill erected. I visited the mine last summer, and noticed a quantity of rich-looking zinc and lead ores ready for crushing. The Greenside mine, on Helvellyn, is one of the

largest, and, in my opinion, most up-to-date mines in the district.

In addition to the above mines, which are working at present, there are many disused mines all over the county, one of the most interesting of which is the Goldscope lead and copper mine, at Newlands. I heard a rumour last year to the effect that this mine, or the property close to it, was going to be re-explored, but do not know if this was true. Passing reference has only been made to the above principal mining districts, in order that the position of the different mines, to which I shall refer again, may be understood.

Although the system of classification which I have adopted in this paper is not considered by some to be the best from a technical point of view, it is, I think, the one most acceptable to the casual observer, and I have, therefore, arranged the minerals which I propose to describe to correspond with the arrangement of the specimens in the Carlisle Museum collection, which have been divided into the following groups :—

Lead Ores.

Iron Ores.

Zinc Ores.

Copper Ores.

Manganese Ores.

Compounds of Silicon.

Do.      Calcium.

Do.      Baryta.

Miscellaneous Minerals.

### LEAD ORES.

Cumberland has always held an important position as a lead producer, and in addition to the large quantities of saleable ore which has been mined, it is still further interesting to the mineralogist on account of the large variety of lead compounds which have been found at various times. This latter fact is probably due to the different rocks in which lead has been mined, including limestone, slate, and the volcanic series, and it is in the latter that the greatest variety have been found.

I propose to deal with each compound individually, commencing with the

**Sulphide of Lead, or Galena**, which is the principal ore of commerce, and contains, when pure, 86% of lead and 14% of sulphur. This mineral is found in all our local lead mines, generally in an amorphous form, but also occasionally in the crystalline state. Very fine specimens of the latter have been discovered in the Alston district, illustrating the characteristic cubic crystals in a very perfect manner, as will be seen by reference to our Carlisle Museum collection. The ore is found in more or less extensive veins of varying thickness, and also occasionally in the form of large pockets.

Nearly all Galena carries a small percentage of silver, but seldom sufficient to pay for extraction. The Galena at Force Crag is said to contain about 35 ozs. per ton, and the ore in several other mines varies in assay down to 12 ozs. per ton. Until quite recently the silver was extracted from the Greenside mine lead, but when last at the mine, I was told that the practice was unremunerative, and had been discontinued.

**Carbonate of Lead, or Cerussite**, is considered a valuable ore of lead, owing to the comparative ease with which it can be smelted, due to the absence of sulphur. When pure the mineral contains about 83% of lead oxide, and 17% of carbonic acid. No very large quantities have been mined locally, but it is constantly found associated with Galena in the crystalline and amorphous state. Cerussite is considered to be of secondary origin, produced from Galena by the action of water containing Carbonate of Lime. The old Yewthwaite mine, near Keswick, and the Caldbeck Fells mines, have provided the best examples of this ore.

**Sulphate of Lead, or Anglesite**, is seldom found in sufficiently large quantities to be of any commercial value, and has only been found locally in the form of isolated crystals and coatings principally at Roughtengill. Like Cerussite, this ore is probably produced from Galena by oxidation. The composition, when pure, is lead, 68% ; sulphur, 11% ; oxygen, 21% ; approximately.

**Phosphate of Lead, or Pyromorphite**, has been found in comparatively large quantities in the Roughtengill and other Caldbeck Fells mines, where its origin has no doubt been due to the varied chemical composition of the enclosing rocks. A large quantity of the Pyromorphite found at Roughtengill seems to have been in the crystalline form, exhibiting very beautiful, elongated crystals varying in colour from bright green to dark brown. Owing to the difficulties found in smelting this ore, it is not usually considered to be of much commercial value, although I have been told that a considerable quantity was smelted at Roughtengill years ago. The composition of the ore when pure is approximately, protoxide of lead, 74% ; phosphoric acid, 15%, and the remainder chloride of lead.

**Arseniate of Lead or Mimetite**, is a somewhat rare ore of lead, but has been found in quantity in the now disused Drygill mine, on the Caldbeck Fells. There is an outcrop of friable quartz on High Pike, from which I have extracted some very nice specimens of this ore. The chemical composition is somewhat similar to Pyromorphite, with the exception that the phosphoric acid is almost entirely replaced by arsenic acid.

**Chromate of Lead, or Crocosite**, is another rare ore of lead, and one which has not, I think, been found at any other British mine except Roughtengill, a specimen of which is in Carlisle Museum collection.

**Linarite, or the Sulph-Hydrate of Lead and Copper**, has been found at the Redgill mine, and is also a very scarce mineral. The crystals are of elongated, prismatic form, and a beautiful deep blue colour. The mineral is found in contact veins, and seems to be the result of chemical action on the two basic metals, lead and copper.

**Tungstate of Lead, or Stolzite**, has, according to Mr. Postlethwaite, been found in the past at the Force Crag mine, which is a somewhat strange occurrence for a mineral deposited in slate, where any evidence of Tungsten would hardly be expected. As this mine has now been re-opened, there is some chance of fresh specimens being found.

**Molybdate of Lead, or Wulfenite**, has been found in small quantities at the Brandygill mine, and is probably the result of contact between some of the lead ores and Molybdenum, which is often found in the surrounding rocks.

**Leadhillite** is a compound of carbonate of lead and sulphate of lead, and has been found at the Redgill mine. The ore is of rare occurrence, and was first discovered, as the name implies, in the Leadhill district. The mineral is of bright green colour, and usually crystalline.

**Caledonite** is similar to the foregoing mineral, with the exception that it contains a small percentage of carbonate of copper.

### IRON ORES.

Cumberland contains a large variety of Iron Ores, the principal of which is the

**Anhydrous Oxide of Iron, or Hæmatite**, which is found in large quantities, and is recognised as one of the principal commercial iron ores in the country. The composition of the ore, where pure, is 70% iron, and 30% oxygen, and most of the ore mined averages from 50% to 60% of iron. The mineral is generally found in the amorphous form usually exhibiting a botryoidal structure, which when perfect produces the well-known "kidney" appearance. Very fine crystalline specimens are occasionally found, which are dense black in colour, and known as specular iron or iron glance. The deposits of hæmatite are not generally found in a stratified form, but in large masses or pockets, often in the vicinity of a fault, and extending over a large area and depth. The origin of these deposits has been the subject of much discussion, but the theory of alteration is the one now generally accepted. This proposition was, I think, put forward by J. D. Kendall, F.G.S., in 1884, and states that the mineral was formed out of the rocks themselves by substitution.

From what I have been told, it seems that the overlying limestone has been subject to the action of ferric acids of subterranean origin, which, acting upon the carbonate of calcium, have in the course of time resulted in the deposition

of ferric oxide. A very strong support has been given to this theory by the discovery in certain mines of deposits which have only undergone a partial change. The hæmatite deposits cover a large area of Cumberland, and there seems to be, in my opinion, every reason to expect that the field may be extended to our immediate vicinity in the future. During the past two or three years, I have been endeavouring to trace the various outcrops which occur to the South-West of Carlisle, and have found evidence of the mineral in the following positions :—

1. In the bed of the River Wampool, beyond Shawk Quarries.
2. In the bottom of an old quarry near Rosley Rigg.
3. On Aughtertree Fell.
4. In the Caldew washings between Rose Castle and Sebergham.

I have been told that pieces of hæmatite are occasionally found on the surface of certain fields near Southwaite, and also near the source of the Waver.

The above indications seem to suggest that the West Cumberland deposits extend into the limestone, which exists at the northern base of the Cumbrian Group. I made a rough qualitative analysis of some hæmatite which I cut from an outcrop in the River Wampool, and found, curiously enough, that it contained a large percentage of arsenic.

**Hydrous Oxide of Iron, or Limonite**, is found in all parts of the county, but not in sufficient quantity to be of commercial value. The mineral generally assumes an amorphous form, and is of dark brown colour. When pure the ore contains 60% of iron, but this quantity is invariably reduced by a large proportion of impurities. Some limonite is produced from spathic iron ore and iron pyrites by oxidation, but probably more is the result of atmospheric action on certain aquatic vegetation producing a deposit which in succeeding ages yields the so called Bog iron ore. This latter quality is frequently found close to the surface on the fells.

**Oxide of Iron, or Magnetite**, has not been found in any large masses, but forms a rock constituent in several places. Large grains of Magnetite are closely diffused through the Carrock Fell Syenite, and form a notable feature of that rock. When pure the ore contains 72% of iron, but its value is frequently decreased by a high percentage of phosphorous, which is very detrimental to an iron that is to be subsequently converted into steel.

**Titaneferous Iron, or Ilmenite**, is only found in scattered grains, notably in the vicinity of Carrock Fell.

**Carbonate of Iron, or Siderite**, is one of the principal commercial iron ores, but has not been found in the county in workable quantities. The best crystalline specimens are, I think, to be found in Brandygill, and are of foliated structure, usually brown and pale green. I saw some nice specimens of this mineral on the dumps at Force Crag last year.

**Sulphide of Iron, or Iron Pyrites**, is found all over the county, and is regarded as a constant associate of all minerals in the vein, so much so in fact that it is recognised as a reliable indicator by prospectors. The bright metallic appearance of the mineral is too well-known to need description, but it is interesting to note that pseudomorph replicas of nearly all our principal minerals have been found in iron pyrites, amongst which I have noticed excellent formations of dolomite and specular iron at one of the Frizington iron mines.

**Arsenical Iron, or Mispickel**, is of common occurrence in the Brandygill mines, and can usually be found embedded in the rocks in lumps of varying size. When pure the mineral contains about 46% of arsenic.

### ZINC ORES.

Until a year or two ago, Cumberland took a foremost place as a zinc ore producer, but has now, I think, yielded that position to one of the Welsh Counties. Large quantities of zinc ore were found in the early period of mining in this county, but it was regarded as worthless until the comparatively recent demand was created for galvanising and other purposes. In consequence of this latter fact, a lot of the old dumps have been profitably re-worked for the zinc contents.

**Sulphide of Zinc, or Zincblende**, is the principal ore, and occupies relatively the same position to zinc as Galena does to lead. This ore is mined at the present time at the Alston Moor mines, Saddleback, Thornthwaite and Force Crag, and has been found in the past at practically all the lead mines, with which ore it is commonly associated, often to the extent of being mixed in the same vein. The composition of the ore, when pure, is zinc 67% and sulphur 33%, and the colour various shades of brown. The mineral is found in both the amorphous and crystalline form, excellent specimens of the latter being found at Nenthead.

**Carbonate of Zinc, or Calamine**, has not been found in very large quantities, and where it has occurred has probably only been the product of alteration from the sulphide. As in the case of carbonate of lead, Calamine is worth slightly more than blende as an ore, owing to the greater ease with which it can be smelted. When pure, Calamine yields about 52% of metallic zinc.

**Silicate of Zinc, or Hemimorphite**, has only been found on rare occasions, notably at Roughtengill and Alston Moor, where it assumes a beautiful sky blue colour and is generally in the form of a coating.

### COPPER ORES.

Although Cumberland has now practically ceased to be a copper producer, it has, nevertheless, yielded a variety of copper ores in the past, and there is some reason to think that explorations may some day prove the existence of deposits of sufficient size to encourage working.

**Sulphide of Copper, or Chalcopyrite**, is the staple ore of commerce, and the principal one which has been found locally. When pure the mineral contains about 34% of metallic copper, but ores containing down to only 3% can be profitably worked if found in large quantities and favourable localities.

The Coniston mine was at one time the most important copper mine in the North of England, and has yielded large quantities of copper. Goldscope and Dalehead, at Newlands, near Keswick, and the Caldbeck Fell mines, have also pro-

duced a lot of copper pyrites, and were worked as far back as the reign of Queen Elizabeth. Copper ores do not seem to have occurred to any extent in the Alston Moor and other mines in the Pennine Limestone, but from my own observations, I am inclined to think that a deposit may exist at the base of the fells near Talkin village. When examining the broken ground alongside a stream in this district, I found several small outcrops, most of which were oxidised, but one contained ramified veins of copper sulphide up to half-an-inch wide, and apparently of good quality. The rocks in the vicinity of these indications are much distorted, which makes it difficult to localise the probable positions of the main lode from which these small veins may have been derived.

**Carbonate of Copper, or Malachite**, is well-known as an ornamental material, particularly the Siberian variety, which exhibits a beautifully banded structure in varying shades of green. Such masses as are required for the above purpose have not been found in this district, where it more often takes the form of a coating, or, at the best, in small crystalline specimens. The best examples have been found at Roughtengill and Redgill, and also at Goldscope, many years ago.

The corresponding blue carbonate of copper, known as Azurite, has not been recorded from any of the local mines.

**Silicate of Copper, or Chrysocalla**, has been found at Redgill, and also in small specimens somewhere on Saddleback. This mineral generally takes the form of a coating, but some rather massive specimens were thrown on the dumps at Redgill some years ago.

**Sulphate of Copper, or Brochantite**, has been found in small crystallised specimens at Roughtengill, and is probably the result of oxidation of the sulphide ores.

In addition to the above compounds of copper, the following have also been found in small quantities at various times.

**Protoxide of Copper, or Brewsterite**, at Roughtengill.

**Black Oxide of Copper, or Melaconite**, at Roughtengill.

**Hydrous Copper Arseniate, or Olivenite**, at Goldscope.

### ORES OF MANGANESE.

Manganese Ores seem to be widely diffused through the Caldbeck and Keswick mining fields, but have not hitherto been discovered in sufficiently large bodies to warrant mining on a large scale.

**Hydrous Peroxide of Manganese, or Psilomelane**, has been found at Force Crag and the Caldbeck Fells mines, also in lesser quantities at Blencathra. I have noticed some large pieces of the mineral of botryoidal form in an outcrop of Barytes on High Pike. When pure, Psilomelane contains about 70% of Manganese Oxide, and is of commercial value for glass manufacture and other purposes.

**Anhydrous Oxide of Manganese, or Pyrolusite**, occurs on the Caldbeck Fells, and several large lumps have been noticed in the bed of a small stream at the northern base of Skiddaw.

**Protoxide of Manganese, or Hausmannite**, is an uncommon mineral, and has been found to some extent in the crystalline form at the Cleator district iron mines.

**Oxide of Manganese, or Manganite**, occurs in small quantities at Force Crag mine, principally in the form of lenticular crystalline coatings.

**Carbonate of Manganese, or Diallogite**, is a pink mineral, and is only recorded in one isolated specimen shewn in the Carlisle Museum collection, which was found in the vicinity of Newlands.

### COMPOUNDS OF SILICON.

Practically the only mineral that can be dealt with under this heading is the **Oxide of Silicon**, known as Quartz. This mineral is found in all forms locally, from the thin crystalline coatings on rocks and minerals, up to the large amorphous masses which weigh many tons. It is a constant associate of all ores in the veins, and is regarded to a certain extent as an indicator by the prospector. Fine examples of the dense white crystalline Quartz have been found in the Alston Moor lead mines, whilst the colourless and smoky varieties seem peculiar to the Cleator Moor iron mines.

I picked up a specimen of the Amethyst variety in some Shap granite recently, but it was too small to be of much interest.

Agate, Chalcedony, Cornelian and Jasper, are further varieties which are found in an irregular manner all over the district.

### COMPOUNDS OF CALCIUM.

**Compounds of Calcium** form a similar feature in mineral veins to those of Silicon, and as might be expected, are generally more in evidence in limestone formation.

**Carbonate of Calcium, or Calcite**, is the most common variety of the mineral, and is found in practically all our mines, particularly in the Alston and Cleator district. Very fine specimens have been found at the Greenside lead mine, some taking the form of large twin crystals, grouped together and not infrequently attached to a matrix of quartz. The Thornthwaite mine also yields occasional specimens, some of which consist of clusters of the small rhombohedral crystals. In the Cleator Moor mines the crystals are usually of the columnar type, mostly dense white in colour, although I have noticed some crystals at the Pallaflat mine as transparent as water. The long spiked variety, known as dog-tooth spar, has also been found in the West Cumberland mines. Aragonite is chemically the same as Calcite, but differs in its crystalline formation. Some fine groups of columnar crystals have been found at Cleator, and the plant-like forms—known as Floss Ferri—in the various mines of the Pennine Range.

**Fluoride of Calcium, or Fluorite**, is one of the most beautiful minerals known, and the finest specimens which have been found in Great Britain have been raised from the Alston Moor and Weardale mines. This mineral seems to be peculiar to the mines in the Carboniferous Limestone, but has not, as far as I am aware, ever been found in the West Cumberland mines. One or two erratic crystals have been found in the mines in the Skiddaw Slates—the presence of which would be rather difficult to account for. Fluorite is found in the amorphous form as a vein mineral, but where the rocks are open, it assumes the well-known regular cubic form. The predominant colour is purple of varying shades, but specimens are occasionally found in

green and straw colour, and I possess one colourless specimen. The mineral is used as a fluxing agent, and is mined in large quantities for this purpose in one of the Weardale mines.

**Phosphate of Lime, or Apatite**, has been found in the vicinity of Brandygill, mostly in the form of detached groups of crystals, some of which have been very perfect. When present in large quantities, this mineral is used as a chemical manure.

**Bi-carbonate of Lime and Magnesia, or Dolomite**, is of common occurrence in the West Cumberland iron mines, and to a less extent in most of the Alston mines. Small cavities are frequently found in hæmatite lined with this mineral, which varies in colour from white to brown, the latter colour being due to the presence of iron.

**Sulphate of Calcium, or Gypsum**, is mined to a considerable extent at Cotehill, Lazonby and Salkeld, and is also known to exist in other parts of the county. The commercial variety is a dense white amorphous mineral, and is found in large beds at some distance from the surface, where it has, according to some authorities, been deposited in early ages from the waters of shallow lakes. Some of the mineral has a fibrous structure, and occasionally the clear transparent crystals of Selenite are found.

**Tungstate of Lime, or Scheelite**, is mined at Brandygill in company with Wolfram, and is of considerable value for its tungsten contents. Some very fine crystals of this mineral have been found in recent times, most of which are of a yellowish brown colour, and of tetragonal form. The bulk of the ore, however, seems to occur as a thin coating, which can only be separated by crushing and concentrating from the whole of the quartz and granite in which it is found.

#### COMPOUNDS OF BARYTA.

**Sulphate of Baryta, or Barytes**, occur at most of the mines, and has been mined to a considerable extent at Dufton, Force Crag, and Roughtengill. The bulk of the mineral occurs in the form of a heavy laminated substance, frequently white in colour, but more often coloured to some extent by the

presence of iron, manganese and other impurities. A large deposit is known to exist on the mountain called Binsey, which, according to a recent report in the papers, is shortly going to be worked. Some very fine clear crystals used to be found in the mines of the Dufton district, but as far as I have been able to discover, are no longer to be seen. Probably the finest crystalline examples found in Great Britain are taken from the iron mines in the Frizington district. The best specimens usually consist of a group of spear-shaped crystals often five or six inches long, of a light blue, green, pink, or yellow colour and transparent. Large cavities or lough holes are occasionally found in the mines, the sides of which are covered with a crystalline mass of the above mineral, in addition to crystals of quartz, specular iron, calcite, dolomite and iron pyrites, altogether forming, I am told, a most beautiful spectacle. Unfortunately, the high power of the explosives now used in the mines damages a lot of these specimens before they can be extracted.

**Carbonate of Baryta, or Witherite**, has been mined for commercial purposes at the Fallowfield mine, near Hexham, from which some good crystalline specimens seem to have been procured. Witherite is also found at Dufton, but to what extent I have not been able to ascertain.

**Alstonite and Barytocalcite** are compounds of Witherite and Calcite, and have been found in the Alston district, notably at the Bromley mine.

In addition to the principal vein forming minerals included in the compounds of Silicon, Calcium and Baryta referred to above, a large variety of Alumina, Magnesia, and other compounds are found in different parts of the county, mostly in the igneous rocks, and also as rock constituents. One of the most interesting minerals in the above series is, I think, the Bi-silicate of Magnesia and Calcium or Epidote, which is exposed in the lavas that exist at the base of Falcon Crag.

**Garnet**, or the Bi-silicate of Alumina and Calcium occurs in many of the igneous rocks of the district, and notably on Great Gable. I have noticed an abundance of this mineral in both

the crystalline and amorphous form in a large vein which passes through an exposure of Rhyolite on Shap Fells.

**Mica and Muscovite**, which is a variety of Mica, are met with in the form of small agglomerates in the Skiddaw Granite at the Brandygill mines, usually associated with Wolfram and Scheelite.

**Graphite or Plumbago** is, from a commercial point of view, the most important non-metallic mineral which has been found in the county. The well-known mine near Seathwaite, in Borrowdale, was worked more or less continuously from the beginning of the fifteenth century down to comparatively recent times, and has yielded mineral of considerable value.

The Borrowdale deposit occurs in a dioritic dyke, and takes the form of irregular ramified pipes or stringers, instead of the vein formation common to most minerals. The best quality Graphite contains about 96% of carbon, and 4% of iron, a degree of purity which must have been very closely approached by the bulk of the Cumberland ore.

### MISCELLANEOUS MINERALS.

**The Tungstate of Iron and Manganese**, known as Wolfram, has been mined to some extent recently in the Skiddaw Granite at Brandygill. The mineral, like Scheelite, is of value for the tungstic acid it contains, which is used as an alloy for tool steel manufacture. The mineral is of erratic occurrence, being found in fragmentary deposits scattered indiscriminately through the rock in which it occurs. In Cornwall and elsewhere, Wolfram is regarded as an intimate associate of tinstone, and it was at one time expected that tin would be found at Brandygill, but such has not been the case, neither has it been found in any other part of the district.

**Sulphide of Antimony, or Antimonite**, is recorded as having been found at the old Robin Hood lead mine, near Bassenthwaite, but does not seem to occur in any quantity in the district. I detached an isolated lump of lead from some road metal on Shap Fells two years ago, and upon analysis found that it contained a large percentage of Antimony, forming probably

one of the lead-antimony compounds such as Jamesonite, the presence of which has not hitherto been recorded in the district.

**Sulphide of Molybdenum, or Molybdenite**, is found in small detached fragments in the Granite and Quartz of Brandygill, and also occasionally in the Shap Granite.

**Native Bismuth** has been found in small pieces in the Brandygill rocks, also Bismuthine, the Sulphide of Bismuth and Telluric Bismuth or Tetradyomite. Brandygill is, I think, the only place in Great Britain where the latter rare mineral has been found.

**A Cobalt bearing mineral**, which is, I think, the **Arseniate of Cobalt, or Erythrine**, occurs in some quantity in the form of an outcrop on the mountain face opposite to Forde Crag. An attempt was made to mine this ore some years ago, but was for various reasons a failure. I have closely examined this interesting outcrop two or three times in the hopes of finding some of the nickel ores which are invariably associated with Cobalt, but have not as yet been successful. Some specimens of Nickel Arseniate have, I am told, been found on the other side of the mountain in Newlands.

The various minerals to which I have referred do not by any means constitute a complete list of the varieties which occur in Cumberland, but have been confined principally to those of which we have specimens in the Carlisle Museum collection.

In conclusion, I wish to say that although I have visited the mines, and am familiar with the minerals to which I have referred, it was nevertheless from the interesting and instructive book on "The Mines and Minerals of the Lake District," by J. Postlethwaite, F.G.S., that I gained my preliminary information, and to which I would refer any who are interested in the subject.

# THE ARACHNIDS, (Spiders, etc.,) OF CUMBERLAND.

BY H. BRITTEN, F.E.S.

## PREFACE

In 1894, a list of the Spiders of Cumberland, Westmorland, and the Lake District, was published in the "Naturalist" by the late F. O. Pickard-Cambridge. The material had been almost entirely collected by himself in the neighbourhood of Carlisle, of which city he was for several years a resident. He, however, made a few trips to the Lake District, and obtained several species there, which at that time were new to Britain. He also visited Newton Reigny Moss, near Penrith, and other localities.

Between 1896 and 1903, Dr. Randall Jackson spent half-a-dozen autumnal holidays in the Lake District, and made a considerable number of additions to the known Arachnid fauna of that beautiful locality. He also collected a little on the Raven-glass sandhills. In 1901, therefore, when Mr. F. O. Pickard-Cambridge was compiling a list of the *Arachnida* of Cumberland for the Victoria County History, he was enabled to include several of Dr. Jackson's captures.

About this time Mr. J. C. Varty Smith, of Penrith, commenced forming collections in his district, and later I started to study very carefully the Spider fauna of the upper reaches of the Eden Valley, and the red sandstone hills between the river and the L. & N. W. Railway, making occasional excursions to various other localities. Desultory work has been done by several well-known Entomologists, chiefly whilst engaged in working at their own specialities. The chief of these were Messrs. J. Hodgkinson, H. Donisthorpe, F. H. Day, and G. B. Routledge, the initials of all being appended to their various captures.

Amongst the other groups of *Arachnids*, the *Opiliones*, and *Pseudoscorpiones*, were almost untouched by Messrs. F. O. Pickard-Cambridge and A. Randall Jackson, only six species of *Opiliones* and two *Pseudoscorpiones* appearing in the Victoria History list. The bulk of the work has been done by myself in the former group, and as 16 out of the British total of 20 species have been captured, further increase is not very likely, especially as three of the remaining four are Southern forms, and the fourth is of excessive rarity in the country, though probably fairly widely distributed.

In the case of the *Pseudoscorpiones*, some very useful work was done by the Messrs. Whyte in Borrowdale, the results of their work being published in the "Naturalist," June, 1907.

A species of *Tartarid* has also been obtained in a hothouse at Great Salkeld. Professor Hansen considers this to belong to an undescribed species, but as yet the female only has been taken, and in this sex the determination of species is not very easy. Though we cannot claim these exotic animals as indigenous members of our fauna, still when they apparently find congenial habitats and reproduce their species freely, it is only right that they should be admitted to our lists as members of our fauna.

Of the 186 species included in F. O. Pickard-Cambridge's 1894 list, 4 were from localities in the Lake District outside our boundaries; these were again included in the 218 species published in the Victoria History of Cumberland, in 1901, with a fifth species from the same area. Then *Cornicularia clara*, Camb., has proved synonymous with *Cornicularia cuspidata*, Bl.; *Walckenaera nudipalpis*, West., was also recorded from a Westmorland locality, but this species has since occurred at several localities in the county, so that of the Spiders included in the above list, we now have 212 reliably authenticated. Since the publication of the above list, 89 Spiders have been added to our list, making a total of 301 species for the county.

In conclusion, I must express my obligations to those who have assisted me in gathering together the material for compiling this list, and to Mr. Varty Smith for allowing me to make use of all his notes. Finally, my special thanks are due to Dr. A. Randall Jackson, who has seen and identified all my *Arachnids*,

and who has materially assisted in the compilation of the list with many notes and much valuable advice.

## Order I ARANÆ.

### FAMILY DYSDERIDÆ.

**Harpactes hombergii**, Scop. Common beneath loose bark and amongst herbage at base of walls, occasionally under loose stones. Armathwaite, Carlisle, Derwentwater, Borrowdale, (F.Cb.); Penrith, Newton Arlosh, (J.C.V.S.); Great Salkeld, Gelt, Aira Beck, (H.B.) Adult from April to July.

**Segestria senoculata**, L. Abundant beneath stones on walls and under loose bark, reaching at least 1,500 feet on the fells, where it is found beneath stones. Penrith, Derwentwater, Borrowdale, Helvellyn, (F.Cb.); Great Salkeld, Wan Fell, Newton Reigny Moss, Gelt, (H.B.) Adult in July.

### FAMILY OONOPIDÆ.

**Oonops pulcher**, Templ. This little spider is plentiful at grass roots, amongst leaves, beneath sycamore bark, and also amongst debris in cattle sheds. Great Salkeld, Wan Fell, Aira Beck, Newton Reigny Moss, (H.B.) Adult in July.

**Triæris stenaspis**, Sim. Numbers of adult females and immature examples were captured in a hothouse at Nunwick Hall, in October, 1909. The male is as yet unknown. First described as a member of our fauna from two females found in a hothouse at the Botanic Gardens, Glasnevin, near Dublin. It inhabits Venezuela and the West Indies.

**Ischnothyreus velox**, Jackson. An adult male of this species was taken in a hothouse at Nunwick Hall, Great Salkeld, in October, 1910. The above two species are not indigenous, but are apparently establishing themselves in suitable situations throughout the country and breed freely.

### FAMILY DRASSIDÆ.

**Prosthesima latreillii**, Sim. Common beneath stones, reaching 2,750 feet at St. Sunday's Crag in Westmorland. Eskdale, Borrowdale, Grisedale, (A.R.J.) Adult August and September.

- Prosthesima petiverii**, Scop. Accompanies the last-named under stones on the fells. Eskdale, (A.R.J.) Adult August and September.
- Prosthesima electa**, C. L. Koch. One female, Ravenglass sandhills, 1899 (A.R.J.). Adult in August.
- Prosthesima pusilla**, Bl. One female found near the summit of Catbells, at about 1,000 feet (A.R.J.). A second female was taken on the sandhills at Seascale (F.H.D.).
- Drassodes cupreus**, Bl. Found abundantly under stones on the fells throughout the county. Carlisle, Lake District (F.Cb.) ; Wan Fell, Great Salkeld, Gamblesby Fell, Aira Beck (H.B.); Seascale, Saddleback (F.H.D.). Adult from May to September.
- Drassodes troglodytes**, C. L. Koch. Accompanies the last-named though it is much rarer. Lake District (F.Cb.) ; Borrowdale, Anthorn, (H.B.). Adult June and July.
- Scotophæus blackwallii**, Thor. Occasionally found crawling on walls and ceilings in houses. Newton Arlosh, 1907, (J.C.V.S.); Great Salkeld, (H.B.). Adult in May and June.
- Gnaphosa anglica**, Camb. Common under stones, reaching 2,500 feet or more. Grisedale Pike, Causey Pike, Saddleback (A.R.J.) ; Wan Fell (H.B.). Adult May, June and July.

#### FAMILY CLUBIONIDÆ.

- Clubiona trivalis**, C. L. Koch. Common amongst heather. Lake District (A.R.J.) ; Great Salkeld, Wan Fell (H.B.) ; Bowness-on-Solway (J.C.V.S.). Adult from May to September.
- Clubiona reclusa**, Camb. Abundant amongst the foliage of trees, shrubs and plants. Lake District (F.C.B.) ; Great Salkeld, Ullswater (H.B.) ; Newton Arlosh, Bowness-on-Solway (J.C.V.S.). Adult throughout the summer.
- Clubiona grisea**, C. L. Koch. Moderately common in swamps. Solway district, Newton Reigny Moss (F.Cb.) ; Silloth, Bowness Moss (H.B.) ; Newton Arlosh (J.C.V.S.). Adult throughout the summer.
- Clubiona holosericea**, De Geer. Another marsh-loving species. Common. Solway district, Newton Reigny Moss (F.Cb.) ; Keswick (H.B.). Adult in May and June.

- Clubiona pallidula**, Clerck. Fairly common on low shrubs along the wooded margins of the lakes. Lake District (F.Cb.). Adult in May and June.
- Clubiona lutescens**, Westr. Common amongst the foliage of trees and shrubs. Great Salkeld, 1907 (H.B.). Adult throughout the summer.
- Clubiona neglecta**, Camb. Moderately common amongst long grass on banks. Penrith (J.C.V.S.); Seascale (F.H.D.); Silloth (H.B.). Adult in June and July.
- Clubiona brevipes**, Bl. Fairly plentiful by beating oak branches. Great Salkeld, 1908, Baron Wood (H.B.). Adult in May and June.
- Clubiona comta**, C. L. Koch. Common amongst herbage on the ground, and by beating. Eden Valley, Gilsland, Carlisle (F.Cb.); Great Salkeld, Newton Reigny Moss (H.B.); Tarn Lodge (G.B.R.). Adult April to June.
- Clubiona diversa**, Camb. Not rare at roots of heather and amongst herbage. Lake District (A.R.J.); Great Salkeld, Wan Fell, Silloth (H.B.). Adult throughout the summer.
- Clubiona terrestris**, Westr. Rather common amongst the foliage of trees and shrubs. Eden Valley District (F.Cb.); Lake District (A.R.J.); Great Salkeld (H.B.). Adult throughout the summer.
- Chiracanthium carnifex**, Fabr. Common amongst heather, the females making their tent-like nests on the ends of the long shoots. Eden Valley District (F.Cb.); Eskdale (A.R.J.); Wan Fell, Great Salkeld (H.B.). Females adult throughout the year, male adult about June and July.
- Chiracanthium lapidicolens**, Sim. Not common under stones and amongst heather. Wan Fell, 1908, Great Salkeld (H.B.).
- Anyphœna accentuata**, Walck. Not uncommon on foliage. Eden Valley district (F.Cb.). Adult in June.
- Agroeca brunnea**, Bl. Not common. Eden Valley District (F.Cb.); Females in Eskdale (A.R.J.). Adult in September.
- Agroeca proxima**, Camb. Common and widely distributed amongst heather and herbage. Lake District. (A.R.J.); Great Salkeld, Anthorn, Silloth (H.B.) Adult in autumn.

- Scotina celans**, Bl. Occurs in clearings in woods. A few adult females amongst moss in the woods at Wreay (F.Cb.). Adult in autumn, some of the females survive the winter, and may be found in spring.
- Scotina gracilipes**, Bl. One female at Newton Reigny Moss (J.C.V.S.). Adult at the same season as the previous species.
- Zora spinimana**, Sund. Common amongst heather. Eden Valley District (F.Cb.); Great Salkeld (H.B.). Adults may be found throughout the year.
- Micaria pulicaria**, Sund. Common amongst moss. Lake District (A.R.J.); Great Salkeld, Wan Fell (H.B.); Allonby (J.C.V.S.). Adults may be found throughout the year.
- Phrurolithus festivus**, C. L. Koch. Rare. Eden Valley District (F.Cb.). Adult in summer.

## FAMILY THOMISIDÆ.

- Xysticus cristatus**, Clerck. Common amongst grass and herbage. Eden Valley, Lake District (F.Cb.); summit of Bowfell, 2,960 feet (A.R.J.); Baron Wood, Great Salkeld, Wan Fell, Newton Reigny Moss, Langwathby, Anthorn, Silloth (H.B.); Seascale (F.H.D.); Bowness-on-Solway, Newton Arlosh (J.C.V.S.). Adult throughout the summer.
- Xysticus sabulosus**, Hahn. Amongst moss and herbage. Several adult males and an immature female in September, 1899, (A.R.J.); one female, 1910, Wan Fell (H.B.).
- Xysticus erraticus**, Bl. Not common amongst grass. Newton Reigny Moss (F.Cb.), one adult male in May; Silloth, one adult female in September (H.B.), Eskdale, September, 1899, (A.R.J.).
- Xysticus ulmi**, Hahn. One female, Newton Reigny Moss, 1907; two females Wan Fell, October, 1910, (H.B.). Males are adult in May, females throughout the year.
- Oxyptila trux**, Bl. Common amongst moss, dead leaves, and herbage. Newton Reigny Moss (J.C.V.S.); Great Salkeld, Wan Fell, Bowness Moss (H.B.). Adult throughout the year.
- Oxyptila atomaria**, Panz. Eskdale, September, 1899, (A.R.J.). Not uncommon among the heather. Wan Fell, Lazonby Fell (H.B.). Adult in late summer and autumn,

- Philodromus aureolus**, Clerck. Common on trees and bushes. Eden Valley district (F.Cb); Great Salkeld, Lazonby Fell (H.B.). Adult in May and June.
- Philodromus cespiticollis**, Walck. Common throughout the Lake District (A.R.J.); Bowness-on-Solway (J.C.V.S.).
- Philodromus elegans**, Bl. A large colony on long heather on Wan Fell (H.B.). Adult May and June.
- Philodromus fallax**, Sund. Very abundant on Gull Island, Ravenglass, in September, 1899, (A.R.J.). Adult in spring.
- Thanatus striatus**, C. L. Koch. Not uncommon in Newton Reigny Moss (F.Cb.). Adult in May.
- Tibellus oblongus**, Walck. Abundant amongst grass. Newton Reigny Moss, Solway District (F.Cb.); Ravenglass sandhills (A.R.J.). Adult in May.
- Tibellus maritimus**, Menge. An adult female from a tuft of grass, Great Salkeld (H.B.).

#### FAMILY ATTIDÆ.

- Salticus senicus**, Clerck. Abundant on the walls of houses. Eden Valley (F.Cb.). Common amongst stones on the fells, and ascending several hundred feet (A.R.J.); Great Salkeld (H.B.); Penrith (J.C.V.S.); Seascale (F.H.D.). Adult in June.
- Salticus cingulatus**, Panz. Found in colonies under bark on dead trees and old palings. Penrith (J.C.V.S.); Great Salkeld (H.B.). Adult in June.
- Heliophanus flavipes**, Clerck. Common amongst grass. Ravenglass sandhills (A.R.J.); Great Salkeld (H.B.); Carlisle (F.H.D.); Adult in June to August.
- Neon reticulatus**, Bl. Common amongst moss and under stones on the fells. Newton Reigny Moss (F.Cb.); Keswick (H.B.); summit of Grasmoor, 2,790 feet, (A.R.J.). Adult in May.
- Euophrys frontalis**, Walck. Not common amongst grass. Newton Reigny Moss (F.Cb.); Seascale (F.H.D.). Adult in May.
- Euophrys erraticus**, Walck. Common beneath the coping stones on walls, occasionally colonies may be found on warm grassy banks. Lake District (F.Cb.); Gilsland (H.F.); common under stones, ascending to a considerable height on the fells,

(A.R.J.) ; Great Salkeld, Lazonby Fell (H.B.). Adult in May and June. Penrith Castle (J.C.V.S.).

**Euophrys petrensis**, C. L. Koch. Under stones. Grisdale Pike at about 2,000 feet, August, 1902, (A.R.J.).

**Sitticus caricus**, Westr. Not common amongst herbage at Newton Reigny Moss (F.Cb., J.C.V.S., H.B.). Adult in May.

**Attulus saltator**, Sim. Common at the roots of marram grass. Gull Island, Ravenglass, September, 1899.

**Evarcha falcata**, Bl. Fairly common in the wooded parts of the Lake District, where it may be beaten from gorse and heather during the summer (A.R.J.).

#### FAMILY AGELENIDÆ.

**Argyroneta aquatica**, Latr. Common in weedy ponds, and peaty holes full of sphagnum. Newton Reigny Moss and Eden Valley, near Carlisle (H.F.) ; Wan Fell, 700 feet, Cross Fell, 1,000 feet, Monkhill Lough, Bowness Moss (H.B.).

**Cryphæa silvicola**, C. L. Koch. Abundant amongst dead leaves and pine needles, also beneath stones. Lake District (F.Cb.) ; summit of Scafell Pike, 3,210 feet, (A.R.J.) ; Great Salkeld, Wan Fell (H.B.) ; Penrith Beacon, Bowness-on-Solway (J.C.V.S.) ; Carlisle (F.H.D.). Adults may be found throughout the year.

**Cryphæa diversa**, Camb. A single adult female, then new to science, was taken on the banks of the Caldew, October, 1892 (F.Cb.).

**Cœlotes atropos**, Walck. Abundant beneath logs of wood and stones, also in stone walls. Lake District, Carlisle (F.Cb.) ; summit of Scafell Pike and Helvellyn, over 3,000 feet (A.R.J.) ; Borrowdale, Cross Fell (H.B.) ; Skiddaw (J.C.V.S.) Saddleback (F.H.D.). Adult in June.

**Agelena labyrinthica**, Clerck. Very common, spinning its sheet-like web on gorse bushes. Eskdale and Wastdale (A.R.J.) ; Seascale (F.H.D.) ; Newton Arlosh (J.C.V.S.). Adult in July.

**Tegenaria derhamii**, Scop. One of the two common northern house spiders, also abundant beneath stones, on walls, and crevices in rocks. Carlisle, Rockcliffe (F.Cb.) ; Great Salkeld,

Newton Reigny Moss, Cross Fell, Wan Fell, Anthorn, Silloth, Keswick, Borrowdale, Gelt (H.B.). Adult in summer.

**Tegenaria sylvestris**, C. L. Koch. Derwentwater (F.Cb.); Eskdale (A.R.J.). Adult in June.

**Textrix denticulata**, Oliv. Common in crevices, and beneath the coping stones on walls. Eden Valley and Lake Districts (F.Cb., A.R.J.); Great Salkeld, Wan Fell, Newton Reigny Moss, Aira Beck (H.B.). Adult in May and June.

**Antistea elegans**, Bl. Amongst grass and rushes in marshy places. Newton Reigny Moss (F.Cb.); Wan Fell (H.B.); Seascale (J.C.V.S.). Adult in June.

**Hahnina montana**, Bl. Amongst moss and dead leaves. Lake District (F.Cb.); Keswick (H.B.). Adult in June.

**Hahnina helveola**, Sim. Amongst moss and fallen pine needles. Lake District (F.Cb.); Eskdale, etc. (A.R.J.).

**Hahnina nava**, Bl. Amongst moss and leaves, also beneath stones. Lake District, to 1,100 feet, (A.R.J.); Keswick (H.B.).

#### FAMILY PISAURIDÆ.

**Pisaura mirabilis**, Clerck. Common amongst heather and other herbage. Eden Valley, Solway and Lake Districts (F.Cb.); Great Salkeld, Wan Fell (H.B.); Carlisle (F.H.D.). Adult in June.

#### FAMILY LYCOSIDÆ.

**Pirata latitans**, Bl. Not common. Newton Reigny Moss (F.Cb.). Adult in June.

**Pirata piraticus**, Clerck. Abundant in most of the marshes and swamps. Lake District, Newton Reigny Moss (F.Cb.); Borrowdale, Great Salkeld, Bowness Moss, Melmerby Fell, 1,800 feet (H.B.); Seascale (F.H.D.); Abbey Junction (J.E.H.). Adult in June.

**Pirata piscatoria**, Clerck. Not uncommon where found. Newton Reigny Moss (J.C.V.S.); Newton Reigny Moss, Bowness Moss (H.B.). Adult in June.

**Pirata hygrophilus**, Thor. Not uncommon. Newton Reigny Moss (F.Cb.); Eskdale and Lake District (A.R.J.). Adult in June.

**Trochosa ruricola**, De G. Common on the banks of ponds and streams. Lake District (F.Cb.); Great Salkeld, Silloth (H.B.); Newton Arlosh (J.C.V.S.). Adult in June.

**Trochosa terricola**, Thor. Common on the banks of ponds and streams, also amongst dead leaves. Lake District and Armathwaite (F.Cb.); Wan Fell, Great Salkeld (H.B.). Adult in June.

**Trochosa spinipalpis**, Camb. A single pair, male and female, adult, were taken together beneath a stone at the head of Lake Derwentwater, near Lodore, in May, 1893. It was then new to science, but has since occurred in Dorset, and on the banks of the South Tyne. Captured by F.Cb.

**Trochosa picta**, Hahn. Common on the sandhills round the coast. Ravenglass sandhills (A.R.J.); Seascale (F.H.D.); Silloth (H.B.). Adults may be found throughout the year.

**Trochosa cinerea**, Fabr. This handsome spider is common on beds of shingle on the banks of the Eden, these beds being liable to be covered with several feet of swiftly running water. In May and June, when they become adult, they may often be seen running about amongst the stones, their large size making them conspicuous amongst the smaller species. Great Salkeld (J.C.V.S.); Edenhall (H.B.); Caldew Valley (F.H.D.).

**Tarentula pulverulenta**, Clerck. A common and handsome spider. Lake District (F.Cb.); Wan Fell, Borrowdale, Great Salkeld, Aira Beck (H.B.). Adult in May and June.

**Tarentula accentuata**, Latr. Not uncommon amongst heather. Lake District (A.R.J.); Wan Fell (H.B.); Borrowdale (F.Cb.). Adults may be found in autumn, and again in spring and early summer.

**Tarentula miniata**, C. L. Koch. Common on the sandhills. Ravenglass sandhills (A.R.J.); Seascale (F.H.D.). Adults may be found throughout the year.

**Lycosa amentata**, Clerck. Abundant everywhere. Lake District (F.Cb.); Borrowdale, Wan Fell, Great Salkeld, Newton Reigny Moss, Ullswater, Aira Beck (H.B.); Carlisle (F.H.D.). Adult in May and June.

- Lycosa traillii**, Camb. Common running amongst the loose screes on Styhead Pass, and the foot of Great Gable (F.Cb.); Styhead, 1,300 feet; Grasmoor, (A.R.J.). Adult in May and June.
- Lycosa pullata**, Clerck. Very common everywhere. Eden Valley, Solway and Lake Districts (F.Cb.); Wan Fell, Great Salkeld, Newton Reigny Moss, Cross Fell, Aira Beck, Anthorn, (H.B.); Seascale, Saddleback (F.H.D.); Skiddaw, Bowness-on-Solway (J.C.V.S.). This and several other common **Lycosæ** ascend some hundreds of feet on the mountains. Adult throughout the summer.
- Lycosa lugubris**, Walck. Very abundant amongst dead leaves in the woods around Armathwaite and Wreay (F.Cb.); Great Salkeld (H.B.). Adult in April and May.
- Lycosa agricola**, Thor. Abundant on the shingle beds and sandy shores of lakes and streams. Eden Valley and Lake District (F.Cb.); Great Salkeld, Silloth, Anthorn (H.B.); Seascale (F.H.D.). Adult in May and June.
- Lycosa monticola**, Clerck. Abundant. Borrowdale, Bowness Moss, Rockcliffe Marsh (F.Cb.); Seascale (F.H.D.); Newton Reigny Moss (J.C.V.S.). Adult in May and June.
- Lycosa purbeckensis**, F.Cb. Both sexes taken on the shores of Solway Moss (F.Cb.); Newton Arlosh (J.C.V.S.). Adult in May.
- Lycosa palustris**, Linn. Very common everywhere. Solway and Lake Districts (F.Cb.); Wan Fell, Great Salkeld, Cross Fell (H.B.). Adult in May and June.
- Lycosa nigriceps**, Thor. Abundant in the heather districts. Lake District (F.Cb.); Great Salkeld, Wan Fell (H.B.); Seascale, Bowness-on-Solway (J.C.V.S.). Adult in June.

#### FAMILY DICTYNIDÆ.

- Dictyna arundinacea**, Linn. Common in the heather districts. Lake District (F.Cb.); Great Salkeld, Wan Fell, Lazonby Fell, Baron Wood (H.B.); Bowness-on-Solway (J.C.V.S.). Adult in May and June, when both sexes may be found in their little nests spun amongst the topmost twigs of the heather.

**Dictyna latens**, Fabr. Found on gorse bushes in sheltered situations. Eskdale (A.R.J.); Seascale (J.C.V.S.). Adult August and September.

**Dictyna uncinata**, Thor. Abundant about gardens and shrubberies, and on broom bushes on the banks of the river. Eden Valley and Lake District (F.Cb.); Great Salkeld (H.B.). Adult in May.

**Amaurobius fenestralis**, Ström. Abundant under stones, beneath bark, and amongst dead leaves. Armathwaite, Talkin Tarn, Helvellyn, Penrith Beacon (F.Cb.); Great Salkeld, Wan Fell, Cross Fell (H.B.). Adult throughout the year.

**Amaurobius similis**, Bl. Abundant in quarries, outhouses, and in the crevices of the red sandstone of the Eden Valley. This species is also a common house spider. Eden Valley, Solway, and Lake District, Carlisle, Gilsland, Helvellyn (F.Cb.); Great Salkeld, Baron Wood, Borrowdale (H.B.). Adult from April to September.

**Amaurobius ferox**, Walck. A few specimens only in Carlisle (F.Cb.).

#### FAMILY ULOBORIDÆ.

**Hyptiotes paradoxus**, C. L. Koch. A single female, taken at Grange, in the Lake District of Cumberland, 1863 (J.H.). This specimen was the first British record, and remained unique until 1894, when it was taken in the New Forest, Hampshire. It occurred in Ireland in 1910, and is recorded from Box Hill, Surrey by A.R.J., but has not again been taken in Cumberland.

#### FAMILY MIMETIDÆ.

**Ero furcata**, Vill. Occurs sparingly amongst grass, heather, and other herbage. Eden Valley, Solway and Lake District (F.Cb.); Great Salkeld (H.B.); Bowness-on-Solway (J.C.V.S.). Adults may be found throughout the year.

**Ero cambridgei**, Kulez. Occurs amongst grass and other herbage. Newton Arlosh (J.C.V.S.).

## FAMILY THERIDIIDÆ.

- Episinus truncatus**, Latr. Not common amongst heather. Eden Valley district (F.Cb.) ; Wan Fell, Lazonby Fell (H.B.) ; Bowness-on-Solway, Newton Arlosh (J.C.V.S.). Adult in June.
- Theridion tepidariorum**, C. L. Koch. Abundant in greenhouses and potting sheds, and is probably an introduced species. Carlisle, Dalston (F.Cb.) ; Great Salkeld, Edenhall, Penrith (H.B.). Adult in June.
- Theridion riparium**, Bl. One male taken in 1899, and another in 1900 in Eskdale (A.R.J.) ; Seascale, 1911, (J.C.V.S.).
- Theridion lineatum**, Bl. Abundant amongst shrubs and herbage. Eden Valley and Lake District (F.Cb.) ; Great Salkeld, Newton Reigny Moss, Borrowdale (H.B.) ; Seascale (F.H.D.). Adult in June and July.
- Theridion pictum**, Hahn. Abundant amongst holly and gorse bushes. Eden Valley District (F.Cb.) ; Great Salkeld, Wan Fell (H.B.). Adult in June.
- Theridion denticulatum**, Walck. Common on the branches of conifers, and in the crevices of lichen-covered bark, also found on stone walls. Eden Valley and Lake District, Lodore (F.Cb.) ; Great Salkeld (H.B.) ; Plumpton, Newton Arlosh (J.C.V.S.). Adult May, June and July.
- Theridion varians**, Hahn. Abundant on trees and bushes, and in the angles of porches and doorways. Eden Valley and Lake District (F.Cb.) ; Great Salkeld (H.B.) ; Newton Reigny Moss (J.C.V.S.). Adult in June.
- Theridion sisypium**, Clerck. Abundant on holly and gorse bushes. Eden Valley District (F.Cb.) ; Great Salkeld, Lazonby Fell (H.B.) ; Newton Arlosh, Bowness-on-Solway (J.C.V.S.). Adult in June.
- Theridion impressum**, C. L. Koch. Not uncommon on gorse bushes. Great Salkeld, Wan Fell (H.B.). Adult June and July.
- Theridion vittatum**, C. L. Koch. Not uncommon on trees and gorse bushes. Dalston (F.Cb.) ; Great Salkeld (H.B.). Adult in May and June.

- Theridion pallens**, Bl. Common on trees and shrubs, a colony found on the tin roof of a shed. Wetheral, Carlisle (F.Cb.) ; Baron Wood, Great Salkeld, Newton Reigny Moss (H.B.). Adult in May and June.
- Theridion bimaculatum**, Linn. Occasional amongst grass and herbage. Great Salkeld, Silloth (H.B.) ; Newton Reigny Moss, Newton Arlosh (J.C.V.S.). Adult in May and June.
- Euryopis flavomaculatum**, C. L. Koch. Occurs amongst moss and dead leaves. Newton Reigny Moss, 1907 (Donis). Adult in May and June.
- Asagena phalerata**, Panz. Found under stones on the lower slopes of the mountains. Lake District, Eskdale, Wastdale, Grisedale, and Borrowdale (A.R.J.). Adult in August.
- Crustulina guttata**, Wid. Under stones. Grasmoor, 2,791 feet, (A.R.J.).
- Steatoda bipunctata**, Linn. Common in stables and outhouses, also frequent in living rooms. Eden Valley District, Carlisle (F.Cb.) ; Great Salkeld, Borrowdale, Skirwith (H.B.) ; Newton Arlosh (J.C.V.S.). Adult in May and June.
- Robertus lividus**, Bl. Abundant under stones, and amongst moss in woods. It reaches at least 2,000 feet on the fells. Eden Valley and Lake District (F.Cb.) ; Great Salkeld, Wan Fell, Keswick, Cross Fell, Langwathby (H.B.) ; Newton Reigny Moss, Skiddaw, Seascale (J.C.V.S.). Adult throughout the year.
- Robertus arundinetus**, Camb. Not uncommon under stones. Wan Fell, Great Salkeld (H.B.). Adults found in May, June and July.
- Robertus neglectus**, Camb. Not uncommon amongst moss and debris in woods. Great Salkeld, Gelt (H.B.) ; Newton Arlosh (J.C.V.S.). Adult throughout the year.
- Enoplognatha thoracica**, Hahn. Under stones on the fells, ascending some hundreds of feet. Eskdale (A.R.J.) ; Seascale (J.C.V.S.).
- Pholcomma gibbum**, Westr. Not common amongst dry grass, herbage, and fallen leaves. Solway Moss (F.Cb.) ; Baron Wood, Great Salkeld, Wan Fell (H.B.). Adult at all seasons.

**Onesinda minutissima**, Camb. This minute spider is widely distributed, and not rare amongst moss in woods. Wan Fell (H.B.). Adult from October till March.

### FAMILY ARGIOPIDÆ.

#### Sub-Family I., Linyphiinæ.

**Ceratinella brevis**, Wid. Not uncommon amongst grass, moss, and dead leaves, reaching at least 2,000 feet on the fells. Great Salkeld, Keswick, Wan Fell (H.B.). Adult in autumn and spring.

**Ceratinella brevipes**, Westr. Moderately common amongst grass, moss, and dead leaves. Solway District (F.Cb.); Great Salkeld, Keswick, Wan Fell, Newton Reigny Moss (H.B.). Adult in autumn and spring.

**Ceratinella scabrosa**, Camb. Newton Reigny Moss (F.Cb.); Gelt (F.H.D.).

**Lophocarenum nemorale**, Bl. Rare amongst moss and dead leaves. Armathwaite (F.Cb.); Aira Beck (H.B.); Eskdale (A.R.J.). Adult in autumn and spring.

**Lophocarenum parallelum**, Bl. Occasional amongst grass and herbage. Great Salkeld (H.B.). Adult in autumn and spring.

**Lophocarenum mengii**, Sim. Amongst moss and herbage, a rare spider. Wan Fell, Great Salkeld (H.B.). Adults are found at all seasons, though they are more abundant from autumn to spring.

**Cnephalocotes obscurus**, Bl. Rather rare amongst moss and dead leaves. Armathwaite Woods (F.Cb.); Great Salkeld (H.B.). Adult from autumn to spring.

**Cnephalocotes curtus**, Sim. A male and female of this little species were taken at Allonby, 1910 (J.C.V.S.). Adult from autumn to spring.

**Tiso vagans**, Bl. Not common amongst moss and herbage. Carlisle (F.Cb.); Great Salkeld, Wan Fell, Langwathby, Dollywaggon Pike, 2,700 feet (H.B.). Adults may be found at all seasons.

- Aræoncus humilis**, Bl. Abundant amongst moss and grass. Carlisle (F.Cb.); Silloth, Anthorn, Great Salkeld (H.B.). Adults may be obtained throughout the year.
- Aræoncus crassiceps**, Westr. A single example was taken at Newton Reigny Moss, 1907 (H.B.).
- Troxochrus scabriculus**, Westr. Not uncommon amongst moss and grass on the banks of the Eden. Great Salkeld (H.B.). Adult in autumn and spring.
- Troxochrus cirriformis**, Camb. Amongst moss and grass on the banks of the Eden. Carlisle (F.Cb.); Great Salkeld (H.B.). Adult in autumn and spring.
- Troxochrus hiemalis**, Bl. Plentiful in moss in woods. Great Salkeld, Keswick (H.B.). Adult from autumn to spring.
- Troxochrus ignobilis**, Camb. One male taken in moss on the banks of Aira Beck, 1910 (H.B.).
- Caledonia evansii**, Camb. Amongst moss and short heather. Skiddaw (J.C.V.S.). Adult from autumn to spring.
- Baryphyma pratensis**, Bl. Not rare amongst grass on the banks of the river Eden. Great Salkeld (H.B.). Adult in April and May.
- Dicymbium nigrum**, Bl. Abundant amongst grass and herbage. Armathwaite, Wreay (F.Cb.); Great Salkeld, Keswick, Silloth (H.B.); Bowness-on-Solway (J.C.V.S.). Adult throughout the year, but most abundant in autumn.
- Dicymbium tibiale**, Bl. Generally found amongst moss and grass in damp places in the woods, ascends over 1,800 feet on the fells. Wreay (F.Cb.); Lake District (A.R.J.); Styhead to Sprinkling Tarns (H.B.). Adult from autumn to spring.
- Savignia frontata**, Bl. Abundant everywhere in fallen leaves and debris. Swarms on fences and walls in October, when they are making aerial trips to fresh hunting grounds. Carlisle (F.Cb.); Great Salkeld, Wan Fell, Cross Fell, Keswick, Gelt, Anthorn (H.B.). Adult from autumn to spring.
- Diplocephalus cristatus**, Bl. Not uncommon amongst dead leaves and debris. Carlisle (F.Cb.); Great Salkeld (H.B.). Adult in autumn and spring.
- Diplocephalus permixtus**, Camb. A single male at Newton Reigny Moss (F.Cb.). Adult in autumn and spring.

- Diplocephalus latifrons**, Camb. Not uncommon amongst dead leaves in woods. Carlisle (F.Cb.) ; Great Salkeld (H.B.). Adult in autumn and spring.
- Diplocephalus fuscipes**, Bl. Abundant everywhere. Armathwaite (F.Cb.) ; Great Salkeld, Keswick, Wan Fell, Bowness Moss (H.B.). Adult in autumn and spring.
- Diplocephalus castaneipes**, Sim. Two male examples of this rare spider were taken in a tuft of grass on Dollywaggon Pike, in April, 1911, about 2,700 feet. It has only been once recorded from near the summit of Snowdon, in September, 1905.
- Diplocephalus beekii**, Camb. On the margin of ponds and lakes. Lake District (F.Cb.) ; Edenhall pond (J.C.V.S.). Adult in June.
- Diplocephalus picinus**, Bl. Newton Reigny Moss (J.C.V.S.). Adult in May and June.
- Tapinocyba præcox**, Camb. Not uncommon amongst moss and dead leaves. Great Salkeld, Lazonby Fell, Langwathby, Silloth (H.B.). Adult in autumn.
- Tapinocyba subitanea**, Camb. Common in autumn and winter amongst hay and straw in stables and outhouses. Carlisle (F.Cb.) ; Great Salkeld, Langwathby (H.B.).
- Tapinocyba pallens**, Camb. Abundant amongst moss and dead leaves. Newton Reigny Moss (J.C.V.S.) ; Great Salkeld, Keswick, Wan Fell (H.B.). Adult from autumn to spring.
- Lophomma punctatum**, Bl. Common in marshes. Newton Reigny Moss (F.Cb.) ; Great Salkeld (H.B.) ; Abbey Junction (J.E.H.). Adult throughout the year.
- Lophomma herbigradum**, Bl. Fairly common amongst grass, moss and herbage, in all kinds of situations. Newton Reigny Moss (A.R.J.) ; Great Salkeld, Wan Fell, Styhead to Sprinkling Tarn (H.B.).
- Lophomma subæquale**, Westr. A male amongst herbage at Allonby, 1910 (J.C.V.S.). Adult from April to August.
- Eboria caliginosa**, Falconer. A fine female example of this interesting spider was taken in moss between Styhead and Sprinkling Tarns, in April, 1911, this being only the second record of its occurrence. This species was first discovered

in Yorkshire amongst sphagnum, at an altitude of 1,000 feet, in May, 1909, by Mr. Falconer, and described in the "Naturalist" for February, 1910.

**Pocadicnemis pumila**, Bl. Abundant amongst grass and herbage. Eden Valley, Newton Reigny Moss (F.Cb.); Great Salkeld (H.B.). Adult in May and June.

**Peponocranium ludicrum**, Camb. Frequent amongst heather and gorse. Borrowdale (H.B.). Adult in May and June.

**Minyriolus pusillus**, Wid. One of the smallest spiders known, is abundant amongst moss in damp woods. Newton Reigny Moss (F.Cb.); Keswick, Wan Fell, Great Salkeld, Aira Beck (H.B.). Adult principally in autumn, but may be taken throughout the year.

**Panamomops bicuspis**, Camb. Occasionally amongst moss in pastures. Great Salkeld (H.B.). Adults may be taken throughout the year.

**Styloctetor penicillatus**, Westr. Abundant beneath the flaky bark on sycamore trees, also in the crevices in the bark of other trees. Edenhall (J.C.V.S.); Great Salkeld, Aira Beck, Gelt (H.B.). Adult in June and July.

**Styloctetor uncinus**, Camb. Amongst moss on Scafell Pike, 3,200 feet (A.R.J.).

**Entelecara erythropus**, Westr. Common on the foliage of trees, and amongst tall herbage. Carlisle (F.Cb.); Great Salkeld, Aira Beck (H.B.); Seascale (J.C.V.S.). Adult in May and June.

**Entelecara omissa**, Camb. Reaches 3,200 feet on Scafell Pike, and on the summit of Bowfell (A.R.J.).

**Entelecara acuminata**, Wid. A few adult males from the neighbourhood of Carlisle (F.Cb.). Adult May and June.

**Entelecara trifrons**, Camb. Not uncommon in marshy places. Eden Valley, Newton Reigny Moss (F.Cb., H.B.); Newton Arlosh (J.C.V.S.). Adult in April and May.

**Entelecara thorellii**, Westr. Rare; one female amongst moss in Newton Reigny Moss (H.B.). Adult in May.

**Hypselistes jacksoni**, Camb. Amongst moss in swamps. Wan Fell, 1908, the third British record. Plentiful in October, 1910, in the same place (H.B.). Adult in autumn.

**Thyreosthenius biovatus**, Camb. This species inhabits the dome-like nests of the wood ant, **Formica rufa**, and may be found amongst the debris or clinging to the undersides of stones placed on the nests. Keswick (H.B.). Adult males were found in April, and have occurred in May, June and August ; the females throughout the year.

**Evansia merens**, Camb. Another inhabitant of ants' nests, and is found generally with **Formica fusca**, but has been taken with **Lasius niger**. These ants make simple nests beneath stones, and the spiders are found in the galleries or on the sheltering stone, and are not uncommon. Hayton Moss, Carlisle (Donis) ; Great Salkeld, Wan Fell, Baron Wood (H.B.). The males are principally mature in September and October, but adults occasionally turn up throughout the year.

**Wideria antica**, Wid. Occurs sparingly amongst moss at the roots of heather, and amongst grass. Lake District (F.Cb.) ; Great Salkeld, Wan Fell, Silloth (H.B.). Principally adult in autumn.

**Wideria cucullata**, C. L. Koch. Amongst fallen leaves and pine needles in woods. Carlisle (F.P.S.). It can be found throughout the year, but commonest from autumn to spring.

**Wideria melanocephala**, Camb. Lake District (F.Cb.).

**Prosopotheca monoceros**, Wid. Amongst moss at about 1,500 feet, on Grisdale Pike and Saddleback (A.R.J.). Adult in autumn.

**Cornicularia unicornis**, Camb. Not common amongst moss in damp places. Penrith, Newton Arlosh (J.C.V.S.). Adult chiefly in autumn.

**Cornicularia vigilax**, Bl. Not common amongst grass and moss. Wan Fell, Great Salkeld (H.B.) ; Newton Arlosh (J.C.V.S.). Adult in autumn and spring.

**Cornicularia cuspidata**, Bl. Not uncommon amongst grass and moss, reaches a height of over 1,800 feet on the fells. Newton Reigny Moss (F.Cb.) ; Great Salkeld, Penrith, Hartside (H.B.) ; Carlisle (F.H.D.). Adult chiefly from autumn to spring.

**Cornicularia Kochii**, Camb. One female amongst rushes in a swamp. Wan Fell, 1910, (H.B.). October.

**Walckenaëra acuminata**, Bl. Not uncommon amongst moss, grass, dead leaves, and rushes. Eden Valley (F.C.) ; Gilsland (T.P.) ; Great Salkeld, Wan Fell, Keswick, Sprinkling Tarn (H.B.) ; Seascale, Carlisle (F.H.D.). Both sexes adult in autumn.

**Walckenaëra nudipalpis**, Westr. Widely distributed, but not common, amongst moss in swampy places, reaching 1,800 feet in the Lake District. Newton Reigny Moss, Great Salkeld, Keswick, Wan Fell (H.B.). Adult from autumn to spring.

**Walckenaëra capito**, Westr. One female at about 2,900 feet on Great End (A.R.J.).

**Walckenaëra nodosa**, Camb. A male and female amongst debris in a swamp in October. Great Salkeld, 1910 (H.B.).

**Neriere rubens**, Bl. Abundant amongst grass and herbage. Eden Valley (F.Cb.) ; Great Salkeld, Newton Reigny Moss, Wan Fell, Langwathby (H.B.) ; Bowness-on-Solway (J.C.V.S.). Adult from autumn to spring.

**Neriere rubella**, Bl. Moderately common amongst herbage. Carlisle (F.Cb.) ; Dunmallet Woods, Ullswater (A.R.J.) ; Great Salkeld (H.B.). Adult in autumn.

**Enidia bituberculata**, Wid. Abundant amongst grass and rushes in swampy places. Solway and Eden Valley Districts, Newton Reigny Moss (F.Cb.) ; Great Salkeld, Wan Fell, Langwathby (H.B.) ; Newton Arlosh, Bowness-on-Solway, Seascale (J.C.V.S.) ; Abbey Junction (J.E.H.). Adult in April, May and June.

**Enidia cornusa**, Bl. Not common, beating the foliage of trees. Great Salkeld, (H.B.) ; Newton Arlosh (J.C.V.S.). Adult in May and June.

**Dismodicus bifrons**, Bl. Very abundant amongst grass and herbage. Seascale, Bowness-on-Solway, Newton Arlosh, Penrith, (J.C.V.S.) ; Great Salkeld, Langwathby (H.B.). The males are adult in May and June, the females at all seasons.

- Gongylidium rufipes**, Sund. Not uncommon amongst herbage and dead leaves in woods. Lake District (F.Cb.) ; Great Salkeld, Newton Reigny Moss (H.B.) ; Carlisle (F.H.D.) ; Newton Arlosh (J.C.V.S.). Adult in May and June.
- Edothorax fuscus**, Bl. Common in any situation. Newton Reigny Moss (F.Cb.) ; Great Salkeld, Langwathby, Wan Fell, Silloth (H.B.). Adult at all seasons.
- Edothorax agreste**, Bl. Moderately abundant under stones and amongst herbage. Ullswater (F.Cb.) ; Newton Reigny Moss, Great Salkeld, Aira Beck, Wan Fell, Langwathby (H.B.) ; Penrith (J.C.V.S.) ; Carlisle (F.H.D.). Adult throughout the year.
- Edothorax retusus**, Westr. Common in any situation. Newton Reigny Moss (F.Cb.) ; Great Salkeld, Anthorn, Silloth, Bowness Moss, Langwathby (H.B.) ; Seascale (F.H.D.) ; Newton Arlosh (J.C.V.S.). Adult at all seasons.
- Edothorax apicatus**, Bl. Not uncommon under stones on the banks of the Eden, and amongst herbage. Lake District (F.Cb.) ; Great Salkeld, Newton Reigny Moss (H.B.). Adult in May and June.
- Edothorax gibbosus**, Bl. Amongst grass and moss in marshy places. Lake District (F.Cb.) ; Newton Reigny Moss (J.C.V.S.). Adult in May and June.
- Edothorax tuberosus**, Bl. Not uncommon in swamps. Lake District, Newton Reigny Moss (F.Cb.) ; Wan Fell (H.B.). Adult in May and June.
- Trachygnaea dentata**, Wid. A common marsh spider. Solway, Newton Reigny Moss (F.Cb.) ; Abbey Junction (J.E.H.) ; Great Salkeld (H.B.). Adult throughout the year.
- Gongylidiellum vivum**, Camb. Occasional amongst grass, and moss in swampy places. Newton Reigny Moss, Great Salkeld (H.B.) ; Bowness-on-Solway (J.C.V.S.). Adult throughout the year.
- Gongylidiellum faustum**, Camb. Two examples of this common species were taken in moss, one at the summit of Scafell Pike, 3,210 feet, the other between Styhead and Sprinkling Tarns, April, 1911.

**Erigone dentipalpis**, Wid. Common in every situation. Eden Valley, Solway, and Lake District (F.Cb.) ; Newton Reigny Moss, Great Salkeld, Aira Beck (H.B.) ; Seascale (F.H.D.). Adult throughout the year.

**Erigone promiscua**, Camb. Not common. Allonby (J.C.V.S.) ; Anthorn (H.B.) . Adult at all seasons.

**Erigone atra**, Bl. Abundant and widely distributed, ascending to over 2,500 feet on the fells. Lake District, Solway and Eden Valley (F.Cb.) ; Great Salkeld, Wan Fell (H.B.) ; Buttermere (J.C.V.S.). Adult at all seasons.

**Erigone longipalpis**, Sund. Several examples of each sex amongst grass and debris on the shores of the Solway, at Anthorn (H.B.), September, Newton Arlosh (J.C.V.S.). Adult at all seasons.

**Erigone arctica**, White. A male was taken beneath a stone on the summit of Helvellyn, whilst several examples were taken on the coast. Helvellyn, 3,118 feet (H.B.) ; Seascale (F.H.D.). Allonby (J.C.V.S.).

**Maso sundevallii**, Westr. Common amongst grass and dead leaves. Newton Reigny Moss (F.Cb.) ; Great Salkeld, Keswick (H.B.) ; Seascale (J.C.V.S.). The males are adult from the end of May to August. Females may be found throughout the year.

**Phaulothrix hardii**, Bl. A widely distributed species. Raven-glass sandhills (A.R.J.). Adult in September and October.

**Leptorhoptrum huthwaitii**, Camb. Not uncommon in swampy places. Newton Reigny Moss, Eden Valley and Lake District (F.Cb.) ; Great Salkeld (H.B.). Adult from autumn to spring.

**Hilaira uncata**, Camb. Moderately common amongst moss in swampy places, ascends over 1,800 feet on the fells. Lake District (F.Cb., A.R.J.) ; Newton Reigny Moss, Wan Fell (H.B.). Both sexes adult in autumn, the females surviving until spring.

**Hilaira excisa**, Camb. Common amongst grass, rushes, and moss in swampy places. Buttermere (A.R.J.) ; Aira Force (H.B.) ; Gelt (F.H.D.). The males are adult from June to September, the females throughout the year.

**Hilaira montigena**, C. L. Koch. A mountain species found under stones, reaching 3,200 feet on Scafell Pike, and 3,118 feet on Helvellyn. Lake District (F.Cb.) ; Scafell Pike (A.R.J.) ; Helvellyn, Cross Fell (H.B.). Adult from June to September.

**Diplocentria rivalis**, Camb. A mature male of this species was taken in moss at the summit of Scafell Pike, 3,210 feet, and two female examples occurred in moss between Styhead and Sprinkling Tarns, April, 1911.

**Coryphæus distinctus**, Sim. Common amongst grass, rushes, and beneath stones on the banks of the Eden. Carlisle (F.Cb.) ; Great Salkeld, Langwathby (H.B.). Adult chiefly from autumn to spring.

**Coryphæus fortunatus**, Camb. A male of this very rare species was taken amongst grass on the shores of the Solway, at Anthorn, in September, 1910 (H.B.).

**Coryphæus simplex**, F. Camb. Another very rare species which was taken in grass on the shores of the Solway, at Anthorn, in September, 1910 (H.B.).

**Macrargus rufus**, Wid. Common in woods amongst dead leaves. Armathwaite (F.Cb.) ; Great Salkeld, Keswick (H.B.) ; Penrith Beacon (J.C.V.S.). Adult throughout the year.

**Macrargus abnormis**, Bl. Not uncommon amongst dead leaves in woods, also under stones, reaching quite 2,000 feet on the fells. Armathwaite (F.Cb.) ; Lake District (A.R.J.) ; Great Salkeld, Keswick, Wan Fell (H.B.). The males are adult in June and July, the females throughout the year.

**Macrargus adipatus**, C. L. Koch. Amongst dead leaves and under stones, reaching 3,118 feet on the summit of Helvellyn. Penrith Beacon (F.Cb.) ; Helvellyn (A.R.J., H.B.). Adult in August and September.

**Macrargus firmus**, Camb. Found amongst moss in woods. Keswick (H.B.). The males are adult in autumn, the females living till spring.

**Mengia scopigera**, Grube. Common amongst grass and herbage in swampy places. Eden Valley and Solway Districts (F.Cb.) ; Lake District (A.R.J.) ; Great Salkeld (H.B.) ; Newton

Reigny Moss (J.C.V.S.). Both sexes are adult in autumn, a few females surviving the winter.

**Mengia warburtonii**, Camb. Fairly common in swampy places. Newton Reigny Moss (F.Cb.); Keswick (A.R.J.); Great Salkeld (H.B.). Both sexes adult in autumn.

**Hillhousia misera**, Camb. Amongst moss in a swamp. Wan Fell (H.B.). Apparently adult at all seasons.

**Rhabdoria diluta**, Camb. A very minute spider, not uncommon amongst dead leaves and moss. Great Salkeld (H.B.). Adult from autumn to spring.

**Centromerus bicolor**, Bl. Abundant everywhere, ascending to a great height on the fells. Carlisle, Gilsland (F.Cb.); Great Salkeld, Langwathby, Wan Fell, Styhead to Sprinkling Tarn (H.B.); Newton Arlosh, Newton Reigny Moss (J.C.V.S.). Both sexes adult in autumn, females, however, may be found at any season.

**Centromerus concinna**, Thor. Not uncommon, ascending to near the summit of Scafell Pike. Carlisle, Gilsland (F.Cb.); Scafell Pike (A.R.J.); Wan Fell (H.B.). Adult chiefly in autumn.

**Centromerus expertus**, Camb. Not common in marshy places. Newton Reigny Moss (F.Cb.); Great Salkeld, Wan Fell (H.B.). Adult chiefly in autumn, but may be found at all seasons.

**Centromerus silvaticus**, Bl. Not uncommon amongst moss, grass, and fallen leaves in woods. Penrith Beacon (F.Cb.). Adult from autumn to spring.

**Centromerus prudens**, Camb. In moss and under stones, ascends to over 2,000 feet on the fells. Scafell Pike (A.R.J.); Great Salkeld, Styhead to Sprinkling Tarns (H.B.). Both sexes adult in autumn, single females may be taken at any season.

**Centromerus arcanus**, Camb. Found sparingly amongst moss, and under stones, reaching 2,900 feet on the fells. Great Gable (A.R.J.); Penrith, Skiddaw (J.C.V.S.); Great Salkeld, Styhead to Sprinkling Tarn (H.B.). Adult in autumn.

**Porrhomma pygmæum**, Bl. Abundant everywhere. Carlisle (F.Cb.); Newton Reigny Moss, Great Salkeld, Wan Fell (H.B.). Adult in autumn.

- Porrhomma oblongum**, Camb. Amongst moss, reaching 3,118 feet on the fells. High Seat (A.R.J.) ; Helvellyn, Styhead to Sprinkling Tarn (H.B.) ; Skiddaw (J.C.V.S.).
- Porrhomma microphthalmum**, Camb. Not common, under stones reaching at least 2,000 feet on the fells. Penrith, Seascale (J.C.V.S.) ; Great Salkeld (H.B.). Adult in June and July.
- Porrhomma errans**, Bl. A single male taken in the spring of 1909, and a female in moss in the autumn of 1910, are all the examples of this rare species that have occurred. Great Salkeld (H.B.).
- Microneta viaria**, Bl. Abundant amongst moss and dead leaves in the woods. Eden Valley (F.Cb.) ; Great Salkeld, Keswick, Aira Force (H.B.) ; Carlisle (F.H.D.). Adult throughout the year.
- Microneta innotabilis**, Camb. Not common, found in the crevices of bark of conifers. Great Salkeld (H.B.). Adult chiefly in July, but females may be found at all seasons.
- Microneta conigera**, Camb. Not common, but may be beaten from the branches of conifers, or found in grass. Great Salkeld (H.B.) ; Abbey Junction (J.E.H.). Adult in June and July.
- Microneta decora**, Camb. A scarce species. One male in Newton Reigny Moss, in May, (F.Cb.). One female, Great Salkeld, (H.B.).
- Microneta cauta**, Camb. An adult male in Newton Reigny Moss (H.B.).
- Microneta rurestris**, Koch. Common amongst grass and herbage. Carlisle (F.Cb.) ; Great Salkeld, Wan Fell (H.B.) ; Penrith Beacon (J.C.V.S.). Adult chiefly in autumn.
- Microneta beata**, Camb. A not uncommon spider amongst grass and herbage. Catbells (A.R.J.) ; Wan Fell (H.B.) ; Seascale (J.C.V.S.). Adult in June and July.
- Microneta sublimis**, Camb. Not uncommon under stones on the fells, reaching a height of over 3,000 feet. Lake District (F.Cb.) ; Helvellyn, Cross Fell (H.B.) ; Skiddaw (J.C.V.S.). Adult from June to September, varying according to altitude.

**Microneta saxatilis**, Bl. Common amongst grass and herbage. Penrith (A.R.J.) ; Newton Reigny Moss, Newton Arlosh (J.C.V.S.) ; Great Salkeld, Styhead to Sprinkling Tarn (H.B.). Adult in June and July.

**Bathypantes nigrinus**, Bl. Abundant amongst moss, grass, and herbage in any situation. Carlisle, Newton Reigny Moss, Lake District (F.Cb.) ; Great Salkeld, Wan Fell, Langwathby (H.B.). Abbey Junction (J.E.H.). Adult all the year round.

**Bathypantes gracilis**, Bl. Abundant in any situation. Carlisle, Newton Reigny Moss (F.Cb.) ; Great Salkeld, Wan Fell (H.B.) ; Abbey Junction (J.E.H.). Adult at all seasons.

**Bathypantes setiger**, F.Cb. This rare Spider was new to science in 1893, when a few adults of both sexes were taken in Newton Reigny Moss in May. This locality remained unique until 1910, when it was taken in a swamp on Wan Fell, and also near the Eden. It has now been taken in Ireland, and the specimen from Norfolk described as **B. spretus** in 1906, is found to be really a female of this species. Newton Reigny Moss (F.Cb.) ; Wan Fell, Great Salkeld (H.B.). Adults have been taken in May and October.

**Bathypantes parvulus**, Westr. Not rare in swampy places. Penrith (A.R.J.) ; Great Salkeld, Cross Fell (H.B.) ; Abbey Junction (J.E.H.) ; Newton Arlosh (J.C.V.S.). Adult in June and July.

**Bathypantes approximatus**, Camb. Abundant in marshes. Carlisle, Newton Reigny Moss (F.Cb.) ; Great Salkeld, Wan Fell, Langwathby (H.B.) ; Abbey Junction (J.E.H.) ; Bowness-on-Solway (J.C.V.S.). Adults may be found at almost any season.

**Bathypantes pullatus**, Camb. A common species in swampy places. Eden Valley and Solway District, Gelt (F.H.D.) ; Bowness-on-Solway, Newton Arlosh (J.C.V.S.). Adult in May and June.

**Bathypantes concolor**, Wid. Common amongst herbage and dead leaves, also frequently found under stones. Eden Valley and Lake District (F.Cb.) ; Great Salkeld, Langwathby, Keswick (H.B.) ; Newton Arlosh (J.C.V.S.). Adult throughout the year.

**Bathyphantes dorsalis**, Wid. Abundant on the branches of conifers, and in gorse bushes. Carlisle (F.Cb.) ; Great Salkeld, Baron Wood (H.B.). Adult in April, May and June.

**Bathyphantes variegatus**, Bl. Abundant under stones and at the roots of heather, reaching at least 2,000 feet on the fells. Lake District (F.Cb.) ; Great Salkeld, Wan Fell, Lazonby Fell (H.B.) ; Newton Reigny Moss, Bowness-on-Solway, Newton Arlosh (J.C.V.S.). Adults may be found throughout the year.

**Leptyphantes ericaeus**, Bl. Common amongst moss, dead leaves, and heather. Lake District (A.R.J.) ; Great Salkeld, Silloth, Wan Fell (H.B.) ; Seascale (J.C.V.S.). Adults may be found at all seasons.

**Leptyphantes pallidus**, Camb. Not common amongst dead leaves and moss in woods, also under overhanging ferns and other herbage on the banks of woodland ditches. Eden Valley, Newton Reigny Moss (F.Cb.). Adult males occur in June and July, females throughout the year.

**Leptyphantes obscurus**, Bl. Not common, but may be beaten from the branches of trees and bushes, or found amongst dead leaves and moss. Eden Valley (F.Cb.) ; Great Salkeld, Borrowdale, Newton Reigny Moss (H.B.) ; Seascale (F.H.D.). Adult in May, June and July.

**Leptyphantes pinicola**, Sim. Common beneath stones on the lower slopes of mountains, and ascending to over 3,000 feet on Helvellyn. Lake District (F.Cb.) ; Scafell, High Stile (A.R.J.) ; Skiddaw, Newton Arlosh (J.C.V.S.) ; Helvellyn, Cross Fell (H.B.). Adult in September.

**Leptyphantes mengii**, Kulcz. Abundant everywhere. Catbells (A.R.J.) ; Great Salkeld, Wan Fell (H.B.) ; Newton Reigny Moss, Seascale (J.C.V.S.). Adult throughout the year.

**Leptyphantes flavipes**, Bl. A scarce species, found amongst grass and herbage. Eden Valley (F.Cb.).

**Leptyphantes tenuis**, Bl. Abundant everywhere. Eden Valley, Gilsland (F.Cb.) ; Great Salkeld, Wan Fell, Newton Reigny Moss, Cross Fell, Silloth, Anthorn (H.B.) ; Bowness-on-Solway, Seascale (J.C.V.S.). Adult at all seasons.

**Leptyphantes tenebricola**, Wid. Not common amongst dead leaves in woods and amongst grass and herbage, reaching over 3,000 feet on the fells. Armathwaite (F.Cb.) ; Helvellyn (A.R.J.) ; Great Salkeld, Aira Beck (H.B.) ; Gelt (F.H.D.). Adult in May and June.

**Leptyphantes blackwalli**, Kulcz. Abundant everywhere, ascending over 3,000 feet on the mountains. Eden Valley, Gilsland (F.Cb.) ; Helvellyn, Scafell Pike (A.R.J.) ; Wan Fell, Great Salkeld, Keswick, Cross Fell, Anthorn (H.B.) ; Gelt (F.H.D.) ; Newton Arlosh (J.C.V.S.). Adult at all seasons.

**Leptyphantes cristatus**, Menge. Common in swampy places. Eden Valley (F.Cb.) ; Great Salkeld, Gelt, Wan Fell (H.B.) ; Newton Reigny Moss (J.C.V.S.). Adult chiefly from autumn spring.

**Leptyphantes angulatus**, Camb. A female on the summit of Bowfell, 2,960 feet (A.R.J.).

**Leptyphantes whymperli**, F.Cb. Reaches the summit of Scafell Pike, 3,210 feet, and Great Gable (A.R.J.).

**Leptyphantes terricola**, C. L. Koch. Abundant amongst dead leaves and herbage in woods. Eden Valley (F.Cb.) ; Keswick, Great Salkeld (H.B.). Adult from autumn to spring.

**Leptyphantes leprosus**, Ohl. Common in outhouses and porches. Carlisle (F.Cb.) ; Borrowdale, Great Salkeld (H.B.). Adult from autumn to spring.

**Leptyphantes minutus**, Bl. Common in crevices in bark, and in the crannies in stone walls. Eden Valley (F.Cb.) ; Borrowdale, Great Salkeld, Gelt (H.B.). Adult in September and October.

**Leptyphantes nebulosus**, Sund. A wide-spread but local spider, living chiefly in outhouses and cellars. Carlisle (F.Cb.).

**Labulla thoracica**, Wid. Abundant on overhanging banks and rocks, also in lichen-covered crevices in bark. Eden Valley (F.Cb.) ; Wan Fell, Keswick, Gelt (H.B.).

**Taranucnus setosus**, Camb. Abundant in Newton Reigny Moss (F.Cb.). Adult in August.

- Linyphia clathrata**, Sund. Common everywhere. Eden Valley (F.Cb.) ; Great Salkeld, Newton Reigny Moss, Langwathby (H.B.) ; Bowness-on-Solway, Newton Arlosh (J.C.V.S.). Adult at all seasons.
- Linyphia montana**, Clerck. Common on the branches of spruce, yew and gorse. Eden Valley, Solway and Lake District (F.Cb.) ; Great Salkeld, Skirwith, Wan Fell, Baron Wood (H.B.) ; Newton Arlosh (J.C.V.S.). Adult in May and June.
- Linyphia triangularis**, Clerck. Very common on herbage and low bushes. Eden Valley and Lake District (F.Cb.) ; Wan Fell, Great Salkeld, Gelt (H.B.). Adult in August, September and October.
- Linyphia peltata**, Wid. Abundant on the foliage of trees and bushes. Eden Valley and Lake District (F.Cb.) ; Great Salkeld, Lazonby Fell, Aira Beck (H.B.). Adult in May, June and July.
- Linyphia pusilla**, Sund. Common, spinning its snare amongst grass in pastures. Gelt (H.F.) ; Newton Reigny Moss, Borrowdale, Great Salkeld, Lazonby Fell, Wan Fell (H.B.) ; Bowness-on-Solway, Seascale, Newton Arlosh (J.C.V.S.). Adult in June and July.
- Linyphia insignis**, Bl. Common on the foliage of trees and bushes in woods, also amongst tall herbage. Eden Valley (F.Cb.) ; Great Salkeld, Gelt (H.B.). Adult in September and October.
- Stemonyphantes lineatus**, Linn. Common everywhere. Eden Valley and Solway Districts (F.Cb.) ; Great Salkeld, Silloth, Wan Fell (H.B.) ; Carlisle (F.H.D.). Adult throughout the year.
- Bolyphantes luteolus**, Bl. Abundant amongst long grass. Silloth, Penrith Beacon (F.Cb.) ; Great Salkeld, Wan Fell (H.B.) ; Newton Arlosh (J.C.V.S.). Adult in September and October.
- Bolyphantes alticeps**, Sund. Common amongst long grass and other herbage. Penrith and Lake District (F.Cb.) ; Great Salkeld (H.B.). Adult in September and October.
- Bolyphantes bucculentus**, Clerck. Not common amongst tall herbage. Eden Valley (F.Cb.) ; Newton Reigny Moss (J.C.V.S.) ; Wan Fell (H.B.). Adult in September and October.

- Drapetisca socialis**, Bl. Abundant on the trunks of conifers, also on rocks overhanging rivers and streams. Eden Valley (F.Cb.); Eskdale (A.R.J.); Great Salkeld, Gelt (H.B.); Tarn Lodge (G.B.R.). Adult in September and October.
- Tapinopa longidens**, Wid. Common amongst herbage and under stones. Eden Valley and Lake Districts, Talkin Tarn (F.Cb.); Penrith Beacon (J.C.V.S.); Great Salkeld, Wan Fell (H.B.). Adult chiefly in autumn, but both sexes may occasionally be met with in the adult state throughout the year.

#### SUB-FAMILY II. TETRAGNATHINÆ.

- Pachygnatha de geerli**, Sund. Abundant everywhere. Eden Valley and Lake District (F.Cb.); Great Salkeld, Anthorn, Newton Reigny Moss (H.B.); Carlisle (F.H.D.); Newton Arlosh (J.C.V.S.). Adult throughout the year.
- Pachygnatha clerckii**, Sund. Abundant amongst grass on the shores of lakes and streams. Solway, Eden Valley, Lake District (F.Cb.); Great Salkeld, Ullswater, Gelt, Newton Reigny Moss (H.B.); Abbey Junction (J.E.H.); Newton Arlosh (J.C.V.S.). Adult at all seasons.
- Pachygnatha listerii**, Sund. Rare, amongst fallen leaves and herbage in woods. Eden Valley (F.Cb.). Adult from autumn to spring.
- Tetragnatha extensa**, Linn. Common amongst tall herbage and bushes in and near swampy places. Fells and Lake District (A.R.J.); Newton Reigny Moss, Borrowdale, Great Salkeld (H.B.); Seascale, Newton Arlosh, Bowness-on-Solway (J.C.V.S.). Adult throughout the summer.
- Tetragnatha solandri**, Scop. Abundant on the foliage of trees and bushes. Wan Fell (H.B.). Adult throughout the summer.
- Tetragnatha pinicola**, Sim. A single adult male was beaten from shrubs of sweet gale on Solway Moss (F.Cb.).
- Tetragnatha obtusa**, C. L. Koch. Not common on the branches of trees. Great Salkeld (H.B.). Adult in summer.
- Meta segmentata**, Clerck. Abundant everywhere. Eden Valley, Solway and Lake Districts (F.Cb.); Great Salkeld, Newton Reigny Moss, Borrowdale, Wan Fell, Baron Wood, Keswick,

Gelt, Aira Beck (H.B.); Carlisle (F.H.D.); Tarn Lodge (G.B.R.). Adults and immature examples may be found at all seasons.

**Meta merianæ**, Scop. Abundant in cellars and under overhanging rocks and steep damp banks, also under the arches of bridges. Carlisle, Wetheral, Rockcliffe (F.Cb.); Great Salkeld, Aira Beck, Melmerby Fell, over 2,000 feet (H.B.); Bowness-on-Solway, Newton Arlosh (J.C.V.S.). Adult at all seasons.

**Meta menardii**, Latr. Scarce. About a dozen specimens in one small cave at Boot, (A.R.J.); Giant's Cave, Edenhall (J.C.V.S.).

**Nesticus cellulanus**, Clerck. Common under damp herbage growing on overhanging rocks on the margins of rivers and streams. Wetheral, Gelt, Gilsland (F.Cb.). Adult in summer.

### SUB-FAMILY III. ARGIOPINÆ.

**Cyclosa conica**, Pall. Very rare, on trees and bushes. Great Salkeld (H.B.); Carlisle (F.H.D.); Penrith Beacon (J.C.V.S.).

**Zilla x-notata**, Clerck. Abundant on buildings and bridges. Eden, Caldew, Irthing, Lake District (F.Cb.); Great Salkeld, Carlisle (H.B.). Adult in late summer and autumn.

**Zilla atrica**, C. L. Koch. Abundant on hedges and shrubs, also swarms on the stone walls. Eden Valley and Lake Districts (F.Cb.); Wan Fell, Great Salkeld, Bowness Moss (H.B.). Adult in late summer and autumn.

**Singa hamata**, Clerck. About twenty specimens, including adult females and immature males, were taken from their webs spun amongst the heather branches in a swampy bit of moorland on Ulpha Fell, at the end of July, 1900, (A.R.J.).

**Singa albovittata**, Westr. One adult female and numbers of immature examples of this handsome little spider, were found amongst heather on Wan Fell, in June, 1910, (H.B.).

**Epeira curcurbitina**, Clerck. This lovely green spider is common on trees and bushes. Eden Valley District (F.Cb.); Great Salkeld, Wan Fell, Baron Wood, Edenhall (H.B.); Carlisle (F.H.D.). Adult in June and July.

**Epeira sturmil**, Hahn. Two immature males have been beaten from the branches of trees, but it is not certain whether they are really this species or **E. triguttata**, Fahr. Baron Wood, Great Salkeld (H.B.).

**Epeira diademata**, Clerck. Common on hedges and bushes, very dark examples occurring on the dark lichen-covered rocks on the fells. Solway and Lake Districts (F.Cb.) ; Lazonby Fell, Wan Fell, Great Salkeld, Cross Fell, Aira Beck, Borrowdale (H.B.) ; Carlisle, Seascale, St. Bees (F.H.D.). Adult in autumn.

**Epeira cornuta**, Clerck. Common amongst rushes in swampy places on the fells. Lake and Fell Districts (F.Cb.) ; Newton Reigny Moss, Wan Fell, Melmerby Fell, over 2,000 feet, (H.B.) ; Seascale (J.C.V.S.). Adult in late summer and autumn.

**Epeira patagiata**, Clerck. Abundant on hedges and gorse bushes. Carlisle, Rockcliffe, Derwentwater (F.Cb.). Adult from May to September.

**Epeira quadrata**, Clerck. This fine species, the "bee-catching spider," is abundant on heathy moors. Eden Valley (F.Cb.) ; Wan Fell, Great Salkeld, Baron Wood (H.B.) ; Carlisle, Seascale (F.H.D.). Adult from July to October.

**Epeira umbratica**, Clerck. Common beneath dead bark on trees and fences, also taken in crevices in wooden boathouses. Eden Valley, Gilsland (F.Cb.) ; Dunmallet Woods, Ullswater (A.R.J.) ; Penrith Beacon (J.C.V.S.) ; Great Salkeld, Wan Fell, Baron Wood, Edenhall (H.B.).

## Order II. OPILIONES.

### FAMILY PHALANGIOIDÆ.

**Liobunum rotundum**, Latr. Common amongst grass and herbage in marshes, and on the banks of ditches and streams. Borrowdale, Great Salkeld, Skirwith, where I found a colony living amongst the branches of a peach tree in a hothouse, Allonby (J.C.V.S.). Adult from July to October.

**Liobunum blackwallii**, Meade. Locally common amongst rushes and willow herb on the banks of the Eden and its tributaries. This species was first taken at Great Salkeld on the banks of a ditch in August, 1910.

**Megabunus insignis**, Meade. Abundant on rocks overhanging rivers and streams, not common under stones. Eden Valley (F.Cb.) ; Wan Fell, Great Salkeld, Baron Wood, Keswick, Aira Beck (H.B.). Adult in July and August.

**Platybunus corniger**, Herm. Moderately common amongst herbage. Great Salkeld, Wan Fell (H.B.). Adult in May and June.

**Phalangium opilo**, Linn. Common amongst herbage on the banks of streams and ditches, also in marshes and near ponds. Solway District (F.Cb.) ; Great Salkeld, Aira Force, Silloth, Bowness Moss (H.B.) ; Seascale (F.H.D.). Adult in August and September.

**Phalangium parietinum**, De Geer. Moderately abundant on walls and tree trunks. Carlisle (F.Cb.) ; Great Salkeld, Wan Fell (H.B.). Adult in August and September.

**Phalangium saxatile**, C. L. Koch. A maritime species, first taken at Seascale in 1910, by Mr. Day, and later at Allonby by Mr. Varty Smith. It was not found at Silloth, though very carefully searched for.

**Mitopus morio**, Fabr. Abundant everywhere amongst herbage. This is an extremely variable species. At high levels the individuals are usually larger and more brightly coloured. The males of these frequently have the tibiae of the first pair of legs provided beneath with numerous strong denticles, and these forms have been described as **M. alpinus**, Herbst. There are, however, numerous intermediates, and quite a number of different varieties may be found in mountainous districts. I obtained some immature specimens on Gamblesby Fell in 1910, which were identified by the Rev. O. Pickard-Cambridge as **M. cinerascens**, C. L. Koch-Camb. It is impossible to say into which form these would have developed. **M. morio** extends from sea level to the summit of Scafell Pike. Lake District (F.Cb.) ; Scafell Pike (A.R.J.) ; Newton Reigny Moss, Wan Fell, Gamblesby Fell, Gelt, Silloth, Bowness Moss, Great Salkeld (H.B.) ; Allonby (J.C.V.S.). Adult in August and September.

**Oligolophus ephippiatus**, C. L. Koch. Two examples were taken amongst grass at Great Salkeld in 1910. Adult in July and August.

**Oligolophus tridens**, C. L. Koch. Abundant amongst herbage everywhere. Newton Reigny Moss, Great Salkeld, Wan Fell, Gelt, Bowness Moss (H.B.); Allonby (J.C.V.S.). Adult in late summer and autumn.

**Oligolophus hansenii**, Kraep. A large colony of this species was found on the branches of a young pine tree at Great Salkeld in 1907, and again on the branches of old pine trees in another wood. This is not a common species, though widely distributed. Adult in October and November.

**Oligolophus palpinalis**, Herbst. Four mature males and one female were taken at Newton Reigny Moss in October, 1910. This does not appear to be a common species, though of wide distribution.

**Oligolophus meadall**, Camb. This species was first discovered on Wan Fell in 1907, and was the fourth record of its capture in the British Isles. It was again found at Anthorn in 1910, and Mr. Varty Smith met with immature examples at Allonby. Adult in November.

**Oligolophus agrestis**, Meade. Abundant amongst herbage everywhere. Eden Valley (F.Cb.); Wan Fell, Great Salkeld, Newton Reigny Moss, Silloth, Gelt (H.B.); Allonby (J.C.V.S.) Carlisle (F.H.D.). Adult in late summer and autumn.

#### FAMILY NEMASTOMATOIDÆ.

**Nemastoma lugubre**, Müller. Abundant beneath stones and pieces of wood everywhere, ascending to a considerable height on the fells. Solway District (F.Cb.); Wan Fell, Keswick, Cross Fell, Edenhall, Baron Wood, Newton Reigny Moss (H.B.); Carlisle (F.H.D.). Adult at all seasons.

**Nemastoma chrysomelas**, Herm. Common amongst herbage. Scafell Pike, 3,200 feet, (A.R.J.); Newton Reigny Moss, Great Salkeld (H.B.). Adult in late summer and autumn.

## Order III. PSEUDOSCORPIONES.

## FAMILY CHELIFERIDÆ.

**Chelifer nodosus**, Schr. This animal has only been taken on two occasions in Cumberland, and both were found attached to the legs of house flies in Carlisle. It is widely distributed, and usually common, occurring amongst vegetable refuse, in cucumber frames, and manure heaps ; but probably more often taken on the legs of flies, and caught on fly papers in autumn.

**Chelifer dubius**, Camb. This species was taken in some numbers under stones firmly embedded in the soil, both in the woods and in the open country, south of Derwentwater, by G. A. and R. B. Whyte, of Edinburgh, and recorded by them in the "Naturalist," June, 1907.

**Chelifer panzeri**, C. L. Koch. This species was taken in some numbers in cowsheds and haybarns amongst refuse, at Great Salkeld and Langwathby, in 1906, whilst searching for Coleoptera. Also recorded in the "Naturalist," June, 1907, from Borrowdale (G.A. and R.B.W.).

**Chelifer cancroides**, L. A species which has been long established, but doubtfully indigenous; found in old buildings, corn-stores bakeries, stables, &c. One female example was taken in Carr's Biscuit Factory, Carlisle, May, 1911.

**Cheiridium museorum**, Leach. First taken in debris from an old starling's nest in my house, in 1906, but since taken in numbers in cowsheds at Great Salkeld and Langwathby, in debris, and beneath stones embedded in the floors, or loose stones in the walls, and may frequently be seen crawling on the walls of the rooms in my house. Borrowdale (G.A. and R.B.W.).

## FAMILY OBISUDÆ.

**Obisium muscorum**, Leach. This is the commonest species of false-scorpion, and is abundant under stones, amongst dead leaves, moss, grass, and flood refuse, and ascends from sea level to over 3,200 feet on the mountains. Carlisle, Armathwaite, Wreay (F.Cb.) ; Scafell Pike (A.R.J.) ; Great Salkeld,

Baron Wood, Newton Reigny Moss, Edenhall, Gelt, Cross Fell, Wan Fell, Keswick (H.B.); Styhead Pass, Helvellyn (G.A. and R.B.W.).

#### FAMILY CHTHONIIDÆ.

**Chthonius rayi**, C. L. Koch. One specimen was taken by my son on a flower tub in a hothouse at Great Salkeld, in 1910. This species is widely distributed, and found under stones, and amongst dead leaves and debris, both in the open country and in woods, so probably will be found in some numbers in the county yet.

**Chthonius tetrachelatus**, Preys. Six examples recorded in the "Naturalist," June, 1907; found under flower-pots in a hothouse near Keswick (G.A. and R.B.W.). This species occurs abundantly under stones, from sea level to 1,600 feet, and is widely distributed in Britain and Ireland.

#### APPENDIX.

Spiders found in the Lake District, and not yet obtained in Cumberland :—

**Clubiona coerulescens**, C. L. Koch. Arnside, Westmorland (W.F.).

**Lycosa annulata**, Thor. Elterwater (F.Cb.). Westmorland or Lancashire.

**Tarentula cuneata**, Clerck. Elterwater (F.Cb.). Westmorland or Lancashire.

**Theridion lepidum**, Walck. Tilberthwaite (F.Cb.). Lancashire.

**Cnephalocotes elegans**, Camb. Fairfield, Westmorland (A.R.J.).

**Cornicularia karpinskii**, Camb. Striding Edge, Helvellyn, Westmorland (A.R.J.).

**Epeira redli**, Scop. Tilberthwaite (F.Cb.). Lancashire.

## PLANT LIFE AROUND CARLISLE.

BY T. S. JOHNSTONE.

(READ MARCH 1st, 1906,)

Continued from Vol. I, page 40.

Only two or three more distinctively Spring plants remain to be mentioned. *Callitriche verna*, the Vernal Starwort, may be found in running water by many road sides. Six well-marked species of Willows are in full bloom—*Salix purpurea*, the Bitter Purple Willow, abundantly about Dalston and on the Petteril below Wreay; *Salix rubra*, the Green-leaved Osier, near Drawdykes Castle about Etterby Scar, and below Stainton; *Salix viminalis*, the Common Osier; *Salix Cinerea*, the Grey Sallow; *Salix Caprea*, the Saugh or Palm, the best known of all the Willow tribe; *Salix repens*, the Creeping Willow, is very much smaller than the others, and not so widely distributed. It occurs plentifully on Kingmoor, and Friend also mentions it as being found at Harker. That very peculiar and interesting flower, the *Arum*, or Cuckoo Pint, is recorded by Friend as being found at Cummersdale and in Corby woods. It is also well established in Wetheral woods and is to be found further up the Caldew above Dalston. One Orchis appears in April, *Orchis mascula*, the early purple Orchis, and is of such common occurrence that it is scarcely necessary to specify localities. I have found it occurring very plentifully in the meadows on the left bank of the Eden, between the North British Engine Sheds and Grinsdale Ghylls. In Grinsdale Ghylls also is to be found plentifully the wild Hyacinth, *Scilla nutans*. In Wreay woods it occurs profusely likewise, and it is well distributed in many localities. *Allium ursinum*, the Broad-leaved Garlic, is a plant which belongs to the same order as *Scilla nutans*, viz., the LILIACEAE. The only notes I have for it are Grinsdale Ghylls, and the Caldew

between Dalston and Cummersdale. It is fond of damp and shady situations, and its white, star-like flowers are certainly very showy, but its scent is rather too strong to be agreeable. Cattle are fond of it, though it does not improve the flavour of milk and butter, but very much the reverse. These, I think, may fairly be said to complete the list of Spring flowers in the Carlisle area, and I have lingered perhaps somewhat unduly over them, well-known as many of them are, just because they *are* Spring flowers and the welcome harbingers of the great host to follow.

#### MAY.

By the time May has arrived, they are beginning to come, not as single spies, but in battalions, and I shall have to pass over many of the commoner species, reserving what remarks I have to make for those, chiefly, which are distinguished by greater rarity.

Commencing again with the *RANUNCULACEAE*, we have *Ranunculus aquatilis*, which is in all the rivers round Carlisle. Last summer, owing to the long continued spell of dry weather, its white blossoms were very abundant near, and conspicuous from, Eden Bridge, and I may note the fact that Mr. Skelly and myself found in the Eden, at the mouth of the Caldew, a double-flowering variety. It is interesting that Mr. Wm. Duckworth mentions having found this same variety in the Eden, not far from Carlisle more than 20 years ago, and I have not heard of its having been noticed since until last year. *Ranunculus sceleratus*, the Celery-leaved Crowfoot, is a comparatively rare plant about Carlisle. Bishop Nicolson noted it in his day as being found 'in ye Cittadel pond at Carlile, and also at Hell-Kettles nigh Blackwell'\*. The Duckworths note it for Kingmoor and the Caledonian Railway sheds, Mr. Thomson found it at Kirkandrews, and Mr. Skelly informs me he observed it at Rockcliffe last year. My own specimen was got from Upperby Brick fields. The Creeping Crowfoot, is every where too common in our gardens sometimes. The Bulbous Crowfoot is also common in meadows and pastures. *Ranunculus arvensis*, the Corn Crowfoot, is, fortunately, one of the rarest of the family with us, as it is one of the most poisonous, and is said to be most injurious to cattle and sheep. My

specimen was found on the gravel beds at Grinsdale, and it has also been noted on two or three occasions at Dalston.

*Trollius Europaeus*, the Globe Flower, is recorded by Friend as being found between Wetheral and Warwick, and also at Cummersdale. I have never met with it myself so near Carlisle. The Barberry is noted by Mr. Duckworth for Kingmoor House and Cumwhinton Lonning. I only know one locality where it grows wild, or probably I should say *grew*, in a hedge near Buckabank, but it has been cut down, and, I am afraid, destroyed. I may mention that some plants may be seen in a hedge on Scotland Road, alongside Messrs. Clark Bros. Nursery. This plant is noteworthy as being the host of a micro-fungus, which passes through different stages in its life-history, partly on the Barberry and partly on Grasses, which include wheat, producing what is known as "rust" in wheat. As the Barberry is necessary to the cycle of changes which the micro-fungus undergoes, farmers have now learned to cut it down wherever they find it in their hedges.

Three common species of Poppies occur during May—the Smooth round-headed poppy and the Smooth and Rough long-headed poppies. In the same order, *PAPAVERACEAE*, *Chelidonium majus*, the Greater Celandine, occurs this month. I find notes of it for Dalston, Warwick, Wetheral, Blackwell, and Wreay, and the nearest place to Carlisle where it may be found is along the Convent hedge at St. Ann's, Stanwix. When the stalks are broken, they exude a yellow juice, which country people use for the purpose of removing warts from the hands of their children. The Common Fumitory is a very frequent species with us, but *Corydalis lutea*, the Yellow Fumitory, is only occasionally to be found, I think, generally, as a garden

---

\* Wm. Hodgson, in his Flora of Cumberland, quotes this latter from Nicolson's Manuscript, probably under the impression that it was the Cumberland Blackwell, better known to Cumbrians as "Bleckell," that was referred to; but Hell Kettles, nigh Blackwell, is in the vicinity of Darlington. The places mentioned by Thomas Lawson, a friend and neighbour of Nicolson's, in a well-known letter, (dated April 9th, 1688,) to John Ray, giving a list of plants found by Lawson in the North of England.

escape. *Corydalis claviculata*, the Climbing Fumitory. Mr. Duckworth notes as being found at Stainton.

In the Order *CRUCIFERAE*, there occur in May the Yellow Rocket, Thale Cress, Hedge Mustard. Wild Rape, and Charlock, *Erysimum orientale*, Hare's-ear Treacle Mustard, I have found on gravel beds on the Eden, opposite the Scaur and at Grinsdale, It is mentioned by Hodgson as having been found at Workington, Maryport and Silloth, and its presence so far inland from these points is interesting. It is an alien which has become naturalised in this country, its habitat being on cliffs, but according to Hayward it is very rare in Britain. It is not indigenous to Cumberland, and the fact of its occurrence at the ports mentioned is no doubt to be explained by its seeds having been brought in with grain or ballast. I can only conclude that its presence near Carlisle was due to the discharge of grain-dressings from mills higher up the river—probably from the Co-operative Mills in Junction Street.

The Horse Radish is to be found at Dalston station, and Friend records it also at Scotby, Botcherby, and the banks of the Eden at Stanwix. The Scurvy-grass, used by sailors, as its name indicates, as a cure for Scurvy, is to be found in the creeks about Rockcliffe Marsh. *Thlaspi arvense*, the Penny Cress, noted in Hodgson's Flora as very rare, and for which there was no previous record in the Carlisle area, I found on two or three occasions in 1902 on the Eden, near Carlisle. *Lepidium campestre*, the Field Pepperwort, also noted by Hodgson as rare, I have found at Grinsdale, and there was a previous record for Dalston by Miss E. J. Glaister, of Skinburness.

*Viola tricolor*, the wild Pansy, is now plentiful, and in the order *CARYOPHYLLACEAE*, we have Ragged Robin, fond of moist situations, badly drained meadows, &c. ; *Sagina procumbens*, the procumbent Pearlwort, which is common ; the Three-nerved Sandwort, at Dalston, Wetheral, and Corby to Warwick Bridge ; the Wood Stitchwort, at Grinsdale, Spa Well, and Wetheral Bridge ; and the Bog Stitchwort, at Orton Moss, Dalston, and Harker.

In the Order *GERANEACEAE*, the Herb-Robert is plentiful in woods and hedge banks. *Geranium lucidum*, the Shining Cranesbill, is noted by Mr. Wm. Duckworth near the Print Works, at Cummersdale, and by Friend near Dalston Station. It is very fine on old walls alongside the woods between Buckabank and Gaitsgill, but that is, perhaps, rather outside our 5-mile limit. *Geranium columbinum*, the long-stalked Cranesbill, is comparatively rare for Cumberland, and there is only one record for the Carlisle area, viz., at Cummersdale, by W. Duckworth. *Oxalis acetosella*, the Woodsorrel, a delicately beautiful little white flower, known to all of us, I have placed in May, but it may frequently be found the previous month, though not in such abundance.

Among the *LEGUMINOSAE*, we have, in May, the Petty Whin found on Kingmoor, Kingstown common, south of Rockcliffe, from Scotby lane to Cumwhinton, and at Belle Vue, the Broom, the Black Modick, the Purple Clover, the Bush Vetch, the Common Vetch, and the Tuberous Bitter Vetch. One *Leguminous* plant deserves special mention, viz., *Ornithopus perpusillus*, the Bird's foot. There are a number of records for it in the County, but no previous mention for any locality near Carlisle until last year, when Mr. J. G. Wheeler found it growing plentifully on Warwick Moor. It is a small and inconspicuous plant that nestles closely among the turf, but is so abundant there that it is rather surprising it should have escaped notice so long.

The Wild Strawberry may now be found in flower, common in woods and on hedge banks; the Marsh Cinquefoil on Todhills Moss; the Parsley Piert; the Meadow Saxifrage; the Marsh Pennywort, the smallest of our native *Umbelliferae*, an Order also represented in May by the Earth Nut or Pig nut, and the Bur Chervil. The Woodruff grows plentifully in Wreay woods, and it is also noted for Pow Beck, near Dalston. *Valeriana dioica*, the Marsh Valerian, I have found in Orton Moss, and T. Duckworth records it as being found near Cummersdale.

*Carduus nutans*, the Musk Thistle, has only two records, one at Dalston, by Friend, and another at Grinsdale by Mr. Thomson. *Hieracium pilosella*, the mouse-ear Hawkweed, is common everywhere. *Anagallis arvensis*, the Scarlet Pimpernel—the poor

man's weather glass, as it is called from its sensitiveness to weather changes, has the distinction of being the only scarlet flower in the British Flora, with the exception of the Poppies. It is fairly common, though not found in quantity anywhere. *Anagallis coerulea*, the Blue Pimpernel, is remarked by Hodgson as very rare. It has been found at Workington, at Maryport in 1886, at Silloth in 1890, by Friend, and also in 1891 at Silloth. I found it in 1901 on the gravel bed opposite the Scaur. *Lysimachia nemorum*, the Wood Loosestrife, is to be found in Wetheral and Corby Woods. *Menyanthes trifoliata*, the Buck or Bog Bean, or March Trefoil, may be found in Monkhill Lough and alongside the burn that runs into it. Those who have seen this flower growing will agree with me that it is one of the most beautiful of our wild flowers. According to Anne Pratt, the roots of this plant form one of our best native tonic medicines, and are of great benefit in Rheumatism. It is still sold by Herbalists, those Banditti of the Botanical world, whom we have to thank for the scarceness of several of our native plants.

In the Order *BORAGINEAE*, *Lithospermum arvense*, the Corn Gromwell, is one of the rare plants in the Cumberland Flora. Mr. W. Duckworth records it as being found at Cummersdale, and I have been fortunate enough to find it at Grinsdale. Another member of the same order is *Symphytum officinale*, the common Comfrey, a rather large and coarse plant with purple flowers, which is not so common as might be inferred from its name. I have seen it at Bellevue, on the Eden at Grinsdale, and in a field on the Warwick Road, not far from Warwick. It is mentioned in old Botanical works as being useful for application to wounds, and also good for the lungs. I notice it is still sold by Herbalists. Another closely related plant, *Symphytum tuberosum*, the Tuberous Comfrey, more slender, and with yellow flowers, is much rarer. There is only one record in the Cumberland Flora for this district, viz.: at the cross-roads, Harker. It is well established in one, if not two, places about Messrs. Little & Ballantyne's Nurseries, at Stanwix—not cultivated, of course. One or two other rare plants have been found about these Nurseries, such as *Verbena officinalis*, the Vervain, by Mr. Wm. Duckworth; and *Claytonia perfoliata*, by Mr. Postgate, but these were doubtless only casuals

introduced with other seed, and have not established themselves.

The Order *SCROPHULARINEAE* contributes a number of flowers to the May list—the Toadflax, the Ivy-leaved Speedwell, the Common Speedwell, the Brook-lime, all more or less common. *Veronica montana*, the Mountain Speedwell, has been got by Mr. Thomson at Wetheral, the only record I know of in the Carlisle area. We have also four semi-parasitic plants in the same Order, the Eyebright, the Yellow-rattle, the Marsh Lousewort, and the Cowwheat. These draw part of their sustenance from the roots of the grasses and other plants with which they are found in company, but without their doing any harm, so far as can be ascertained. to their hosts in the pastures and other places where they occur, although in Germany the Eyebright goes among the peasantry by the name of Milk-thief, because in seasons when it is abundant in the pastures, it is supposed to cause a decrease in the milk yield of the cows. For this belief however, there does not appear to be a satisfactory foundation, any more than for the old notion which gave it its English name, that a decoction made from it was good for the eyes. The Yellow Rattle is very abundant in damp meadows. The Marsh Lousewort, found in boggy ground, is recorded for Blackwell, and I have it noted for Orton Moss. The Cow-wheat is to be found in Wetheral woods and Wreay woods.

The Order *LABIATAE* this month gives us *Lamium album*, the White Dead-nettle, which is as uncommon as the Red Dead-nettle, *Lamium purpureum*, is plentiful. Mr. T. Duckworth notes the former on the banks of the Eden, near Linstock, and it is to be found in the lane leading from the Warwick Road to the lower end of Botcherby village. A white-flowering variety of *Lamium purpureum* has long been well-established along the road from Dalston station to the village. *Lamium galeobdolon*, the Weasel-snout, is extremely rare. One of the very few localities in Cumberland for it is at a particular spot on the banks of the Eden, between Wetheral and Warwick Bridge. This is Mr. T. Duckworth's record more than 20 years ago, and the plant is still there, and though not very abundant, appears to be well established. Should anyone come across it, it is to be hoped they will deal sparingly with it in the way of taking specimens. Another

*Labiata* plant, *Ajuga reptans*, the Bugle, is of common occurrence in damp woods and meadows. In every country lane may be found the Sorrel Dock, and the Sheep's Sorrel is abundant in dry pastures.

One Willow, later than the others, I also note—*Salix pentandra*, the Bay Willow—to be found east of the Waterworks and at Monkhill Lough. At the latter station too is to be found *Alisma ranunculoides*, the lesser Plantain, which is rather rare in Cumberland. My friend, Mr. Wm. Thomson, and myself have found it there, but you must look closely for it, and may be disappointed after all. No station in the Carlisle area had been recorded for it when the Cumberland Flora was published.

Two other members of the *ORCHIDACEAE* now appear on our list, *Listera ovata*, the Twayblade, which I have found in Prior Rigg Lonning, Bellevue, and in Orton Moss, and which I think is fairly common in localities favourable to it. *Orchis ustulata*, the dwarf dark-winged Orchis, is a very rare plant in the Carlisle District. Mr. Duckworth's stations, namely Stainton banks and Crosby-on-Eden, are the only ones that are recorded for it.

The Yellow Iris is now in bloom, and frequent in streams and swampy ground. It is very fine and plentiful at the south-end of Monkhill Lough. *Paris quadrifolia*, Herb Paris, may be found in a small wood near Cummersdale, and in the Wreay woods. *Allium scorodoprasum*, the Sand Garlic, is stated by Mr. Hodgson to be plentiful about Warwick. *Zannichellia palustris*, the Horned pondweed, a plant confined to the river Ellen, and one or two other localities in West Cumberland, has been got by Mr. Thomson at Monkhill Lough, the only station in the Carlisle area.

This closes my list of May flowers, but for the month of June alone, there are as many fresh ones as have occurred during the previous part of the year. The numbers I have noted may be interesting, viz.:—All the year round, 2; February, 3; March, 12; April, 55; May, 87; June, 155; July, 121; August, 12; October, 1.

## JUNE.

In June, the leafy month of June, all Nature's orchestra is in full blast. The profusion of floral treasures now before us is such as to render it impossible to deal with such a wealth of material in any detail. I will not attempt to inflict my list upon you in extenso, but confine my remarks chiefly, as before, to those species which are more or less distinguished by rarity.

Commencing again with the *RANUNCULACEAE*, I have first to refer to a treasure which marked a red-letter day in my collecting experience—*Ranunculus reptans*, given by Bentham and Hooker as a variety of *Ranunculus flamula*, the lesser Spearwort, but a much smaller plant, and distinguished in the London catalogue as a separate species. This, the most diminutive and the rarest of all the Buttercup family, I found growing apparently well-established, but within flood-level, at two stations along the left bank of the Eden, east of the Waterworks, in 1901. It is only recorded for three counties in Great Britain, and its proper home is on the shores of Loch Leven, in Kinross-shire. The two other counties are Perthshire, where it is mentioned by Lindley as being found in Glen Clova, that happy hunting ground of Botanists, and Cumberland, where it was found in 1880 on the shores of Ullswater. I have not been able to find it since 1901, the floods having apparently covered it, but am in hopes it will turn up again. The seeds have probably found their way down the Eamont from Ullswater, and possibly we may hear some time that our friend, Mr. Britten, has found it about Lazonby.\*

Another rare plant I have found on the Eden, near Carlisle, is *Alyssum calycium*, the Small Alyssum. I do not know of any other record for Cumberland, and according to Bentham and Hooker, it only occurs rarely in England, Ireland, and the South of Scotland.

*Raphanus raphanistrum*, the wild Radish or Jointed Charlock, I have come across once or twice on the Eden near Carlisle and Rockcliffe. T. Duckworth notes having found it near Cringle-

---

\* Since the above was written, I am pleased to say my anticipation has been realised, Mr. Britten having found the plant in 1909 growing abundantly on rocks in Baron Wood, on the left bank of the Eden above Armathwaite.

dykes. *Reseda lutea*, Wild Mignonette, noted by Hodgson as very rare, I found on both sides of the Eden, near Grinsdale, in 1901 and 1902.

The order *LEGUMINOSAE* is represented by a large number of fresh additions in June. This order, which is otherwise known as *Papilionaceae*, from the fancied resemblance of many of the flowers belonging to it to a butterfly—not a very apt comparison—includes, I need not say, many of our most useful plants, such as the Pea, Bean, Clover, Vetches, &c. We may note the Rest-Harrow, which may be found on the Scaur, beside the old Bath House, and here and there, further down the river on both sides. Mr. W. Duckworth also notes the Prickly Rest-Harrow near Rockcliffe. I have not met with it nearer than Bowness. *Melilotus officinalis*, the Common Melilot, is to be found on the Scaur and at Rockcliffe—the only localities I know for it in the Carlisle area. Its scent, which is much more noticeable when dried, is very agreeable, something like that of the Woodruff, but stronger and more fragrant. Several Trefoils occur this month—the Zig zag trefoil, the Hop trefoil, the Lesser yellow trefoil, and the Bird's-foot trefoil—all common—and the Knotted Clover. The last-named is a very rare Cumberland plant. It has been noted on the shore at St. Bees, and Miss E. J. Glaister found it on Grune Point, Skinburness, in 1877. In the Carlisle area, the only station for it is Forge Green, Dalston, where it was found by Rev. H. Friend in 1888 and 1889, by Miss Curwen in 1894, and by Mr. Wm. Thomson and myself in 1901. As the Dalston records thus stretch over a period of 13 years, it is to be hoped the plant, although scarce, may be considered established at that station, though I have some little misgiving, as the place where Mr. Thomson and I found it was being much disturbed by the cartage of gravel from the bed of the river. *Lathyrus aphaca*, the Yellow Vetchling, is another plant of the same Order still more rare. I found it at Grinsdale in 1902, and so far as I know it has not been found elsewhere in the Carlisle area. It is recorded by Hodgson for Silloth in 1890, and Workington in 1891, the seed doubtless brought into these ports with ballast or grain, and in all likelihood the Grinsdale specimen, as in a case already referred to, was the result of grain dressings getting

into the river from mills higher up. Equally uncommon is *Vicia tetrasperma*, the Smooth Tare. Mr. Thomson records having found it near Etterby, and I know of no other station in the Carlisle area. There are only two other records for Cumberland.

As might be expected, the order *ROSACEAE* is well represented in June. I have notes of 15 fresh additions to the list in that Order this month. The Meadow-sweet, the Wood Avens, the Water Avens, the Cinquefoil, the Tormantil, the Silverweed, the Lady's Mantle, the Great Burnet, and the Dog Rose, are all more or less common. *Spiraea Filipendula*, the Water Dropwort, a *Xerophilous* plant, as it is called, *i.e.*, belonging to a limestone district, has been noted by the Rev. R. Wood, Sen., at Dalston, a rare find. The Salad Burnet—also a *Xerophilous* plant—I have likewise found at Dalston, and it is recorded by Friend as occurring from Wetheral to Warwick Bridge. Mr. T. Duckworth also noted it on Stainton Banks. The Enchanter's Nightshade has been found by T. Duckworth on Davidson's banks, *i.e.*, on the left bank of the Eden, between the North British Railway Bridge and the N.B. Loco. sheds; the Navelwort, very rarely, about Buckabank and Dalston.

A rare *Umbelliferous* plant was found at Stanwix last year by Mr. Skelly in his garden, viz., *Bupleurum rotundifolium*, the Round leaved Hare's Ear. It was found in August, but I have mentioned it among the June flowers, as it commences flowering then. It was found at Silloth in 1881, and again by Mr. Hodgson and Miss Glaister in 1889, but there is no subsequent record for the County, and so far as I am aware, it has not been found before in the Carlisle area. Another little *Umbelliferous* plant, the Shepherd's Needle, is mentioned by Bishop Nicolson in 1690, as being found near St. Nicholas. No later confirmation in that locality is forthcoming, but I have found it on both sides of the Eden at Grinsdale. *Caucalis daucoides*, the Small Bur-Parsley, is another rare *Umbellifer* also found at Grinsdale, and as both this and the last mentioned are recorded as occurring at Silloth, I think it is possible we have again to refer their presence near Carlisle to the occurrence of the seed among grain dressings. Many of these plants found at Silloth are aliens, which, as already referred to, have been brought in with ballast or grain,

and cannot be accounted indigenous in the County, but it is interesting to trace them so far inland, and one may indulge in the hope that some of these casual visitors may establish themselves permanently with us.

*Caucalis nodosa*, the Knotted Hedge Parsley has been noted by Mr. Thomson at Etterby—a very rare plant, there being only three previous records in Cumberland for it.\* Rarer still is the Great Bur Parsley, *Caucalis latifolia*, a coarse plant with prickly fruit, which I was fortunate enough to find last year near the Corporation dwellings in Willow Holme. So far as I am aware, this is the only record in Cumberland for this plant, and, needless to say, I was rather pleased with the find.

I had been out for a ramble one evening in July with a friend, and we were returning home just as daylight was beginning to fail, and without much to reward us for our search, when this plant was noticed while passing through a stile against which it was growing. I think I should have missed it but for the peculiar bristles on the fruit, which drew my attention to it as something strange. It was already past the flowering stage. It has occurred to all of us, I fancy, in our collecting experiences, that a whole ramble has resulted in almost nothing new, but something has turned up, perhaps only a single find, which well repaid one for hours of patient searching.† Such was the case here, and a further illustration of the same thing comes conveniently to hand in the next plant I have noted to refer to, viz., *Galium tricornue*, the Rough-fruited Bed-straw.

This example also shewed me how easily one may miss a good thing, and I am afraid I cannot take much credit for the find. In Hodgson's Flora, this flower is noted with the remark: "Gathered at Silloth along with many other casuals, in 1890, by

---

\* I have since found it (19th September, 1909), on Grinsdale gravel beds.

† Since this paper was written, Mr. Thomson has informed me that the late Mr. Hodgson found a specimen of the plant in 1896, on the gravel bed of the River Derwent, nearly opposite to Camerton Church but accidentally omitted the record from his Flora. Mr. Thomson also found a specimen on Grinsdale gravel beds in July, 1899 and two specimens at same place (right bank of River Eden), 1901.

the Rev. H. Friend," and Mr. Hodgson remarks: "Clearly adventive, and as this is the only record that has reached me, I conclude that the Rough-fruited Bed-straw has no legitimate claim to be considered indigenous here." Mr. J. G. Baker, of Kew, notes that this species has been reported from Brookfield, near Wigton, but seems to have been in doubt regarding it, as he says the naming requires confirmation. I got it in two places on the River Eden, below Carlisle, last year, and on the first occasion I simply put it in my vasculum without looking at it closely, thinking it was a poor and water-washed specimen of *Galium aparine*, the Goose-grass, having adopted the plan of taking a specimen of everything I came across, partly for subsequent examination, and partly to save the trouble of making notes at the time. On examination at home, however, it turned out to be unmistakeably *Galium tricornis*, and I then called to mind that I had seen what I have no doubt was the same plant growing on gravel beds on the Caldew, at Dalston. I have the conviction, therefore, that it only requires closer search to prove that it is better established in Cumberland than Mr. Hodgson thought.

Of the most numerous Order in the list, the *COMPOSITAE*, we have many examples in June, most of which are more or less common, and time will not permit us to deal with them all in detail. *Chrysanthemum segetum*, the Corn Marigold, is plentiful where it does occur, but is not of general distribution in the Carlisle area. Mr. T. Duckworth has recorded it for Cargo and Grinsdale, and it was seen a year or two ago plentifully by Mr. Wheeler and myself in a cornfield at Cumwhinton. *Senecio saracenicus*, the Broad-leaved Ragwort, a tall and rather handsome plant, occurs in abundance on the Eden at and below Grinsdale, and on Stainton banks. Duckworth notes it as having been only recently noticed there when he wrote in 1883. *Tragopogon pratensis*, the Goat's Beard, more commonly known as Johnny-go-to-bed-at-noon, from its habit of closing its petals before midday, I have noted for Dalston, Warwick, and on Etterby Scaur.

Of the Order *ERICACEAE*, two species may be noted. One, *Andromeda polifolia*, the Wild Rosemary, is an exceedingly pretty

little flower, which has been recorded for Todhills Moss. I have not myself found it nearer Carlisle than Bowness, where it is fairly common. The other, *Pyrola minor*, the Common Winter-green, may be found in plantations at Bellevue, Cardewlees, Kingmoor, Durdar, &c. *Centunculus minimus*, the Chaffweed, one of the smallest plants in the British Flora, and only recorded for one other locality in Cumberland, has been found by Mr. Wm. Thomson and myself at Thurstonfield, and Mr. Thomson also found it about Kingmoor.

In the Order *BORAGINEAE*, we have two or three plants which are comparatively rare in the Carlisle area. The Viper's Bugloss, *Echium vulgare*, I have noted as having found on the Eden, opposite Grinsdale, and there is also a record for it at Scotby. The Bugloss, *Lycopsis arvensis*, has been found by Mr. W. Duckworth at Stainton—a plant noted by Mr. Hodgson as rare and local.\* *Cynoglossum officinale*, the Hounds-tongue, was noted by Bishop Nicolson among rubbish heaps at Carlisle, but the only locality now known for it in the Carlisle district is on the Forge Green at Dalston. The leaves of this plant have a smell exactly like mice, by which indeed we detected it on the first occasion Mr. Thomson and myself found it, as it did not happen to be then in flower. *Hyoscyamus niger*, the Black Henbane, is another plant noted for Dalston, as being found on the village green there at irregular intervals. It has also been recorded for Corby. *Solanum nigrum*, the Black or Garden Nightshade, was found by Bishop Nicolson under the walls of Carlisle in 1690. T. Duckworth, writing in 1883, notes having found it as a casual in a garden at Stanwix. I found it similarly in a garden at Wellflat on the Dalston Road in 1901. These are the only notes I am aware of for the Carlisle area.† There are some occasional records for it in West Cumberland.

---

\* I have since found this (July, 1906), at Warwick.

† This plant appeared in my garden at Stanwix in the summer of 1911, and Mr. H. Britten and others in the County have had a similar experience. It is possible, as has been suggested, that the seeds lying dormant in the soil for years have been quickened into life by the phenomenally hot weather.

In the Order *SCROPHULARINEAE* we may notice in June *Verbascum thapsus*, the Great Mullein, a tall, very uncommon looking plant, with leaves woolly on both sides, which is of somewhat rare occurrence in the Carlisle district so far as my experience goes. I have noticed it about Dalston station, and it has been found by Friend at Botcherby, and by the Duckworths on Beaumont banks, and also at Dalston. Another rare and local plant which occurs in the Order *LABIATAE* is *Lycopsis arvensis*, the Gypsywort, which may be found by the Black Dub, near Holme Head. Mr. W. Duckworth notes it also as being found in the wood behind the Asylum, at Garlands. In the same Order we have, or I should say, perhaps more truly, had, a well-known, but, so far as the Carlisle area is concerned, very rare plant, *Ballota nigra*, the Black Horehound. It was to be found about the City walls at Carlisle in Bishop Nicolson's day, as he notes, but there is no recent record. Beaumont is given as a station for it by the Rev. H. Friend, but I have never been able to find it there. This plant must not be confused with the White Horehound, *Marrubium vulgare*, a well-known old-fashioned remedy for coughs and colds.

All the *PLANTAINS* may be found this month. The Greater Plantain, the Hoary Plantain, and the Ribwort Plantain, are all common. The Sea Plantain, and the Buck'shorn Plantain, may be found on the marsh about Rockcliffe, and an interesting little plant in the same order, *Littorella lacustris*, the Plantain shoreweed, with leaves almost like a grass and extremely long stamens, may be found growing abundantly around the edges of Monkhill Lough—there, and I think nowhere else in the Carlisle area, although it is common about the lakes.

In the Order *URTICACEAE*, we have two extremes—the Common Nettle, only too common, and *Parietaria officinalis*, Pellitory of the Wall. The latter is a plant which in old times had a reputation on account of its medicinal value, as it contains a very large quantity of nitre. In Bishop Nicolson's time it was to be found abundantly on the City walls of Carlisle, but now there is no locality for it in the Carlisle area save one—on the Churchyard wall at Grinsdale, and if anyone should come across it there

I would suggest, if they wish to take a specimen, they should do so sparingly, and not destroy the plants—there are perhaps not more than half-a-dozen plants altogether. Old walls appear to be a favourite habitat of this plant, no doubt on account of the quantity of nitre which they sometimes contain, and which supplies the condition favourable to its growth. It is recorded in two or three other such situations in Cumberland.

*Myrica gale*, the Bog Myrtle, is to be found in flower this month in Orton Moss and Todhills Moss; and *Butomus umbellatus*, the Flowering Rush, a very handsome looking plant, occurs on the left bank of the Eden, just west of the Caledonian Railway Bridge, and also below Grinsdale. Bishop Nicolson noted it at Carlisle in his time, about the banks of the Caldew.

Other three members of the Orchis family are added to our list this month. *Habenaria bifolia*, the Butterfly Orchis, which may be found in the lanes about Bellevue, on Kingmoor, and near Harker, a delightfully scented species. *Gymnadenia conopsea*, the Fragrant *Gymnadenia*, is a much rarer member of the same family which I have not succeeded in finding in this district, but it is mentioned by the Duckworths as having been found on Stainton banks and on Dalston Green. The third, *Orchis maculata*, the Spotted Orchis, is common in open spaces among woods, and with these I think we may conclude our list for June.

### JULY.

Our July list commences with an extremely rare plant in the Carlisle area, *Thalictrum minus*, variety *montanum*, a variety of the Lesser Meadow Rue. There is, or was, for I have not visited the spot for a year or two, one solitary plant near Kingarth, on the Eden, which was found by Mr. Wm. Thomson growing there in successive years. The late Mr. Hodgson was much interested in hearing of this mountain variety growing so far from its natural habitat—the nearest record to the station referred to being on Crossfell, where it was found by Mrs. Carr, in 1889. *Aconitum napellus*, the Wolfsbane or Monkshood, a well-known plant in medicine, has been found by Mr. W. Duckworth in Blackwell woods. The White and Yellow Water Lilies may both be found in Monkhill Lough, and the Yellow one in Brunstock Beck.

Bishop Nicolson records that the White Water Lily was to be found in ponds about Stanwix, but Stanwix, I fancy, must have been a very different-looking place in his day, and certainly we should look in vain for water-lilies in any part of it to-day. Another plant mentioned by Bishop Nicolson is the Dyer's Weed or Yellow Weed, which, as its name indicates, was formerly used in dyeing to give a yellow dye. It is said to dye a beautiful yellow, and to dye blue cloth a rich green. Bishop Nicolson noted it at Wetheral Abbey, but there is no trace of it about Wetheral now. It may be found about Dalston and Cummersdale, and has also been got at Warwick and at Stainton. In the Stainton lanes also one occasionally finds the Corncockle, a handsome plant with peculiarly long sepals, resembling in that respect the Goat's Beard. It is a plant that is very far from common about Carlisle, or indeed in Cumberland. It is a native of Russia, and is sometimes to be found about Silloth, having been brought in with foreign grain.

Several of the St. John's Worts occur in July, none of which are very rare except *Hypericum montanum*, the mountain species, which Mr. T. Duckworth found on the Scaur, a favourite hunting ground of his, and on which he got a remarkable number of prizes.

And speaking of prizes, the next plant I have to refer to, *Radiola millegrana*, the Allseed, may, I think, be regarded as such by the Cumberland botanist. It is a very diminutive member of the Order *LINACEAE*, in which Order is also included the Linseed plant, one of the most useful, I need not say, that has been given to the human race. There are a few records for our little friend in West Cumberland, but it had not been found in the Carlisle district until Mr. Thomson and myself found it at Newby West a few years ago. This is another of the plants which is mentioned by Bishop Nicolson, and shews that his attention was extended to the smallest members of our native flora. He says it occurs upon moist moors, where the turf has been shaved off, and strangely enough, though it certainly occurs in other situations, it was just on such a piece of ground, from which some turf had been lifted, that we found our specimens. In 1904 I found another locality for it at Silloth, where it appeared to be well-established.

The Musk Mallow, noted by Hodgson as common in Cumberland, is not, I think, very common in the Carlisle area, and I have no note of it among my own records. Mr. Wheeler has noted it near the Bridge at Warwick, and there are other records for Cummersdale, Dalston, Warwick, and Wetheral, and a white-flowering variety in Wreay churchyard. Mr. Wheeler's name recalls that we found the next plant that comes on my list, *Genista tinctoria*, the Dyer's Greenweed, near Cumwhinton, when on a ramble together two or three years ago. Although Hodgson mentions it as frequent in Cumberland, his records are mostly in West Cumberland, and I have not seen it elsewhere in the Carlisle area. It was used anciently for dyeing purposes, giving a yellow dye, but has long ago been superseded by one or other of the many chemical dyes now in use. Another plant belonging to the same order, *LEGUMINOSAE*, which is not common in the Carlisle district, is the Hare's-foot trefoil, which is no doubt familiar to all Silloth visitors, being very fine and abundant there. Friend mentions having found it near Wetheral railway station,\* but the only place in the Carlisle district where it may be found with certainty is at Dalston, where it is plentiful on the Green.

*Lythrum salicaria*, the Purple Loosestrife, a tall plant, with most beautiful purple spikes of flowers, is to be found at Monkhill and Thurstonfield, and about that neighbourhood. T. Duckworth has also found it about Kingmoor, the Black Dub, and Holme Head.

A humbler member of the same Order, viz., *LYTHRARIEAE*, is the Water Purslane, which Mr. Thomson and I have found at Monkhill Lough. It is not a very common plant in Cumberland, and I do not know of any other locality for it in the Carlisle area.

One of our most interesting native plants, the Common Sundew, well-known as one of the three insectivorous plants to be found in this country, is to be got on Todhills Moss. It is very plentiful there, and two other species, the Great Sundew and the Dwarf Sundew, are also recorded as being got there, though I confess I have never myself been able to find them. They are certainly not nearly so common as the other, and as the resemblance is

---

\* Since found there by the writer on North side.

pretty close between all the three, it is very easy for them to evade the search of an untrained eye. The habits of this plant have been dealt with at great length by Darwin and other observers, and it is unnecessary for me to say anything further about it here, save that anyone can grow it at home with little trouble, and study for themselves its interesting peculiarities.

The Order *UMBELLIFERAE* is well represented in July, but we can only particularise one or two members of it. *Carum verticillatum*, the Whorled Meadow Parsnep, is a rare plant in Cumberland. There are only two records for it, and one is on Kingmoor, where it was first discovered by the late T. C. Heysham, who appears to have been somewhat of an all-round Naturalist, in 1837. It is still to be found there along the west side of the Moor, and it is to be hoped that with such a long record it may be considered as well-established. *Oenanthe fistulosa*, the Water Dropwort, is almost as rare a plant in Cumberland, and there is only one locality for it in the Carlisle area that I know of, namely at Monkhill Lough.

Our next Order, the *COMPOSITE*, which, as before mentioned, contributes more numerous than any other to our flora, also adds, as might be expected, the largest number of fresh comers to the July list. The Hemp Agrimony, a tall and conspicuous plant of this Order, which is fond of moist situations, may be noted growing in abundance on the banks of the Eden, below Grinsdale, and there are several other localities in the Carlisle district. This plant and *Senecio saracenicus*, the Broad-leaved Ragwort, before-mentioned, are both recorded by Mr. Britten as occurring higher up the Eden, about Little Salkeld, I think. *Filago minima*, the Least Cudweed, is somewhat rare in Cumberland, and there is only one locality that I know of in the Carlisle district for it, viz., on the Green at Dalston. *Inula dysenterica*, the Common Fleabane, is anything but common with us. It is to be found on the banks of the Eden, below Kingarth, where it appears to be established, and Mr. Thomson got it at Kirkandrews, but there are possibly not more than one or two other stations in the whole of Cumberland. Several of the *Senecios* appear this month. A rare member of the family, the Hoary Ragwort, is noted by

Friend near Harker station, and *Senecio viscosus*, the Clammy or Stinking Groundsel, has been noted at Cummersdale and Dalston. *Bidens cernua*, the Nodding Bur Marigold, (var. *b. radiata*), a rare Cumberland plant, is to be found close to the roadside in a burn which crosses the road at Botcherby. *Bidens tripartita*, the Three-cleft Bur Marigold, also rare, is said by the Rev. H. Friend to have been found at the same place. I have got it at Thurstonfield. *Artemisia absinthium*, Wormwood, may be found about Dalston, the only locality in the Carlisle area. *Centaurea calcitropa*, the Star Thistle which seems to have established itself about Silloth docks, probably the only locality in Cumberland where it is established, I have also found by the Eden, at Grinsdale; in this case, as in others, no doubt an additional instance of the seed having been introduced among foreign grain.

In the Order *CAMPANULACEAE*, in which the Blue-bell occurs earlier in the year, we have now and again in the Carlisle area, in July, the Clustered Bellflower, and the Giant Bellflower. The former has been found at various points on the Eden, between Wetheral and Cargo. It is a *Xerophilous* plant, and has no doubt been brought down the river from its proper habitat in the limestone districts. The Giant Bellflower occurs rather scarcely along the river edge by Stainton banks, and also on the opposite side of the river, below Grinsdale, odd plants, doubtless from seeds brought down the river from its upper reaches, or from Ullswater, where it is said to occur abundantly. I have already mentioned the Common Pimpernel and the Blue Pimpernel, which are in flower in May. In July we have the Bog Pimpernel, *Anagallis tenella*, a delicate little plant with shortly-stalked pink flowers thrown up in pairs from the creeping stem.

I do not know of any other place in the Carlisle area where it may be found, except in marshy ground at the side of Thurstonfield Lough, and there sparingly. It is an unobtrusive little plant which requires looking for, but it is one of those prizes which a botanist feels well repays him for a whole afternoon's tramping. Another diminutive plant is also to be found at the same place, namely Thurstonfield Lough, *Limosella aquatica*, if you have eyes sharp enough to detect it—I confess

mine have as yet failed to do so, but I have no doubt it is there. Mr. W. Duckworth reports finding it there and also at Newby. It is a still more unobtrusive plant in its appearance than the Bog Pimpernel, and it will be a very creditable find to whomsoever may be fortunate enough to light upon it next.

One plant in the Order *BORAGINEAE* deserves notice in the July list, viz., *Asperugo procumbens*, the Madwort. It has occurred several times about Maryport and Silloth, the seeds probably brought in with grain or ballast, but has just once been got in the Carlisle area, near the N.B. Loco. sheds, by Mr. Thomson.

Among the *Labiatae* in July, I can only notice two plants here. One, *Origanum vulgare*, the Wild Marjoram, a *Xerophilous* plant, has been recorded by Mr. Wm. Duckworth as occurring at Etterby and Skewbanks, and by Mr. Thomson at Cargo, the only notes for it in the district. The other is a very rare Cumberland native—though one with an old record, for Bishop Nicolson notes it as "among ruins, as about the Abbey, at Carlisle"—*Leonurus cardiaca*, the Motherwort. A paper might well be written upon the virtues attributed to plants long ago, indications of many of which are to be found in the names they still bear. That many of our native plants are efficacious in sickness and disease is beyond doubt, and their efficacy was probably more commonly known in former times than at the present day. But with some truth was mixed up much error, and a glance into the older herbals shews how fantastic some of the old herbalists' ideas were. What precise medical virtue was implied in the name Motherwort I am not aware, but the Latin name, *cardiaca*, is said to have been given because the plant could cure heart-ache. If this be true, here surely is a treasure that should be greatly sought after.

I hope, however, that persons seeking the cure will not want too much—too much of the plant, I mean—for in the Carlisle area there is now only one place where it may be found, namely along a few yards of a hedge in Grinsdale village, and the last time I was there I noticed it had got short shrift at the hands of some vandal of the fields, as it was nearly all cut down.

From time to time I have found alien plants, *i.e.*, plants not indigenous to this country, but whose appearance can be more or less definitely accounted for on the Eden, near Carlisle, the

seeds doubtless having found their way into the river amongst grain dressings, as I have more than once already mentioned in reference to other plants, or in one or two instances possibly as garden escapes. None of these aliens are mentioned in Hodgson's Flora, or in the Victoria History of Cumberland, the Botanical article in which was the last work done by Mr. Hodgson before his death, and as they have not been mentioned in any other list that I am aware of, I may just place their names on record here. They are as follows :—

## CRUCIFERAE.

*Matthiola bicornis*

*Lepidium virginicum*

*Rapistrum orientale*

## CARYOPHYLLACEAE

*Gypsophila porrigens*

*Saponaria vaccaria*

(This plant appears occasionally in corn-fields in the South of England, and has been admitted to a place in the London Catalogue of British plants, but it may still be considered an alien in Cumberland)

## LEGUMINOSAE

*Trigonella hamosa*

*Trigonella coerulea*

## BORAGINEAE

*Anchusa italica*

*Anchusa undulata*

*Echiospermum lappula*

*Cerinthe minor*

## POLEMONIACEAE

*Phacelia tanacetifolia*

I am sorry that space has compelled me to omit reference to many plants which I should have liked to mention, and I have only briefly now to touch upon one or two of those which make their appearance in flower when the days have already begun to shorten in the month of August.

## AUGUST.

*Althea officinalis*, the Marshmallow, is one of these. I have noted it in my list, as it has been found by Mr. T. Duckworth at Rockcliffe, but I have not come across it or learned of any other record. I should be glad to hear if it has been noted elsewhere.

*Dipsacus sylvestris*, the Wild Teasel, has been noted at several localities in West Cumberland, but it is scarce in the Carlisle area. Several plants may be seen every year about Dalston station, and I noticed a specimen last year in Mr. Carlisle's garden at Tarraby.

*Polygonum minus*, the Lesser Knot-grass, was got by Mr. Thomson and myself by the Eden, at Stainton, in August, 1901. The only other Cumberland records noted by Hodgson for this plant are the shore of Ullswater and Edenhall pond, Penrith. I notice Mr. Britten found it further up the Eden, in August, 1904.

With this and one other, I close my list. It began with the Daisy, it closes fittingly with the Ivy, which flowers latest of all, about October. Long before its flowering is over the botanist has ceased his rambles for the season, and betaken himself to his books in slippered ease at his fireside, perchance to mount the specimens that have been accumulating during a summer's gathering. And as each specimen comes before him it recalls memories of place and time when it was gathered, of changing skies and fresh winds of Spring, of perfect days of Summer, when a ramble along country lanes, with their teeming profusion of life of plant, bird and insect, made one feel it was good to be alive—memories of the Red-letter days, when we got some rare prize and felt correspondingly elated. These recollections, as they crowd upon one, form, as every lover of nature knows, not the least of the rewards, as they are among the most lasting of all pleasures, of the study of the Life of the Fields.

## THE NATURAL HISTORY OF THE PEREGRINE FALCON.

BY ERIC B. DUNLOP.

*(Read January 11th, 1912).*

In our faunal area, Lakeland, the Peregrine is far from rare, its reputed scarcity being due to the secluded nature of its haunts, and to the fact that on the wing it is frequently mistaken for a Kestrel, a pardonable error, for at a distance the weaker frame of the latter is not readily distinguished.

The following observations, except where otherwise stated, are the result of personal experience; and refer, without exception to the Lake District.

Many Peregrines remain in their inland breeding haunts throughout the year, though probably individuals resort to the sea-coast during rough weather, when prey is more easily procurable there than elsewhere.

Occasionally, when the fells are deep in snow, a Peregrine Falcon may be seen sitting motionless on a rock for an hour at a time.

As the end of March approaches, the birds, which pair for life, begin to haunt some precipitous crag. On their prospective nesting haunt being invaded, the Falcon (at other times of year usually a silent bird) utters her piercing scream, which may perhaps be syllabised as "kek-kek-kek," although the eggs will not be laid for some time to come. The call before the eggs have been deposited is not so prolonged, and is noticeably hoarser than afterwards, at least this is so in the case of one bird of which I have had considerable experience.

The eggs usually appear in April, but I have known the bird to lay by the 30th. March. Sometimes Ravens and Peregrines nest in the same crag, and even within 30 yards of

one another. When disturbed the Falcons express their annoyance by making vicious stoops at the big Crows, the latter repelling the onslaught by turning over in the air and extending their feet towards the oncoming Raptor. As soon as the first egg has been laid, the Peregrine commences to incubate; if she waited until the clutch was completed before sitting, many of the earlier eggs would be rendered infertile by frost, and many others would be taken by Ravens or Crows. Naturally, the eggs hatch at intervals, and so we find the young varying in size, this variation has sometimes been incorrectly attributed to sex. The eggs are usually deposited in a scratching in the soil on some inaccessible ledge; more than one such scratching may occasionally be found in the vicinity, this is paralleled by the Buzzard, which frequently builds one or two supernumerary nests in the neighbourhood of the one in which the eggs are laid. The Peregrine also not unusually tenants the old home of the Raven, and may drive the rightful owners from their property. At all events, one nest which had been repaired, was occupied by Falcons. I had very little doubt that they had driven the Ravens from it. The Peregrines usually have two or three alternative nesting sites in a range of rock, and even if the young are successfully reared, they do not always occupy the same situation two years in succession. One rather exceptional case came under my observation. Four eggs were taken from an eyrie on April 8th, by May 12th the Falcon was sitting on eggs again in the same nest. The first clutch of eggs usually numbers four, if anything happens to these the bird will lay again in about a month's time, the second set frequently consists of three eggs. If the first were nearly ready to hatch the bird does not always lay again, though the Peregrine may scratch out an eyrie as though about to do so.

The Falcon undertakes the major part of the incubatory duties, but the Tiercel also assists. On one occasion I put the Tiercel off eggs, and the Falcon arrived immediately afterwards with her crop visibly distended, showing that the male had relieved her whilst she went a'hunting. On another occasion the male was put off the eyrie, and the Falcon was found to be perched on a sheltered portion of the precipice, the day being very stormy.

The incubation period is between four and five weeks. The shells of hatched eggs are not removed by the old birds, and addled eggs are frequently left lying in the eyrie. I have more than once known two out of three eggs, in a second laying, to be infertile. The young, when first hatched, are covered with white down, the beak and cere are bluish, the legs flesh-coloured, the latter changing in a few days to yellowish. I have known a young bird to be in the eyrie for five weeks and a day, and then not be ready for flight; the period from the laying of the egg to the flight of the young bird is approximately ten weeks. On one occasion a young bird was found dead beneath the eyrie, from which it had evidently fallen.

Falcons usually show very marked individual characteristics, one bird I know, when put off the eyrie flies away out of sight without uttering a sound, another flies some distance before commencing to expostulate at the top of her voice, a third will occasionally give mouth as she sits on her eggs, and frequently as she stands at the edge of the eyrie. The call also varies greatly in different individuals, both in respect of pitch and the rapidity with which it is uttered. Both sexes utter a sound, which when heard at a distance, is not at all unlike the "cheeping" of a chicken; in fact, the first time I heard it, I thought it was produced by a chicken. This note is frequently uttered when the pair approach one another closely; I have heard the Falcon utter it when surprised on the ground, and the Tiercel when the eyrie, containing young, was nearly approached; no doubt it expresses strong emotion. The young in the eyrie sometimes utter the normal note in reply to their mother, but, of course, feebly. The Tiercel is not nearly so demonstrative as the Falcon when his young are threatened by danger. He sits on some rock-end screaming continuously, whilst his mate dashes about cursing you in no half-hearted manner, and occasionally stooping close over your head. Occasionally she comes within three yards. I have heard of an exceptional case in which the male bird was the more demonstrative. As would be expected from his smaller size, the scream of the Tiercel is not so loud or piercing as that of the Falcon. I noted the roosting habits of one pair during the winter months. The birds spent the night fully half-a-mile apart. In different

years they reared their young at each of the two places which served them as roosts.

A very curious fact came under my notice, partially connected with the breeding of these birds. One year they nested in a rock which had not, to my knowledge, been used before as a breeding place by any large bird. The following season a pair of Ravens, which nest in the same valley, resorted for breeding purposes to the identical place at which the Falcons had nested the previous year. In this connection a quotation from Abel Chapman's "Bird-life of the Borders" is interesting, he says:—"The Raven's nest this year is within 20 yards of the Falcon's; but the young of the former have already flown a month ago. Curiously, this latter nest is built on the exact spot where the Peregrines bred last year." I have heard of other similar instances.

When at the eyries of Peregrine Falcons, I have always noted the birds that have fallen victims to their needs; the following list of wild birds is the result. Taking the species which has most frequently provided a meal for the Falcons, first, at the head of the list comes the Starling, sixteen of these birds having been taken. One, which was found in an eyrie that held a young Falcon nearly ready for flight, had been plucked of all feathers except the primaries of one wing, and had had the head pulled off, doubtless the work of one of the old birds. Next come five Greenfinches, these had not been taken for the young to feed on, as possibly might be supposed, but for the sustenance of the old birds themselves, before the eggs had hatched. Four Mistle-Thrushes were found, also four Grouse, one of the latter was a chick not very many days old. Two examples of each of the following species had been killed:—Chaffinch, Ring-Ouzel, Blackbird, Fieldfare, Redshank, Partridge. And single examples of the following:—Jay, Song-Thrush, Hawfinch, Meadow-Pipit, Cuckoo, Ring-Dove, Woodcock, Curlew, and Lapwing. In addition to these I have seen a considerable number of tame pigeons, and a few domestic chickens, which must, of course, have been picked off the ground. I also know of an authentic case of a Great Spotted Woodpecker being taken; and again, exceptionally, I have found a pelled containing beetle's remains, those of *Carabus nemoralis*. It is worth remark that one of the eyries at which the prey was

regularly noted was on a well-stocked Grouse-moor, yet the only Grouse found in it was the few-day's-old chick ; if the birds has been so inclined they could have lived on Grouse. The Peregrine has a bad name in regard to destroying Grouse, and without doubt individual birds do acquire a taste for game, but that this taste is not general is certain. The case is on a par with that of the Kestrel, certain individuals of this species develop a liking for young Pheasants, but when the marauder has met his fate, the Pheasants are not harried, though there may be many other Kestrels in the district. For game-preservers, to destroy every Peregrine Falcon they can as a punishment for the delinquencies of a few, is unreasonable.

An unusual incident came within my knowledge recently. A wildfowler on the Solway fired at a flock of Grey-leg Geese, and after they had made off, was surprised to see them come back with a Peregrine in hot pursuit ; the Falcon having separated a bird from the rest, stooped at it and knocked it down within a hundred yards of the sportsman. It fell into the water amidst a cloud of feathers ; the Falcon came down towards it, but on the fowler poling his boat towards them, the Raptor flew off, and the Goose again got on to wing. If it had fallen on land instead of water, it would undoubtedly have been killed, so great was the force of the fall. The taste of the Peregrine Falcon is evidently catholic, ranging as it does from a Meadow-Pipit to a Grey-leg Goose.

# THE LEPIDOPTERA OF CUMBERLAND.

## PART II. (MOTHS).

By GEORGE B. ROUTLEDGE, F.E.S.

### HAWK MOTHS.

**Acherontia (Manduca) atropos**, L. (Death's Head). This moth is generally found almost every year in one part of the County or another, but it is never common. Carlisle district.—In the summer of 1825 the larvæ were frequently taken near Carlisle (T. C. Heysham, Steph. Illust. I., p. 117). Abundant in 1858 (T. Armstrong, Ento. Weekly Int. vii., p. 30). Carlisle (Morris' British Moths, i., p. 41). Stanwix, Cummersdale and Warwick Bridge (F. H. Day). Carlisle, four specimens in 1908 and two at Newbiggin (L. E. Hope, Naturalist, 1909, p. 30). Thurstonfield (M. C. Dixon). Solway district.—Silloth (G. Wilkinson, Tutt's Brit. Lep. iv., p. 467); Burgh (M. C. Dixon); Abbey Town, Bowness-on-Solway (L. E. Hope, Naturalist, 1909, p. 30). Brampton district.—Milton Hall (Mrs. M. G. Routledge); Hayton (T. Armstrong, Ento. Weekly Int. ii., p. 5); Castlecarrock, 1898 (G. B. Routledge, Entom. xxxii., p. 48), also many larvæ were found in 1898 at Castlecarrock feeding on privet (Ento. Record xi., p. 268). Penrith district.—Great and Little Salkeld, Langwathby (H. Britten). Cumberland Coast.—Whitehaven (J. Murray); Netherton, near Maryport (J. W. Fawcett, Naturalist, 1900, p. 292). Lake district.—Keswick, found occasionally, (H. A. Beadle, Ent. Record vi., p. 27); Cockermouth (G. Mawson, Entom. iii., p. 314). Victoria Hist. of Cumberland i., p. 122.

This species is well known as a migrant species from abroad, it arrives in England in late Spring, only failing in England to make a permanent home because the late larvæ and pupæ fail to withstand the severity of our late autumn

and long winter climate. The moth is also remarkable in being able to produce a curious shrill squeak.

**Sphinx convolvuli**, L. (*Convolvulus Hawk*). Rare and of uncertain appearance. Carlisle district.—Carlisle, taken in September, 1824 (T. C. Heysham, *Steph. Illust. i.*, p. 121). Recorded from Carlisle (T. Armstrong, *Ento. Weekly Int. vii.*, p. 30). One specimen taken in September, 1887 (C. Eales, *Entom. xx.*, p. 272). One specimen taken by J. B. Cairns, now in the Museum collection. Two specimens taken by George Apsey at Currock Terrace, Carlisle. A specimen taken at Stanwix in 1897, another at Holme Head by R. Leighton, in 1897 (F. H. Day, *teste.*). One taken near the Maryport and Carlisle Railway cottages at Holme Head, in September, 1901 (J. E. Thwaytes, *Ento. Record xiv.*, p. 163). Brampton district.—One specimen taken at Stone House, Hayton, in September, 1887, now in G. B. Routledge's collection. Penrith district.—Penrith (C. S. Grogson), Great Salkeld (H. Britten). Lake district.—Keswick (H. A. Beadle, *Ento. Record vi.*, p. 277 ; *vii.*, p. 89). Cumberland Coast.—Maryport (F. H. Day, *Tutt's Brit. Lep. iv.*, p. 388). One taken between Egremont and Whitehaven (*teste*, J. Murray). *Victoria History of Cumberland i.*, p. 122.

This is also an immigrant species to the British Isles. In 1846 and 1887 large migratory swarms arrived in the British Isles.

**Sphinx ligustri**, L. (*Privet Hawk*). Very rare in the county. Carlisle district.—Near Carlisle (T. C. Heysham, *Steph. Illust. i.*, p. 121). Thomas Armstrong records that some had been taken in the district (*Ento. Weekly Int. vii.*, p. 30, but this statement was doubted by J. B. Hodgkinson, (*Ento. Weekly Int. vii.*, pp. 102 and 159). Penrith district.—(Hope, *Tutt's Brit. Lep. iv.*, p. 326). Lake district.—Keswick, rare (H. A. Beadle, *Ento. Record vi.*, p. 277). *Victoria History of Cumberland i.*, p. 122.

This species is found principally in the southern portion of England. Scarce in the Midlands, and has been recorded from Grange, in North Lancashire, and one specimen recorded from Hartlepool, in Durham. Not recorded from Westmorland and Northumberland. Very rare in Scotland.

**Sphinx pinastri**, L. (Pine Hawk). Thomas Marshall, of London, records in the Entomologist : " That he saw a living specimen in the summer of 1827 or 1828 in Cumberland. It was hanging in the position common to the family when recently escaped from the pupa state, to a portion of the root of a fir tree which protruded through the projecting edge of a piece of ground, overhanging a perpendicular bank of about ten or a dozen feet in height, at the side of a fir plantation on Latrigg, a low mountain near the foot of Skiddaw " (Entom. i., p. 231). Also recorded in Tutt's Brit. Lep. iv., p. 295 ; Barrett's Brit. Lep. ii., p. 29 ; South's Moths i., p. 34.

The County of Suffolk seems to be the British home of this species.

**Deilephila (Celerio) galii**, Schiff. (Bedstraw Hawk). Rare and of uncertain appearance. Carlisle district.—T. Armstrong records that several larvæ were taken (Ento. Weekly Int. vii., p. 30). Two specimens were taken in September, 1835, by T. C. Heysham, at Cumwheaton (? Cumwhitton) near Carlisle (Humphrey and Westwood's British Moths ; Entom. Mag., 1836, p. 409). Brompton district.—One specimen taken in the garden at Stone House, Hayton, July, 1888, now in G. B. Routledge's collection (Hugh Goodfellow, Entom. xxi., p. 210). Solway district.—W. Robinson, Tutt's Brit. Lep. iv., p. 199). Lake district.—Cockermouth, bred from larvæ found in the autumn of 1860 (W. Robinson, Ento. Weekly Int. ix., p. 60). Cumberland coast.—Maryport, 1895 (T. Swainson). Formerly common where the West Cumberland Iron Works now stand i.e., north side of Workington on the coast (G. Mawson). Victoria History of Cumberland i., p. 122.

This is another immigrant species to the British Isles ; there were numerous records of its appearance in the years 1859, 1870, and 1888, when the abundance of its larvæ and the extent of its range in 1888 were greater than on any previously recorded occasion.

**Deilephila (Phryxus) livornica**, Esp. (Striped Hawk). Rare and of uncertain appearance. Carlisle district.—Carlisle, one specimen in 1846 (James Cooper). One specimen taken in a barber's shop window in Botchergate, Carlisle, May 16th,

1904 (J. E. Thwaytes, Entom. xxxvii., p. 188). Another specimen captured on April 26th, 1909 (R. Dalton, Ento. Record xxi., p. 186). (South's Brit. Moths i., p. 41). Brampton district.—One specimen (now in G.B. Routledge's collection) taken at Heads Nook, June, 1892 (Mary G. Routledge, Entom. xxv., p. 169). One seen in the garden at Tarn Lodge, Castlecarrack, June 8th, 1904, hovering over flowers of garden rocket (G. B. Routledge, Ento. Record, vi., p. 209). Cumberland coast.—One specimen at Harrington, near Workington, (J. H. Tiltman, Entom., ii., p. 341). Two specimens at Workington (G. Mawson). One specimen at Maryport in 1892 (T. Swainson). There is a specimen in the Dale collection at Oxford, taken at Workington by B. Martin (Ento. Mo. Mag., xliii., p. 156). Victoria History of Cumberland, i., p. 122.

This is also a migrant species from the shores of the Mediterranean, and also abounding in certain parts of North Africa. The spring brood is generally the migratory one, the May-June immigrants laying eggs which give rise to the native born moths in August and September.

**Choerocampa (Hippotion) celerio**, L. (Silver-striped Hawk). Rare and of uncertain appearance. Carlisle district.—J. B. Hodgkinson records a poor specimen which was taken on the railway bank at Carlisle, in the autumn of 1867 (Ento. Mo. Mag., iv., p. 154), another in October, 1865, (Ento. Mo. Mag., iii., p. 22); and in the Entom., xxiv., p. 20, states: "that he has had altogether four specimens from Carlisle in his collection." Brampton district.—(Morris' Brit. Moths, i., p. 11). Lake district.—Keswick, H. A. Beadle records: "that several have been taken, one specimen is in the local Museum (Ento. Record, vi., p. 277). Cockermouth (Morris' Brit. Moths, i., p. 11). Cumberland Coast.—Maryport (*teste*, G. Wilkinson, Tutt's Brit. Lep., iv., p. 133). There are records of three specimens in Cumberland in 1848, and one in 1849 (C. W. Dale, Brit. Hawk Moths); (Barrett's Brit. Lep., ii., p. 54). Victoria History of Cumberland, i., p. 122.

This is another migrant species from Southern Europe. It is frequently to be found at rest upon ships in mid-ocean.

**Choerocampa (Metopsilus) porcellus**, L. (Small Elephant Hawk).

Local and sometimes not uncommon. Carlisle district.—(T. Armstrong, Ento. Weekly Int., vii., p. 30). Orton (J. E. Thwaytes, Ento. Record, xiv., p. 163). Kirkbampton (M. C. Dixon). Solway district.—Silloth (J. A. Malcolm). Bampton district.—Sometimes not uncommon at the flowers of garden rocket and Valerian at Tarn Lodge, Castlecarrock, (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Cumberland Coast.—Flimby and Flimby Wood (G. Mawson). Common at Maryport (T. Swainson). Workington (G. Wilkinson). Cumberland (Barrett's Lep., ii., p. 58). Victoria History of Cumberland, i., p. 122.

The specimens taken in Cumberland (at least those taken at Tarn Lodge) are not so bright as those taken in the South of England (G.B.R.).

**Choerocampa (Eumorpha) elpenor**, L. (Elephant Hawk). Rare.

Carlisle district.—(T. Armstrong, Ento. Weekly Int., vii., p. 30). Orton, Peastree Wood, near Cummersdale (J. E. Thwaytes, Ento. Record, xiv., p. 163). Bampton district.—One specimen taken at Heads Nook (G. B. Routledge). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Solway district.—Silloth (R. Leighton). Cumberland Coast.—Flimby and Flimby Wood (G. Mawson). Flimby and Siddick (T. Swainson). Victoria History of Cumberland, i., p. 122.

This species is common in the South of England, and it occurs at many places in Cheshire, Lancashire, and Yorkshire; only twice recorded from Northumberland; no records from Durham.

**Smerinthus ocellatus**, L. (Eyed Hawk). Not uncommon in the

larval stage among osiers near streams. Carlisle district.—Near Carlisle (T. C. Heysham, Steph. Illust., i., p. 112). Carlisle (J. E. Thwaytes, Entom., xxx., p. 299). Orton and Cummersdale, sometimes the larvæ are very abundant on

osiers along the River Caldew (F. H. Day). Durdar (J. A. Malcolm). Cummersdale (J. E. Thwaytes, Ento. Record., xiv., p. 163). Brampton district.—One specimen taken on Hayton Moss (G. B. Routledge). Solway district.—Burgh (M. C. Dixon). Lake district.—Keswick, rather rare (H. A. Beadle, Ento. Record, vi., p. 277). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Plentiful in West Cumberland (G. Mawson). Victoria History of Cumberland, i., p. 122.

This species is common in the South of England, locally common as far north as Grange-over-Sands, in North Lancashire. Very few records of its occurrence in Durham and Northumberland, and the records from Scotland number about half-a-dozen single individuals.

**Smerinthus populi**, L. (Poplar Hawk). Generally common, especially in the larval stage. Carlisle district.—(T. C. Heysham, Steph. Illust., i., p. 113). Upperby (R. Dalton). Brampton district.—Hayton, Castlecarrock (G. B. Routledge). Solway district.—Burgh (M. C. Dixon). Penrith district.—Wan Fell, Penrith, Edenhall, Great Salkeld, Langwathby (H. Britten). Lake district.—Uncommon at Keswick (H. A. Beadle, Ento. Record., vi., p. 277). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Victoria History of Cumberland, i., p. 122.

**Smerinthus (Mimas) tiliae**, L. (Lime Hawk). Very rare in the County. Lake district.—Very rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Victoria History of Cumberland, i., p. 122.

This species is widely distributed throughout the southern counties of England, and around London it is common. Scarce in the Midlands, it is exceedingly rare in Lancashire and North Lancashire, and there are only two records from Yorkshire. No records from Durham, Northumberland or Westmorland.

**Macroglossa stellatarum**, L. (Humming-bird Hawk). Sometimes common, though uncertain in its appearance. Carlisle district.—(T. Armstrong, Ento. Weekly Int., vii., p. 30), uncommon (F. H. Day). Kirkbampton (M. C. Dixon),

Harraby (J. A. Malcolm). Brampton district.—Hayton, Castlecarrock (G. B. Routledge). Penrith district.—Penrith, Wan Fell, Great and Little Salkeld, Skirwith, Langwathby (H. Britton). Solway district.—Silloth (F. H. Day), Burgh (M. C. Dixon), Kirkandrews (J. A. Malcolm). Lake district.—Seldom seen at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Not uncommon on the coast (G. Mawson). Victoria History of Cumberland, i., p. 122.

This is one of the most remarkable of the moths that visit this country. It has a distribution that covers the greater part of the Old World, and its powers of flight are extraordinary. Its continuous-brooded habit is almost certainly the cause of its repeated extermination in the British Isles.

**Macroglossa (Hemaris) bombylifomis**, Esp. ; **tityrus**, L. (Narrow-bordered Bee Hawk). Not uncommon. Carlisle district.—Carlisle (Morris' Brit. Moths, i., p. 17 ; Barrett's Brit. Lep., ii., p. 175). Common in the district (T. Armstrong, Ento. Weekly Int., vii., p. 29). Orton (John Dobie). Durdar, two specimens (C. Atkinson). Wreay (J. E. Thwaytes). Orton (G. Wilkinson, Ento. Record, xiv., p. 130 ; J. E. Thwaytes, Ento. Record, xiv., p. 163). Brampton district.—One specimen on Hayton Moss, June 21st, 1899, (G. B. Routledge). Penrith district.—Common on flowers of Lousewort (*Pedicularis sylvatica*) at Wan Fell, Barron Wood (H. Britten). Wan Fell (G. Wilkinson, Ento. Record, xiv., p. 130). Lake district.—(Stainton's Manual, i., p. 100 ; Barrett's Lep. ii., p. 75). Cumberland Coast.—Fairly common (G. Mawson). Victoria History of Cumberland, i., p. 122.

This moth resembles a large humble-bee (*Bombus agrorum*), and visits the blossoms of various low-growing plants. Our other British species, **M. fuciformis**, L., (Broad-bordered Bee Hawk) is widely distributed, and locally common in England, but its northern range does not extend beyond Yorkshire. It has not been captured in Cumberland.

## SESIIDÆ (CLEARWINGS).

**Trochilium bembeciformis**, Hb.; **crabroniforme**, Lewin (Luna Hornet Clearwing). Rather common in the larval state. Carlisle district.—Carlisle (J. B. Hodgkinson, Zool., v., p. 1,883). Orton, also larvæ common in osiers near the North British Railway sheds (F. H. Day). Harraby, bred by J. A. Malcolm from poplars. Kirkbampton (M. C. Dixon). Carlisle, one specimen in 1909 (R. Dalton). Cumberland coast.—Flimby Wood (G. Mawson). Victoria History of Cumberland i., p. 122.

**Trochilium apiformis**, Clerck. (Hornet Moth). Rare. Carlisle district.—Near Carlisle, detailed account of its being reared (Hilderic Friend, Young Naturalist, July, 1890, pp. 133-134). Cumberland coast.—Flimby Woods (G. Mawson). Lake district.—Derwentwater (W. C. Marshall, Entom., vi., p. 122).

This moth is common in the eastern counties, scarce in the southern counties. It has been found near Scarborough, and once near High Force, Teesdale (Wailes' Catalogue, p. 45). In Scotland it is only recorded from near Glasgow, and in the Tweed and Solway districts. The larva feeds in the stems of willow, poplar and poplar. These last two species resemble hornets or wasps. **T. apiformis** has a yellow head, and patches of yellow on the shoulders. **T. bembeciformis** may be distinguished from **apiformis** by the yellow collar behind the black head.

**Sesia tipuliformis**, Clerck. (Currant Clearwing). Lake district.—Common in gardens at Keswick (H. A. Beadle, Ento. Record., vi., p. 283). Cumberland coast.—Flimby Wood (G. Mawson). Victoria History of Cumberland, i., p. 122.

This species is widely distributed in England, and in Scotland has only been rarely noticed in the south. Its larva feeds in the pith of the stems of currant bushes (black and red).

**Sesia myopiformis**, Bork. Very Rare. Cumberland coast.—One specimen taken in Flimby Wood (G. Mawson). Victoria History of Cumberland, i., p. 122.

This species is of frequent occurrence in the southern counties of England, and has also been found in Yorkshire.

J. B. Hodgkinson records: "A single specimen that was captured by H. Murray on a road close to some old apple trees at Grange, in North Lancashire" (Ent. Mo. Mag., xvii., p. 70). Not recorded from Durham and Northumberland. The larvæ feed on the inner bark of the trunks or boughs of apple, and sometimes also on pear trees.

**Sesia culiciformis**, L. Rare, probably because it is overlooked. Brampton district.—One specimen captured at Hayton Moss (G. B. Routledge). Cumberland coast.—Flimby Wood (G. Mawson). Victoria History of Cumberland, i., p. 122.

The larva feeds on the inner bark of birch trees and bushes, preferring the stumps left in the ground where the stems have been cut down. About two years in the larval state, and the stumps of birches should be examined two years after the trees have been cut down.

**Sesia formicaeformis**, Esp. Rare. Cumberland coast.—Flimby Wood (G. Mawson). Victoria History of Cumberland, i., p. 122. Found in the southern counties of England, and has been recorded from Derbyshire and Yorkshire; only one record of its occurrence in Durham, three specimens from Gibside (Wailes' Catalogue). The larva feeds in the stumps of osier (*Salix viminalis*), burrowing in the solid wood and pith.

#### ZYGÆNIDÆ (Burnets and Foresters).

**Ino (Adscita) statices**, L. (Green Forester). Locally common in meadows and mosses in June. Carlisle district.—Orton, Wreay (F. H. Day). Orton and Kirkbampton (R. Dalton). Kirkbampton (M. C. Dixon). Brampton district.—Common on Hayton Moss on flowers of Ragged Robin (G. B. Routledge). Solway district.—Burgh (M. C. Dixon and F. H. Day). Lake district.—H. A. Beadle records: "that it occurs in the Great Wood at Keswick, but has not personally taken it" (Ento. Record, vi., p. 283). Keswick (N. D. Warne Ento. Mo. Mag., xxxii., p. 188). Cockermouth (W. Robinson, Ent. Weekly Int., ix., p. 80). Victoria History of Cumberland, i., p. 122.

Variation.—In colour the specimens present two very distinct forms, the rare (in Britain) blue-green type form

described by Linne, and the common bronzy-green form = *ab. viridis*, Tutt. Most of the Cumberland specimens are *ab. viridis*.

**Ino (Adscita) geryon**, Hb. Rare. Lake district.—Keswick, June, 1890 (Barclay, Tutt's Brit. Lep., i., p. 406). Victoria History of Cumberland, i., p. 122. This Moth appears to have been first noticed on the limestone hills of Worcestershire about 1857 or 1858, and in March, 1860, was recorded as British under the name of *Ino tenuicornis*. It has been recorded from Witherslack by J. B. Hodgkinson (Ento. Mo. Mag., ix., p. 138), and by B. H. Crabtree (Entom., xxix., p. 291), and also at Grange and Silverdale, in North Lancashire. The larva is to be found on the Rock-rose or Common Sun-Cistus (*Helianthemum vulgare*).

**Zygaena (Anthrocera) lonicerae**, Esp. (Narrow-bordered Five-Spot Burnet). Rare. Lake district.—Taken by W. Greenip at Keswick (H. A. Beadle, Ento. Record, vi., p. 283). Rare in West Cumberland (G. Mawson). Cumberland (South's Brit. Moths, ii., p. 340). Victoria History of Cumberland, i., p. 122. There are apparently no records for this species either in Lancashire or Westmorland. It has been taken at Tyne-mouth in Northumberland.

**Zygaena (Anthrocera) filipendulae**, L. (Six-spot Burnet). Locally common in most places, preferring as a habitat damp meadows and railway banks. Occurs sometimes in June, more often in July. Carlisle district.—Newby Cross, Orton, Wreay (F. H. Day). Kirkbampton (M. C. Dixon). Solway district.—Burgh (M. C. Dixon). Brampton district.—Cowran Railway Banks and Castlecarrock (G. B. Routledge). Penrith district.—Wan Fell and Penrith Railway Banks (H. Britten). Lake district.—Beadle records "that it used to be taken in a field behind Lingham, but that he had not personally met with it" (Ento. Record, vi., p. 283). Cumberland coast.—St. Bees, in July (P. J. Barraud, Ento., xl., p. 67). Common on St Bees Head (James Murray). Very abundant at Seascale end of July (F. H. Day). Victoria History of Cumberland i., p. 122.

**BOMBYCES (Sarrothripinae).**

**Sarrothripus undulanus**, Hb.; **revayana** Tr. Taken in limited numbers, and usually after hibernation. Carlisle district.—Orton and Newby Cross (F. H. Day). Orton (J. A. Malcolm). Thurstonfield Woods, larvæ taken by beating, scarce (M. C. Dixon). Penrith district.—Barron Wood (J. B. Hodgkinson, Zool., v., p. 1,883). High Hesket (J. A. Malcolm). Victoria History of Cumberland, i., p. 123.

The species seems to be out from August to April. It is common in the southern counties, and rare in Cheshire, Lancashire, Yorkshire and Westmorland. A single specimen was taken at Hartlepool in 1875 (J. E. Robson). It is a most variable species.

**CHLOEPHORIDAE.**

**Hylophila prasinana**, L. (Green Silver-lines). Widely distributed, and in some seasons is not uncommon, flying towards evening among oaks. Carlisle district.—Common (T. Armstrong, Ento. Weekly Int., vii., p. 30). Kingmoor, Orton and Durdar (F. H. Day). Orton and Kingmoor (R. Dalton). Carleton and Orton (J. A. Malcolm). Brampton district.—Hayton, Hayton Moss, Gelt Wood (G. B. Routledge). Penrith district.—Penrith, Barron Wood, Great Salkeld and Skirwith (H. Britten). Lake district.—Common about oaks at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Victoria History of Cumberland, i., p. 123.

The male of this species is one of the few lepidopterous insects that can produce a sound, resembling, in this case, a pin passed over the teeth of a comb. If beaten out of a tree, it opens the wings on one side only and falls to the ground with a spinning motion.

**NOLIDAE.**

**Nola cucullatella**, L. Rare. Brampton district.—One specimen at Hayton (G. B. Routledge). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Rare in West Cumberland (G. Mawson). Victoria History of Cumberland, i., p. 123.

Common in the South of England, records in the North of England appear to be few, though it is widely distributed in Yorkshire. Rare in Scotland.

**Nola confusalis**, H-S. Not uncommon at rest on tree trunks. Carlisle district.—Wreay, Orton, Newby Cross (F. H. Day). Bunker's Hill and Kirkbampton (R. Dalton). Kirkbampton, Thurstonfield and Moorhouse, not scarce (M. C. Dixon). Brampton district.—Hayton, Gelt Wood, Hayton Moss and Tarn Lodge (G. B. Routledge). Solway district.—Burgh (M. C. Dixon). Penrith district.—Plentiful at Great Salkeld (H. Britten). Lake district.—Rather rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Common in West Cumberland (G. Mawson). Victoria History of Cumberland, i., p. 123. This species is not recorded from Northumberland, and only recorded from the southern portion of Durham.

#### LITHOSIINAE.

**Nudaria mundana**, L. (Muslin). Found at rest on stone walls, local, but some times common. Brampton district.—Hayton, Tarn Lodge and Castlecarrock (G. B. Routledge). Castlecarrock (R. Dalton). Penrith district.—Abundant at Great Salkeld, Barron Wood, Skirwith, Penrith (H. Britten). Lake district.—Keswick (F. H. Wolley Dod, Ento. Record, ii., p. 205). Common throughout the Keswick district, larvæ common on stones at the boat-landing (H. A. Beadle, Ento. Record, vi., p. 277). Borrowdale (R. Dalton). Near Lodore (F. H. Day). Seathwaite and Lodore (J. A. Malcolm). Common in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History of Cumberland, i., p. 123.

The larva feeds upon the lichens which grow upon stone walls.

**Lithosia (Cybosia) mesomella**, L. Locally common. Carlisle district.—Plentiful (T. Armstrong, Ent. Weekly Int., vii., p. 30). Carlisle (Stainton's Manual, i., p. 140). Swarms at Durdar, common at Orton, Kingmoor, Todhills, Newby Cross (F. H. Day). Orton and Kirkbampton (J. A. Malcolm). Orton, Kirkbampton, Newby (R. Dalton). Common at

Kirkbampton (M. C. Dixon). Solway district.—Common at Burgh (M. C. Dixon). Cumberland, very local (Barrett's Brit. Lep., ii., p. 209). Victoria History of Cumberland, i., p. 123.

There are no records of this species in Durham or Northumberland. Very local in Yorkshire.

**Lithosia lurideola** Zinck. ; **complanula**, Bdv. Uncommon. Lake district.—Taken occasionally at Keswick (H. A. Beadle, Ento. Record, vi., p. 277). Victoria History of Cumberland, i., p. 123.

This species is generally the commonest one of the group in the southern half of England as far as Derbyshire, Cheshire, and South Lancashire. In North Lancashire it is scarce, and has been recorded from Witherslack by J. B. Hodgkinson. Seldom met with in Durham and Northumberland.

**Gnophria (Æonestis) quadra**, L. (Four-spotted Footman). Rare. Carlisle district.—Newby Cross (Barrett's Brit. Lep., ii., p. 235). Cumberland coast.—Maryport in 1900 (T. Swainson). Victoria History of Cumberland, i., p. 123.

In England the most favoured locality for this species is in the New Forest, where it abounds in some seasons. Rare in Durham and Northumberland. The sexes are very different in appearance. The forewings of the male are grey tinged with yellow. The female is larger, yellow in colour, and each forewing has two black spots.

**Gnophria (Atolmis) rubricollis**, L. Now very rare. Carlisle district.—Carlisle (Stainton's Manual, i., p. 140, and Morris' Brit. Moths, i., p. 54). T. Armstrong obtained the pupae in winter from the oak by removing the moss (Ent. Weekly Int., vii., p. 30). Woods near "Black Hale" [Blackwell] (T. C. Heysham, Steph. Illust., ii., p. 199). Solway district.—Castletown, near Rockcliffe (T. C. Heysham, Steph. Illust., ii., p. 199). Lake district.—H. A. Beadle records "that W. Greenip captured the species, but that he has never personally come across it." (Ento. Record, vi., p. 277). Taken near Keswick, scarce (G. Mawson). Cumberland.—(Barrett's Brit. Lep. ii., p. 231). Victoria History of Cumberland, i., p. 123.

**Euchelia (Hypocrita) jacobaeae**, L. (Cinnabar). Formerly abundant inland, now very rare. Commoner on the coast. Carlisle district.—(Morris' Brit. Moths, i., p. 58). Kingmoor, Orton (T. C. Heysham, Steph. Illust., ii., p. 198). Carlisle, one specimen (R. Dalton). Moorhouse, scarce (M. C. Dixon). Penrith district.—Wan Fell (H. Britten). Cumberland coast.—(Barrett's Brit. Lep., ii., p. 248). Plentiful on ragwort (*Senecio Jacobaea*) on the coast (G. Mason). Abounds near Ravenglass (F. H. Day), and four specimens at Maryport in 1900 (Victoria History of Cumberland, i., p. 123). Cumberland (Barrett's Brit. Lep., ii., p. 249). This species is usually abundant inland in the South of England; it is scarce in the Midlands. J. E. Robson records "that it used to be abundant on the sand banks and ballast hills beyond Hartlepool, in Durham, but has now disappeared. Its food plant grows everywhere in Cumberland.

#### ARCTIIDÆ

**Nemeophila (Diacrisia) russula**, L. : **sanio**, L. Local, found on the moors. Carlisle district.—(Morris' Brit. Moths, i., p. 61). T. Armstrong records it as plentiful (Ento. Weekly Int., vii., p. 30). Hen Moss, near Orton, and Tarn Wadling (T. C. Heysham, Steph. Illust., ii., p. 198). Newby Cross, Orton (F. H. Day). Orton and Kirkbampton (R. Dalton). Kirkbampton (J. A. Malcolm). Larva and imago not scarce at Kirkbampton (M. C. Dixon). Penrith district.—Barron Wood, Wan Fell, and Lazonby Fell (H. Britten). Lake district.—Not uncommonly locally on heaths at Keswick (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Victoria History of Cumberland, i., p. 123.

**Nemeophila (Parasemia) plantaginis**, L. (Wood Tiger). Locally common. Carlisle district.—(Stainton's Manual, i., p. 146; Morris' Brit. Moths, i., p. 62). T. Armstrong records it as plentiful (Ento. Weekly Int., vii., p. 30). Newby Cross, Orton, Todhills (F. H. Day). Newby Cross, Orton (R. Dalton). Not scarce at Kirkbampton (M. C. Dixon). Brampton district.—Cowran Railway Banks, Gelt Wood, Hayton Moss (G. B. Routledge). Longtown district.—Bolton Fell

(F. H. Day and R. Dalton). Penrith district.—Wan Fell, Lazonby Fell, Great Salkeld, Barron Wood (H. Britten). Lake district.—Common on Skiddaw and several other mountains, Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Keswick Woods (G. Mawson). Keswick (R. Dalton). Borrowdale (H. A. Beadle, Entom., xxv., p. 219). Burmoor and top of Styhead Pass (F. Milton, Entom., xxxii., p. 239). Taken at great elevations on Scawfell and Great Gable by H. Goss.

var. **hospita**, Schiff. This form has all the wings white instead of cream colour or yellow, only males of this form are known. Skiddaw (F. H. Day). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Styhead and Honister Pass (J. A. Malcolm).

**Arctia caia**, L. (Garden Tiger). Common in some districts, larvae more often observed than the moth. Carlisle district.—Durrán Hill, Harker (T. C. Heysham, Steph. Illust., ii., p. 198). Burgh and Orton (G. B. Routledge). Brampton district.—Hayton, often observed about 30 years ago, seldom seen in the district in later years (G. B. Routledge). Penrith district.—Penrith, Great and Little Salkeld, Langwathby (H. Britten). Solway district.—Silloth (F. H. Day). Lake district.—Decidedly not common at Keswick (H. A. Beadle Ento. Record, vi., p. 278). Cumberland coast.—Seascale, (F. H. Day). Formerly common at Parton, near Whitehaven (James Murray). Victoria History of Cumberland, i., p. 123. The larva of this species is familiarly known as the "Woolly-Bear," and is full grown in early June.

**Spilosoma (Phragmatobia) fuliginosa**, L. Carlisle district.—Orton, Newby Cross, Durdar (F. H. Day and R. Dalton). Kingmoor and Wreay (F. H. Day). Not scarce at Kirkbampton (M. C. Dixon). Solway district.—Castletown and Rockcliffe (T. C. Heysham, Steph. Illust., ii., p. 198). Bowness Moss (R. Dalton). Brampton district.—Cowran Railway Banks, Hayton, Hayton Moss, Castlecarrack (G. B. Routledge). Penrith district.—Penrith, Wan Fell, Great and Little Salkeld, Langwathby (H. Britten). Lake district.—Keswick on Ullock Moss, var. **borealis**, Stgr., common on

Skiddaw (H. A. Beadle, Ento. Record, vi., p. 278). Cocker-mouth (W. Robinson, Ent. Weekly Int., ix., p. 60). Victoria History of Cumberland, i., p. 123.

In the South of England the general colour of this species is bright red, the hind wings being very rosy, but as one proceeds northwards a more smoky tint is gradually assumed, until in Scotland the only trace of red colour is found on the inner edge of the hind wings (= var. *borealis*, Stgr.). Most of our Cumberland specimens closely approach this variety.

**Spilosoma (Diaphora) mendica**, Clerck. (The Muslin). In Barrett's work on the Lepidoptera of the British Isles, this species is recorded as occurring on the Cumberland coast (Brit. Lep., ii., p. 281).

This species occurs in Cheshire, Lancashire and Yorkshire, also on the coast of Durham and Northumberland. In Scotland it is common in Aberdeenshire, and is also found in the Solway, Tweed and Tay districts.

**Spilosoma lubricipeda**, Esp. (Buff Ermine). Common in some districts, rare in others. Carlisle district.—Near Etterby (T. C. Heysham, Steph. Illust., ii., p. 198). Carlisle, common but chiefly confined to gardens, the larvæ are fond of feeding on the undersides of rhubarb leaves (F. H. Day). Well Platt, Newtown, and Grinsdale (R. Dalton). Not scarce at Kirkbampton (M. C. Dixon). Common at Harraby (J. A. Malcolm). Penrith district.—Penrith, Great Salkeld, and Langwathby (H. Britten). Wigton district (R. Dalton). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cumberland coast.—Workington (G. Wilkinson, Ent. Record, xix., p. 213). G. Mawson in his West Cumberland list recorded it as plentiful. Victoria History of Cumberland, i., p. 123.

var. **radiata** Haw. A specimen of this form bred from a Cumberland larva by George Dawson (Barrett's Brit. Lep., ii., p. 283).

**Spilosoma menthastri**, Esp. (White Ermine). Generally common, sometimes visiting light in great numbers. Carlisle district.—Common (F. H. Day). Well Platt, Grinsdale (R. Dalton). Kirkbampton (M. C. Dixon). Brampton district.—Hayton,

Castlecarrock (G. B. Routledge). Penrith district.—Great and Little Salkeld, Penrith and Langwathby (H. Britten). Lake district.—Keswick, moderately common. Beadle mentions "that he has several specimens which are almost brown, especially on the forewings" (Ento. Record, vi., p. 278).

var. *walkeri* Curtis. (A form that has the black scales gathered together in streaks along the nervures of the forewings). Several specimens approaching this form have been taken by M. C. Dixon at Burgh. Victoria History of Cumberland, i., p. 123.

The dark-brown hairy larva is often seen crawling on the roads in August and September.

#### HEPIALIDÆ.

**Hepialus humuli**, L. (Ghost Moth). Generally very abundant in the County; the male moths, which are very conspicuous from their white appearance, are to be seen flying in meadows, rough pastures, &c., at dusk. The larva feeds on the roots of plants, and is full grown in May. The moth appears in June and July. Victoria History of Cumberland, i., p. 124.

**Hepialus sylvinus**, L. Locally common. Carlisle district.—(F. H. Day). Grinsdale and American Wood, near Cummersdale (R. Dalton). Brampton district.—Hayton, Hayton Moss, Castlecarrock (G. B. Routledge). Penrith district.—Great Salkeld, common (H. Britten). Lake district.—Not uncommon in Castle Head and Great Woods at Keswick (H. A. Beadle, Ento. Record, vi., p. 283). Common on Skiddaw (Beadle, Ent. Record, xiv., p. 206). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Victoria History of Cumberland, i., p. 124.

**Hepialus velleda**, Hb.; *fusconebulosa*, De Geer. Common on heaths and meadows. Carlisle district.—Common in most localities (F. H. Day). Grinsdale, Orton, Newby Cross (R. Dalton). Common at Kirkbampton (M. C. Dixon). Brampton district.—Hayton, Hayton Moss, Gelt Wood, Castlecarrock (G. B. Routledge). Solway district.—Common at Burgh (M. C. Dixon). Penrith district.—Abundant every-

where (H. Britten). Lake district.—Keswick, common, especially on Skiddaw (H. A. Beadle, Ento. Record, vi., p. 283). Also taken at Keswick (F. H. Wolley Dod, Ento. Record, ii., p. 206; and R. Dalton). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Ennerdale (G. Wilkinson, Ento. Record, xix., p. 223). Seathwaite (J. A. Malcolm). Cumberland coast.—St. Bees and Eskdale (P. J. Barraud, Entom., xl., p. 67).

**ab. gallicus**, Ld. (A uniform reddish variety occurs with the type form not uncommonly). Brampton district.—Hayton and Hayton Moss (G. B. Routledge). Lake district.—Ullock Moss at Keswick (H. A. Beadle, Ento. Record, vi., p. 283). Also occurs in all the other districts. Victoria History of Cumberland, i., p. 124. Before the year 1814, few specimens of *H. velleda* were seen in collections, but in the middle of June of that year a locality was detected at Darenth Wood, Kent.

**Hepialus lupulinus**, L. Locally common. Carlisle district.—Generally common (F. H. Day). Rickerby (T. C. Heysham, Steph. Illust., ii., p. 196). Wilson's Meadow, and Well Flatt (R. Dalton). Kirkbampton, common (M. C. Dixon). Brampton district.—Common at Hayton, Hayton Moss, scarce (G. B. Routledge). Penrith district.—Penrith, Great and Little Salkeld, Barron Wood (H. Britten). Lake district.—Not common at Keswick (H. A. Beadle, Ento. Record, vi., p. 283). Cockermouth (W. Robinson, Ent. Weekly Int., ix., p. 60). Victoria History of Cumberland, i., p. 124.

**Hepialus hectus**, L. Locally common. Carlisle district.—Orton (F. H. Day and R. Dalton). Brampton district.—Hayton, Gelt Wood, Hayton Moss, very common (G. B. Routledge). Penrith district.—Penrith, Great and Little Salkeld, Barron Wood (H. Britten). Solway district.—Rockcliffe and Castle-town (T. C. Heysham, Steph. Illust., ii., p. 196). Lake district.—Common in many woods at Keswick (H. A. Beadle, Ento. Record, vi., p. 283). Seathwaite (J. A. Malcolm). Not uncommon in Cumberland (T. Marshall, Steph. Illust., ii., p. 5). Victoria History of Cumberland, i., p. 124.

## COSSIDÆ.

**Cossus ligniperda**, Fb. Is not often taken in the perfect state, but traces of the larvæ in infested trees are very common. Carlisle district.—Common, occasionally bred (T. Armstrong, Ent. Weekly Int., vii., p. 30). Oakwoods in the neighbourhood of "Black Hole" (Blackwell) and Floses (T. C. Heysham, Steph. Illust., ii., p. 197). Blackwell (F. H. Day). Cornhill, near Grinsdale (R. Dalton). Kirkbampton, Belle Vue (M. C. Dixon). Solway district.—Burgh (M. C. Dixon). Brampton district.—Larvæ taken at Hayton (G. B. Routledge). One moth taken at sugar at Hayton (C. M. Wood). Penrith district.—Larva at Great Salkold (H. Britten). Lake district.—Very rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 283; xiv., p. 206). Victoria History of Cumberland, i., p. 124.

This insect has a peculiar habit. Though it is tongueless it comes to sugar, and may be occasionally taken flying about sugared trees, or sitting on the patch of sweets.

## LYMANTRIIDÆ (Tussock Moths).

**Porthesia similis**, Fues; **auriflua**, F. Does not appear to have been taken in the County for many years. Carlisle district.—Taken by T. C. Heysham in the vicinity of Carlisle (Victoria History of Cumberland, i., p. 124; Stainton's Manual, i., p. 135; and Morris' Brit. Moths, i., p. 70).

This is an abundant species in the South and East of England, and is to be found commonly in the Midlands, and as far north as Lancashire. In Scotland a single specimen was taken on the shores of the Solway Firth, in Kirkcudbrightshire, and another in 1872 in Aberdeenshire. It has also been recorded from Newcastle, in 1829, by W. C. Hewitson (Steph. Illust., ii., p. 18). and since then there have been no further records.

**Leucoma (Stilpnotia) salicis**, L. This species also has not been taken in the County for many years. Carlisle district.—In woods near Cummersdale (T. C. Heysham, Steph. Illust., ii., p. 198). Victoria History, i., p. 124. Formerly it was common in our southern counties and outskirts of London.

Common on the south coast and also on that of Lancashire. Rare in Scotland. Once recorded from Northumberland, and four specimens recorded from Durham.

***Dasychira fascelina*, L.** (Dark Tussock). Moderately common. Carlisle district.—(Stainton's Manual, i., p. 131; Morris' Brit. Moths, i., p. 74). Found on heaths and on birch (G. Dawson, Entom., vi., p. 175). Moderately common at Orton, Durdar, Newby (F. H. Day). Todhills Moss, Orton (R. Dalton). Kirkbampton (M. C. Dixon). Solway district.—Bowness Moss (F. H. Day). Longtown district.—Bolton Fell (F. H. Day and R. Dalton). Brampton district.—Two larvæ on Hayton Moss (G. B. Roulledge). Cumberland (Barrett's Brit. Lep., ii., p. 322; South's Brit. Moths, i., p. 98). Victoria History of Cumberland, i., p. 124.

***Dasychira pudibunda*, L.** (Pale Tussock). Rare. There have been no recent captures in the County. Carlisle district.—"Black-hole" Woods [Blackwell] (T. C. Heysham, Steph. Illust., ii., p. 198). Lake district.—W. Greenip bred the moth from larvæ found on oak (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ent. Weekly Int., ix., p. 60). G. Mawson in his list for West Cumberland records it as rather rare. Cumberland (Barrett's Brit. Lep., ii., p. 320; South's British Moths, i., p. 99). Victoria History of Cumberland, i., p. 124.

Common in the southern half of England extending up to Lancashire, not recorded from Durham or Northumberland, doubtfully recorded from Scotland.

***Orgyia antiqua*, L.** (The Vapourer). Locally common on some of the moors. The female is wingless, and never leaves the cocoon, but lays her eggs on the outside of the cocoon. Carlisle district.—Orton, rare (F. H. Day and R. Dalton). Larva and imago common at Kirkbampton and Thurstonfield (M. C. Dixon). Brampton district.—Hayton, one specimen (G. B. Roulledge). Longtown district.—Occurs in great numbers at Bolton Fell (F. H. Day). Penrith district.—Wan Fell, Great Salkeld, Barron Wood (H. Britten). Not uncommon in West Cumberland (G. Mawson). Victoria History of Cumberland, i., p. 124.

This is an abundant species in most parts of the country, but more especially in and around London.

### LASIOCAMPIDÆ (Lackeys and Eggars).

**Trichiura crataegi**, L. Rare. Carlisle district.—(Stainton's Manual, i., p. 155; Morris' Brit. Moths, i., p. 80). Orton, Hen Moss and Kirkandrews (R. Dalton). Petteril Bank (C. Atkinson). Lake district.—Keswick, rare, taken by W. Greenip (H. A. Beadle, Ento. Record, vi., p. 278). Keswick woods, rather rare (G. Mawson). Cockermouth (W. Robinson, Ent. Weekly Int., ix., p. 60). Victoria History of Cumberland, i., p. 124. Occurs in the South of England, northwards from the Midlands is uncommon, recorded from Silverdale in North Lancashire, not recorded from Westmorland and Northumberland, and no recent records for Durham. Occurs in Scotland as far north as Inverness.

**Poecilocampa populi**, L. (December Moth). Not uncommon, males attracted by light, female rarely observed. Carlisle district.—(T. Armstrong, Ento. Weekly Int., ii., p. 5; Morris' Brit. Moths, i., p. 81). Orton and Carlisle (F. H. Day). Stanwix (R. Dalton). Belle Vue (M. C. Dixon). Carlisle (Hunter, Substitute, p. 16). Brampton district.—Hayton, Castlecarrock (G. B. Routledge). Penrith district.—Penrith, Great and Little Salkeld, Barron Wood, Skirwith (H. Britten). Lake district.—Not common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Derwentwater (W. C. Marshall, Entom., vi., p. 242). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Rather scarce in woods near Cockermouth (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iii., p. 4; South's Brit. Moths, i., p. 114). Victoria History of Cumberland, i., p. 124. The moth is on the wing in October, November and December.

**Eriogaster lanestris**, L. Very rare in the county. Lake district.—Recorded by Beadle as rare at Keswick; he has not personally met with the species (Ento. Record, vi., p. 278). Victoria History of Cumberland, i., p. 124.

Common in the South of England, occurs in Lancashire and Westmorland. In Durham and Northumberland appears to be much rarer than formerly. Very local in Scotland.

**Bombyx (Malacosoma) neustria**, L. (The Lackey). Very rare. Carlisle district.—Davidson's Bank, near Carlisle (T. C. Heysham, Steph. Illust., ii., p. 198). Lake district.—Rare at Keswick (H. A. Beadle, Tutt's Lep., ii., p. 565). Victoria History of Cumberland, i., p. 124.

This species is abundant in England as far north as the north midland counties, and then suddenly ceases: very rare in Cheshire; entirely absent in Scotland.

**Bombyx (Macrothylacia) rubi**, L. (Fox Moth). Common on the moors, male flies in the day-time, female at night. Carlisle district.—T. Armstrong (Ento. Weekly Int., vii., p. 30; Morris' Brit. Moths, i., p. 85). Orton and Kingmoor (R. Dalton). Kirkbampton (M. C. Dixon). Durdar (F. H. Day). Solway district.—Rockcliffe Moss (T. C. Heysham, Steph. Illust., ii., p. 197). Burgh (M. C. Dixon). Brampton district.—Gelt Wood, Hayton Moss, Carlatten (G. B. Routledge). Penrith district.—Wan Fell, Lazonby Fell, Barron Wood, Skirwith (H. Britten). Lake district.—Common amongst ling at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Watendlath (Beadle, Ento. Record, ix., p. 91). Victoria History, i., p. 124. The larvæ are sometimes abundant on the moors in the autumn.

**Bombyx (Lasiocampa) quercus**, L.; var. *callunae*, Palmer. (Northern Eggar). Common on the moors, the males fly during the middle of the day, the females at dusk. Carlisle district.—(Morris' Brit. Moths, i., p. 86). Orton Moss (T. C. Heysham, Steph. Illust., ii., p. 198). Orton, Durdar (F. H. Day). Todhills (R. Dalton). Kirkbampton (M. C. Dixon). Brampton district.—Hayton Moss, Faugh Moss (G. B. Routledge). Longtown district.—Very abundant at Bolton Fell (F. H. Day). Solway district.—Bowness Moss (Day). Penrith district.—Wan and Lazonby Fells, Barron Wood, Great Salkeld (H. Britten). Penrith (Varty). Lake district.—Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Victoria History i., p. 124.

Variation.—H. J. Turner exhibited at the South London Society, in 1899, a fine female variety taken at Carlisle. The basal area was suffused with the male colouration, and the submarginal area semidiaphanous.

The typical form of *B. quercus* has not occurred in the county, only the var. *callunae*.

**Bombyx (Lasiocampa) trifolii**, Esp. Rare and local. Solway district.—Bred from larvæ by G. Dawson (Barrett's Brit. Lep., iii., p. 24). Lake district.—Very rare at Keswick (H. A. Beadle, Ent. Record, vi., p. 278). Bred specimens from Cumberland were exhibited at the London Entomological Society by Frederick Bond, in 1867 (Entom., iii., p. 273). South's Brit. Moths, i., p. 121. Victoria History of Cumberland, i., p. 124. Cumberland is apparently the northern limit of its range in the British Isles.

**Odonestis (Cosmotriche) potatoria**, L. (The Drinker). Local; larvæ frequent grassy hedge banks. Carlisle district.—Near Woodbank (T. C. Heysham, Steph. Illust., ii., p. 198). Carlisle, common (F. H. Day and R. Dalton). Orton (G. B. Routledge). Brampton district.—Rare at Hayton, Hayton Moss (G. B. Routledge). Brampton (Varley). Solway district.—Kirkbride (Miller). Fingland Common (G. B. Routledge). Penrith district.—Very rare at Great Salkeld (H. Britten). Lake district.—Very rare at Keswick (H. A. Beadle, Ent. Record, vi., p. 278). West Cumberland, Cleator Moor (James Murray). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Seascale (F. H. Day). Victoria History of Cumberland, i., p. 124.

#### SATURNIIDÆ.

**Saturnia pavonia**, L.; *carpini*, Schiff. (Emperor Moth). Usually abundant on heaths. Carlisle district.—(Morris' Brit. Moths, i., p. 92). Orton, Durdar, Todhills, Kingmoor (F. H. Day and R. Dalton). Todhills Moss (T. Armstrong, Ento. Weekly Int., ii., p. 5). Kirkbampton (M. C. Dixon). Solway district.—Bowness Flow (R. Cartmel). Solway Flow (Mark Noble, Substitute, p. 16). Fingland (F. H. Day). Longtown district.—Bolton Fell (R. Dalton and J. E. Thwaytes).

Brampton district.—Castlecarrock Fell, Carlatten (G. B. Routledge). Penrith district.—Wan and Lazonby Fells, Great Salkeld, Barron Wood (H. Britten). Penrith (Varty). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Skiddaw (Beadle, Ento. Record, v., p. 226). Dean (G. Wilkinson, Ento. Record, xix., p. 223). Victoria History i., p. 124.

Variation.—Hodgkinson records a fine variety with a black head, and near the shoulder a jet-black patch about three-eighths of an inch in width, taken near the Scotch borderland, in April, 1892 (Entom., xxv., p. 145).

#### DREPANIDÆ (Hook Tips).

**Drepana lacertinaria**, L. Local. Carlisle district.—(Stainton's Manual, i., p. 162; Morris' Brit. Moths, ii., p. 43). Durdar, moderately common at Orton (F. H. Day). Orton (R. Dalton). Durdar (T. C. Heysham, Steph. Illust., iv., p. 5). Lake district.—Common in Ullock Wood, Keswick (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Borrowdale (J. A. Malcolm). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Cumberland (Barrett's Brit. Lep., iii., p. 78). Victoria History, i., p. 125.

**Drepana falcataria**, L. Common in woods amongst birches. Carlisle district.—(Stainton's Manual, i., p. 164; Morris, Brit. Moths, ii., p. 44). Kingmoor, Durdar (F. H. Day). Orton, Kingmoor (R. Dalton). Kirkbampton (M. C. Dixon). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton Moss, Gelt Wood (G. B. Routledge). Penrith district.—Barron Wood, Armathwaite (T. C. Heysham, Steph. Illust., iv., p. 6). Wan and Lazonby Fells, Barron Wood, Great Salkeld (H. Britten). Lake district.—Keswick (F. H. Wolley Dod, Ento. Record, ii., p. 205). Common on Ullock Moss and other woods (H. A. Beadle, Ento. Record, vi., p. 278). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Rare in West Cumberland (G. Mawson). Victoria History of Cumberland, i., p. 125.

***Cilix glaucata***, Scop.: ***spinula***, Schiff. Uncommon as a rule, mostly captured on the wing in the evening along white-thorn hedges. Carlisle district.—Plentiful (T. Armstrong, Ento. Weekly Int., vii., p. 30). Orton Moss (T. C. Heysham, Steph. Illust., iv., p. 9). Kingmoor, Orton, Blackwell, Durdar (F. H. Day). Well Platt, Belle Vue (R. Dalton). Kirkbampton (M. C. Dixon). Harraby, Upperby (J. A. Malcom). Brampton district.—Hayton, Hayton Moss, Castlecarrock, not common (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district. Rather rare, found occasionally about thorn hedges (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Schoose Wood (G. Wilkinson, Ento. Record, xix., p. 224). Rare in West Cumberland (G. Mawson). Victoria History of Cumberland, i., p. 125.

#### PROMINENTS, &c.

***Dicranura (Cerura) bicuspis***, Bork. Barrett records in his British Lepidoptera "that two or three specimens appear to have been taken in Cumberland" (vol. iii., p. 86). Victoria History of Cumberland, i., p. 125.

The first British specimen was obtained at Preston, in Lancashire, in 1847, and recorded by H. Doubleday, Zoologist, 1847; a second example was noted from the same locality in 1849. A male specimen is also recorded from Haverthwaite Moss, near Ulverston, in June, 1905 (C. H. Forsythe, Entom., xxxviii., p. 186).

***Dicranura (Cerura) furcula***, L. Carlisle district.—(Stainton's Manual, i., p. 117; Morris' Brit. Moths, ii., p. 47; J. E. Thwaytes, Entom., xxx., p. 299; R. Cartmell, Substitute, p. 93). Orton, Durdar, Cummersdale (F. H. Day). Brampton district.—One specimen Hayton Moss (G. B. Routledge). Penrith district.—Wan and Lazonby Fells, Barron Wood, Great Salkeld (H. Britten). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Rare in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iii., p. 90). Victoria History, i., p. 125.

**Dicranura (Cerura) bifida**, Hb. Rare. Carlisle district.—Morris' Brit. Moths, ii., p. 49. T. Armstrong records having taken larvæ in September, (Ento. Weekly Int., vii., p. 30). Penrith district.—Great Salkeld (H. Britten). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Rare in West Cumberland (G. Mawson). Victoria History, i., p. 125. The county is its northern limit in the west, Haitlepool in Durham, in the east of England.

**Dicranura vinula**, L. (Puss Moth). Generally distributed and not uncommon. Carlisle district.—Carlisle (J. E. Thwaytes, Entom., xxx., p. 299). Bunker's Hill, Grinsdale and Orton (R. Dalton). Durdar (F. H. Day). Harraby Knells (T. C. Heysham, Steph. Illust., ii., p. 197). Brampton district.—Brampton (T. C. Heysham, Steph. Illust., ii., 197). Hayton, Hayton Moss, Castlecarrock (G. B. Routledge). Solway district.—Burgh (M. C. Dixon). Penrith district.—Barron Wood (T. Armstrong, Ento. Weekly Int., ii., p. 4). Great Salkeld, Langwathby, Wan Fell, Lazonby, Barron Wood (H. Britten). Lake district.—Only occasionally found at Keswick, owing to having so few poplars in the district (H. A. Beadle, Ento. Record, vi., p. 278). Victoria History, i., p. 125.

**Pterostoma palpina**, L. Rather scarce. Carlisle district.—(Stainton's Manual, i., p. 120; Morris' Brit. Moths, ii., p. 55). Cummersdale, Orton (R. Dalton). Penrith district.—(H. Britten). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Derwentwater (W. C. Marshall, Entom., vi., p. 242). Rare in West Cumberland (G. Mawson). Cumberland.—Victoria History, i., p. 125; South's Brit. Moths, i., p. 81.

**Lophopteryx camelina**, L. Fairly common. Carlisle district.—Orton, Durdar, Newbiggin (F. H. Day). Orton, Well Flatt (R. Dalton). Botcherby, Newby Cross, Carleton (J. A. Malcolm). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Gelt Wood (F. H. Day). Penrith district.—Barron Wood, Great Salkeld, Langwathby (H.

Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Derwentwater (W. C. Marshall, Entom., vi., p. 242). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Victoria History i., p. 25.

**Lophopteryx (Odontosia) carmelita**, L. Rare. Carlisle district.—(Stainton's Manual, i., p. 124 ; Morris' Brit. Moths, ii., p. 57). Lake district.—Keswick (J. B. Hodgkinson, Zool., 1844, p. 666). Beadle records it "as having been taken at intervals for a good many years back" (Ento. Record, vi., p. 278). Eight specimens were captured near Keswick, in April, 1861, (J. S. Mawson, Zool., p. 7,569 ; also Entomologist's Annual, 1862, p. 115). Derwentwater, six moths bred from pupæ (W. C. Marshall, Entom., vi., p. 242). Cockermouth, "from April 10 to 21 is the best time to find this insect ; found upon trunks of birch or oak trees about mid-day, from four to six feet up the stem" (G. Mawson, Entom., ii., p. 151). Victoria History of Cumberland, i., p. 125.

This species occurs in Kent, Sussex, Surrey, Hants, and Berkshire, and there is no record of its capture in any of the intermediate counties of England, until Cumberland is reached.

**Notodonta (Pheosia) dictæa**, L. ; **tremula**, Clerck. Local. Carlisle district.—(Stainton's Manual, i., p. 123 ; Morris' Brit. Moths, ii., p. 57). Carlisle (J. E. Thwaytes and R. Dalton). Newby Cross (T. Gilbertson). Solway district.—Rockcliffe (T. C. Heysham, Steph. Illust. ii., p. 197). Penrith district.—Wan Fell (H. Britten). Penrith (L. E. Hope). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Rather scarce (G. Mawson). Victoria History, i., p. 125.

**Notodonta (Pheosia) dictæoides**, Esp. Locally common. Carlisle district.—Houghton Moss (R. Cartmell, Substitute, p. 16). Durdar (F. H. Day and R. Dalton). Penrith district.—Wan Fell (H. Britten and F. H. Day). Penrith (L. E. Hope). Barron Wood (T. Armstrong, Ento. Weekly Int., ii., p. 25). Lake district.—Keswick (F. H. Wolley Dod, Ento. Record, ii., p. 206 ; H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60 ; Stain

ton's Manual, i., p. 123 ; Morris' Brit. Moths, ii., p. 58).  
Cumberland.—(Barrett's Brit. Lep., iii., p. 111. Victoria  
History, i., p. 125.

**Notodonta dromedarius**, L. Local. Carlisle district.—(T. Armstrong, Ento. Weekly Int., vii., p. 30 ; Morris' Brit. Moths, ii., p. 59 ; Stainton's Manual, i., p. 119). Orton, Durdar (F. H. Day). Penrith district.—Penrith, Wan Fell, Barron Wood (H. Britten). Wan Fell (F. H. Day). Lake district.—Keswick (H. A. Beadle, Ento. Record, vi., p. 278 ; Entom., xxvi., p. 197). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Scarce in West Cumberland (G. Mawson). Victoria History, i., p. 125.

Variation.—var. *perfusca*, Stp. Found in Cumberland (Barrett's Brit. Lep., iii., p. 127).

**Notodonta ziczac**, L. Widely distributed. Carlisle district.—(Stainton's Manual, p. 299 ; Morris' Brit. Moths, ii., p. 60 ; J. E. Thwaytes, Entom., xxxi., p. 299). Durdar, Cummersdale (F. H. Day). Brampton district.—Hayton, Tarn Lodge (G. B. Routledge). Penrith district.—Great Salkeld, Barron Wood (H. Britten). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Rare in West Cumberland (G. Mawson). Victoria History, i., p. 125.

**Notodonta trepida**, Esp. Very rare. Carlisle district.—(Stainton's Manual, i., p. 126 ; Morris' Brit. Moths, ii., p. 61). Lake district.—Two specimens taken at Keswick, and several by W. Greenip (H. A. Beadle, Ento. Record, vi., p. 278 ; Entom., xxvi., p. 197). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Cumberland.—A specimen taken in the County in G. Dawson's collection (Barrett's Brit. Lep., iii., p. 121). Victoria History, i., p. 125.

**Notodonta (Drymonia) chaonia**, Hb. Very rare. Carlisle district.—(Stainton's Manual, i., p. 121 ; Morris' Brit. Moths, ii., p. 61). Lake district.—Cockermouth (Stainton's Manual, i., p. 121 ; Morris' Brit. Moths, ii., p. 61). Specimens bred (W. Robinson, Ento. Weekly Int., ix., p. 60), also in G. Mawson's list. Keswick (F. H. Wolley-Dod, Ento. Record, ii., p. 206 ; H. A. Beadle, Ento. Record, xiv., p. 205). Cumberland.—(Barrett's Brit. Lep., iii., p. 132). Victoria History, i., p. 125.

Scarce species in the North of England.

**Notodonta (Drymonia) trimacula**, Esp. Very rare in the County. Lake district.—Cockermouth (Stainton's Manual, i., p. 121; Morris' Brit. Moths, ii., p. 62). G. Mawson in his West Cumberland list says: "that it is rare." Keswick (H. A. Beadle, Ento. Record, xiv., p. 205). Derwentwater (W. C. Marshall, Entom., vi., p. 242). Cumberland.—(Newman's Brit. Moths, p. 234). Victoria History, i., p. 125.

**Phalera bucephala**, L. (Buff-tip). Common in the county in all the districts. Taken at Cummersdale, Rockcliffe, Orton (T. C. Heysham, Steph. Illust., ii., p. 197). This insect when at rest is remarkable for its resemblance to a broken bit of stick. Victoria History i., p. 125.

**Pygaera curtula**, L. Rare. No records of its capture since 1859. Carlisle district.—(Stainton's Manual, i., p. 127; Morris' Brit. Moths, ii., p. 52). Recorded as plentiful (T. Armstrong, Ento. Weekly Int., vii., p. 30). Scaleby Moss (R. Cartmel, Substitute, p. 93). Cumberland.—(Barrett's Brit. Lep., iii., p. 169; South's Brit. Moths, i., p. 83). Victoria History, i., p. 125.

**Pygaera pigra**, Hufn. Locally common. Carlisle district.—Plentiful at Carlisle (T. Armstrong, Ento. Weekly Int., vii., p. 30). Durdar, Orton, sometimes extremely common in the larval state on dwarf sallows (F. H. Day). Orton (R. Dalton). Houghton Moss (R. Cartmel, Substitute, p. 93). Carlisle (Stainton's Manual, i., p. 127; Morris' Brit. Moths, ii., p. 53). Longtown district.—Bolton Fell (F. H. Day). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (Newman's Brit. Moths, p. 223). G. Mawson records it as uncommon in his West Cumberland list. Cumberland.—(Barrett's Brit. Lep., iii., p. 175); Victoria History, i., p. 125.

### THYATIRIDÆ.

**Thyatira (Habrosyne) derasa**, L. Very local. Lake district.—Keswick, common at sugar (H. A. Beadle, Ento. Record, vi., p. 278). Perhaps its most northern limit. Has been recorded from Jesmond, in Northumberland, and Gibside, in Durham; only a single record from Scotland at Gourock (P. Cameron).

**Thyatira batis**, L. Fairly common at sugar. Carlisle district.—(Morris' Brit. Moths, ii., p. 64). Durdar (T. C. Heysham, Steph. Illust., iii., p. 325). Durdar, Orton, Newby Cross (F. H. Day). Kingmoor (R. Dalton). Solway district.—Burgh (M. C. Dixon). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Barron Wood (T.C.H., Steph. Illust., iii., p. 325; T. Armstrong, Ento. Weekly Int., ii., p. 5). Lake district.—Keswick, not so common as **T. derasa** (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Borrowdale (R. Dalton). Seathwaite (J. A. Malcolm). Derwentwater, came freely to sugar (W. C. Marshall, Entom., iv., p. 201). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Cumberland.—(Barrett's Brit. Lep., iii., p. 192). Victoria History, i., p. 125).

Variation.—I have taken var. *juncta*, Tutt (two rosy spots at costa joined together (G.B.R.)).

**Cymatophora (Palimpsestis) or**, Fb. Local. Carlisle district.—Orton, Newby Cross (F. H. Day, R. Dalton, M. C. Dixon, J. A. Malcolm). Durdar (F. H. Day). Brampton district.—Hayton, one specimen at sugar (G. B. Routledge). Longtown district.—Hethersgill (J. A. Malcolm). Lake district.—Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Scarce in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iii., p. 201; Victoria History, i., p. 125).

**Cymatophora (Palimpsestis) duplaris**, L. Not uncommon amongst birch trees. Carlisle district.—Orton (F. H. Day, R. Dalton, M. C. Dixon). Durdar (F. H. Day). Red Cat (J. A. Malcolm). Brampton district.—Hayton Moss (G. B. Routledge). Penrith district.—Wan Fell, Great Salkeld, Barron Wood (H. Britten). Lake district.—Moderately common at Keswick (H. A. Beadle, Ento. Record, vii., p. 89). Ullock Moss (H.A.B., Ento. Record, vi., p. 278). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Victoria History, i., p. 125.

**Cymatophora (Palimpsestis) fluctuosa**, Hb. Very local. Lake district.—Moderately common at Keswick (H. A. Beadle,

Ento. Record, vii., p. 89 ; ix., p. 91), also taken at sugar on a Moss near Keswick by H. Goss (Victoria History, i., p. 125). Borrowdale and Seathwaite (R. Dalton). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Seathwaite (J. A. Malcolm). G. Mawson records it as rare. Cumberland.—Two specimens taken by George Dawson (Barrett's Brit. Lep., iii., p. 198). South's Brit. Moths, i., p. 91.

This species is similar to *C. duplaris*, but is slightly larger in size, has whiter ground colour, and the two black dots from the edge of the band are absent. Keswick, so far as is known, is its most northerly locality.

***Asphalia diluta*, F.** Local, not very common. Carlisle district.—Scarce at Orton (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, never common (G. B. Routledge). Lake district.—Common at sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Cumberland.—(Barrett's Brit. Lep., iii., p. 207). Victoria History, i., p. 125.

***Asphalia (Polyploca) flavicornis*, L.** Found in March resting on the main stems of birch bushes. Carlisle district.—Durdar, Orton, Kingmoor (F. H. Day). Hen Moss, Orton, Kingmoor (R. Dalton). Solway district.—Burgh (M. C. Dixon). Brampton district.—Hayton Moss (G. B. Routledge). Penrith district.—Wan Fell, Great Salkeld, larvæ abundant on birch at Barron Wood (H. Britten). Keswick (G. Mawson, Ento. Weekly Int., x., p. 43). Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Victoria History, i., p. 125.

***Asphalia (Polyploca) ridens*, F.** Rare and local. Carlisle district.—(Morris' Brit. Moths, ii., p. 68). Lake district.—Cockermouth (Morris', ii., p. 68). Cockermouth, specimens captured April 27th, 1856, by C. S. Gregson (Ento Weekly Int., i., p. 45), specimens bred by W. Robinson (Ento. Weekly Int., ix., p. 60). Keswick (G. Mawson, Ento. Weekly Int., x., p. 43), rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Derwentwater (W. C. Marshall, Entom., vi., p. 242). Cumberland.—(Barrett's Brit. Lep., iii., p. 214 ; South's Brit.

Moths, i., p. 94). Victoria History, i., p. 125. G. Mawson records "that the 15th of April is the best time for its search, it is taken upon the trunk of the oak tree, mostly from one to four feet up" (Entom., ii., p. 151). Cumberland is apparently the most northern locality in Great Britain for this species, and it has not been recorded from Scotland.

### DOUBTFUL RECORDS.

The six following species require further confirmation before being admitted to the *Cumberland* list.

**Ino (Rhagades) globulariae**, Hb. Recorded from Oton Moss (W. F. Kirby, Ento. Weekly Int., vii., p. 67). Probably erroneous and wants confirmation (Tutt's Brit. Lep., i., p. 413). West Cumberland, uncommon (G. Mawson). This species is only known to occur in Kent and Sussex.

**Zygaena (Anthrocera) trifolii**, Esp. West Cumberland, very common (G. Mawson). Common in the southern counties, and local in Lancashire and Yorkshire.

**Hylophila bicolorana**, Fues.; **quercana**, Schiff. Carlisle district.—"Frequently met with" (T. Armstrong, Ento. Weekly Int., vii., p. 30). J. B. Hodgkinson says "that this record is an error" (Ento. Weekly Int., vii., p. 102). There are no records further north than Herefordshire and Worcestershire.

**Spilosoma urticae**, Esp. Scarce in Cumberland (G. Mawson). Occurs in North Lancashire, and has been recorded from the Solway and Clyde districts of Scotland.

**Drepana binaria**, Hufn.; **hamula**, Esp. Carlisle (Stainton's Manual, i., p. 164; Morris' Brit. Moths, ii., p. 45). Cumberland (Meyrick's Handbook of British Lepidoptera, p. 318). Widely distributed in the southern and eastern counties; its most northern locality seems to be in Lincolnshire. One record of its appearance at Jesmond, in Northumberland. Not recorded in Yorkshire or Lancashire; not known in Scotland.

**Drepana cultraria**, F.; **unguicula**, Hb. Recorded by G. Mawson as rare in his West Cumberland list. Found in our southern counties; no records from our northern counties.

## NOCTUIDÆ.

**Bryophila perla**, F. Found on old walls, larva feeds on lichens growing on old walls from August to May. Carlisle district.—Common (F. H. Day). Harraby, Newtown, Carlisle (J.A. Malcolm). Light form occurs on Barrock Fell (G. Wilkinson, Ento. Record, xviii., p. 105). Brampton district.—Hayton (Mrs. M.G. Routledge, Entom., xxi., p. 280). Tarn Lodge, not common (G. B. Routledge). Penrith district.—Plentiful on walls (H. Britten). Lake district.—Occasionally found at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Common in West Cumberland (G. Mawson). Victoria History, i., p. 126. The forms that I have taken are near the form var. **suffusa**, Tutt (G.B.R.).

**Demas coryli**, L. Rare and very local. Lake district.—Several taken at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Victoria History, i., p. 126. Not uncommon in several localities in Scotland.

**Acronycta tridens**, Schiff. Rare. Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Rare in West Cumberland (G. Mawson). Victoria History, i., p. 126. There is a single record of its occurrence in Scotland (Solway district) by Dr. F. B. White.

**Acronycta psi**, L. Very common. Carlisle district.—Holme Hill (T. C. Heysham, Steph. Illust., iii., p. 325). Durdar, Wreay, Grinsdale, Todhills (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Solway district.—Rockcliffe (T. C. H., Steph. Illust., iii., p. 325). Longtown district.—Bolton Fell (F. H. Day). Penrith district.—Widely distributed (H. Britten). Lake district. Generally common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Wastwater (F. H. Day). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Honister (G. Wilkinson, Ento. Record, xix., p. 224). West Cumberland, common (G. Mawson). Cumberland coast.—Schoose Wood, Workington (G. Wilkinson, Ento. Record, xix., p. 224). Victoria History, i., p. 126.

Variation.—I have taken var. *juncta*, Tutt, and for the first time, in 1911, one specimen of var. *suffusa*, Tutt at Tarn Lodge (G.B.R.).

***Acronycta leporina*, L.** Not very common, taken at sugar. Carlisle district.—(Morris' Brit. Moths, ii., p. 72; J. B. Hodgkinson, Zool., v., p. 1,883). Carlisle (T. Armstrong, Ento. Weekly Int., vii., p. 30; G. Wilkinson, (British Naturalist, 1894, p. 201). Holme Head, Durdar, Orton (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Not uncommon (H. Britten). Lake district.—Taken occasionally at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Wythop (O. Whittaker, Entom., xxiii., p. 356). Cocker mouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Scarce in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iii., p. 229). Victoria History, i., p. 126).

***Acronycta megacephala*, F.** Local. Carlisle district.—Blackhall Wood (T. C. Heysham, Steph. Illust., iii., p. 325). Orton, Newby Cross (F. H. Day). Brampton district.—A few taken at Tarn Lodge (G. B. Routledge). Penrith district.—Moderately common (H. Britten). Not uncommon in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iii., p. 236; Victoria History, i., p. 126).

***Acronycta (Craniophora) ligustri*, F.** Somewhat local, larva found on ash trees. Carlisle district.—(Morris' Brit. Moths, ii., p. 76; J. B. Hodgkinson, Zool., v., p. 1,883). Brampton district.—Several at Tarn Lodge and Hayton (G. B. Routledge). Penrith district.—(H. Britten). Lake district.—Keswick, not uncommon by the river (H. A. Beadle, Ento. Record, vi., p. 278). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Seathwaite (J. A. Malcolm, M. C. Dixon, Ento. Record, xiv., p. 49). Not often met with in West Cumberland (G. Mawson). Victoria History, i., p. 126.

Variation.—I have taken the type form and also var. *coronula*, Haw., and var. *olivacea*, Dobrée (G.B.R.).

**Acronycta rumicis**, L. The most abundant of the genus in the county. Carlisle district.—(Morris' Brit. Moths, ii., p. 76). Neal House (T. C. Heysham, Steph. Illust., iii., p. 325). Orton, Durdar (F. H. Day). Cummersdale, Newby Cross, Todhills (J. A. Malcolm). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Very abundant (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Seathwaite (J. A. Malcolm); (M. C. Dixon, Ento. Record, xiv., p. 49). Not uncommon in West Cumberland (G. Mawson). Victoria History, i., p. 126.

**Acronycta menyanthidis**, View. On moors and mosses. Carlisle district.—(Morris' Brit. Moths, ii., p. 77). Durdar, Orton, Newby Cross (F. H. Day). Todhills (Day and J. A. Malcolm). Carlisle (G. Wilkinson, Ento. Record, xix., p. 212). Longtown district.—Bolton Fell (J. E. Thwaytes, Entom., xxx., p. 250; F. H. Day). Brampton district.—Gelt Wood, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Wan and Lazonby Fells (H. Britten). Taken occasionally in West Cumberland (G. Mawson). Cumberland.—Barrett's Brit. Lep., iii., p. 257. Victoria History, i., p. 126.

**Diloba caeruleocephala**, L. Locally common, larvæ abundant on hawthorn and crab. Carlisle district.—(Morris' Brit. Moths, ii., p. 62). Carlisle (— Hunter, Substitute, p. 51). Wreay, Belle Vue, Stanwix (F. H. Day). Upperby (J. A. Malcolm). Brampton district.—Walton Moss, Tarn Lodge, (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Rather common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Keswick (G. B. Routledge). Cocker-mouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Common in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iii., p. 178; South's Brit. Moths, i., p. 266). Victoria History, i., p. 126.

**Leucania (Chabuata) conigera**, F. Carlisle (T. Armstrong, Ento. Weekly Int., vii., p. 30). Grinsdale and Harraby (J. A. Malcolm). Carlisle (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Pen-

rith district.—Common (H. Britten). Lake district.—Not uncommon at Keswick (H. A. Beadle, Ento. Record vi., p. 278). Plentiful in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 66). Victoria History, i., p. 126.

**Leucania (Sideridis) lithargyria**, Esp. Visits flowers and comes to sugar. Carlisle district.—Kingmoor, Durdar (F. H. Day, Ento. Record, ix., p. 182). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Common everywhere in the Penrith district (H. Britten). Lake district.—Not uncommon at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Not uncommon in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 66). Victoria History, i., p. 126.

**Leucania littoralis**, Curt. No recent captures; a coast species. Cumberland coast.—“In 1827 Mr. Weaver took several specimens on the coast of Cumberland, where it may be presumed to be a maritime species” (T. C. Heysham, Steph. Illust., iii., p. 74). Humphrey Westwood's Brit. Moths, i., p. 217. Wood's Index Entomologicus, p. 67. Uncommon in West Cumberland (G. Mawson). Victoria History, i., p. 126.

**Leucania impudens**, Hb.; **pudorina**, Hb. No recent captures. Carlisle district.—Cardew Mire (T. C. Heysham, Steph. Illust., iii., p. 326). Scarce in West Cumberland (G. Mawson). Victoria History, i., p. 126. First recorded as British in 1821, when a single example was captured in June in the New Forest. (Cardew Mire has now been drained, and the Maryport and Carlisle Railway runs over the site between Dalston and Curthwaite Stations),

**Leucania (Cirphis) comma**, L. Carlisle district.—Durdar, Grinsdale (F. H. Day). Cummersdale (J. A. Malcolm). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton Moss, Hayton, Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Plentiful in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 155). Victoria History, i., p. 126.

**Leucania impura**, Hb. Common in reed beds and marshy ground in July. Carlisle district.—Common (F. H. Day and J. A. Malcolm). Little Orton (T. C. Heysham, Steph., Illust., iii., p. 326). Brampton district.—Hayton, Hayton Moss (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Common in West Cumberland (G. Mawson). Victoria History, i., p. 126.

**Leucania pallens**, L. Common at sugar in July and August. Carlisle district.—Very common, red form occasionally taken (F. H. Day). Durdar (T. C. Heysham, Steph. Illust., iii., p. 76). Solway district.—Rockcliffe (T.C.H., Steph. Illust., iii., p. 76). Brampton district.—Common (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Common at sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Common in West Cumberland (G. Mawson). Cumberland coast.—Schoose Wood, near Workington (G. Wilkinson, Ento. Record, xix., p. 224). Victoria History, i., p. 126.

**Tapinostola fulva**, Hb. Common in damp meadows in August and September, flies freely at dusk. Carlisle district.—Durdar, Orton, Todhills (F. H. Day). Harraby, Red Cat (J. A. Malcolm). Brampton district.—Hayton Moss (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278; xiv., p. 205). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Rather rare in West Cumberland (G. Mawson). Cumberland coast.—Seascale (Rev. W. G. Whittingham, Entom., xl., p. 157). Victoria History, i., p. 126.

Variation.—I have met with var. *ochracea-suffusa*, Tutt; var. *punicea-suffusa*, Tutt; and var. *fluxa*, Tr., on Hayton Moss (G.B.R.).

**Nonagria arundinis**, F.; **typhae**, Esp. Found in ponds among Reed-mace (*Typha latifolia*), larva feeds in the stems. Carlisle district.—A single specimen taken at light on the railway in Carlisle, in 1898, by J. E. Thwaytes (Victoria History, i., p. 126). Common in the brickfields amongst Reed-mace at Upperby (F. H. Day and J. A. Malcolm). Solway district.—Long Burgh (J. A. Malcolm). Victoria History i., p. 126.

**Gortyna (Ochria) ochracea**, Hb.; **flavago**, Esp. Rare in West Cumberland (G. Mawson). In the Ento. Weekly Int., vii., p. 30, T. Armstrong records the larvæ of *Hydroecia petasitis*, as common in the Burdock (*Arctium lappa*) in Cumberland. That species is not known to feed in the stems of that plant, and it is probable that he found the larva of *G. ochracea*. This species has occurred at Ulverston, in North Lancashire.

**Hydroecia (Gortyna) nictitans**, Bork. Carlisle district.—Abundant at Orton, scarce at Durdar (F. H. Day). Orton (J. A. Malcolm). Solway district.—Silloth (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Common at Keswick, the only form taken is large, with very distinct markings, and a red reniform (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Not uncommon in West Cumberland (G. Mawson). Victoria History, i., p. 126.

**Hydroecia (Gortyna) petasitis**, Dbl. Very local in its distribution, the larva feeding in the roots of the butterbur (*Petasites vulgaris*). Carlisle district.—(Morris' Brit. Moths, ii., p. 94). Abundant, the larvæ common on Butterbur (T. Armstrong, Ento. Weekly Int., vii., p. 30; Entom. Annual, 1860, p. 140). One specimen near Cummersdale, in August, 1893 (F. H. Day). Lake district.—Cockermouth, bred (W. Robinson, Ento. Weekly Int., ix., p. 61). Rather rare in West Cumberland (G. Mawson). Victoria History, i., p. 126.

**Hydroecia (Gortyna) micacea**, Esp. Common. Carlisle district.—Cummersdale (T. C. Heysham, Steph. Illust., iii., p. 326). Carlisle (F. H. Day). Harraby (J. A. Malcolm, Entom., xxxvi., p. 142). Brampton district.—Hayton, Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Taken at sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Rather rare in West Cumberland (G. Mawson). Victoria History, i., p. 126. I have taken the type form and var. **brunnea**, Tutt. (G.B.R.).

**Axylia putris**, L. Rather scarce. Carlisle district.—(Morris' Brit. Moths, ii., p. 95). Occasionally by dusking and at

sugar (F. H. Day). Harraby, Newtown and Cummersdale (J. A. Malcolm). Brampton district.—Rare at Hayton and Tarn Lodge (G. B. Routledge). Scarce in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 66). Victoria History, i., p. 126. This species seems to be very rare in Northumberland and Durham.

**Xylophasia rurea**, F. Common. Carlisle district.—Common (F. H. Day, J. A. Malcolm). Brampton district.—Common (G. B. Routledge). Longtown district.—Bolton Fell (F. H. Day). Penrith district.—Abundant, var. *combusta* also occurs (H. Britten). Lake district.—Type form and var. *combusta* occur at Keswick (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Crummock (G. Wilkinson, Ento. Record, xix., p. 224). Common in West Cumberland (G. Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 213). Cumberland.—Victoria History, i., p. 126. Barrett records a pretty form found in Cumberland by G. B. Routledge (Brit. Lep., iv., p. 370). Variation.—I have met with the type form, also var. *ochrea*, Tutt, and var. *combusta*, Haw. (G.B.R.).

**Xylophasia lithoxylea**, F. Common. Carlisle district.—Wreay, Orton (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Of frequent occurrence in West Cumberland (G. Mawson). Cumberland coast.—Scale Hill, Workington (G. Wilkinson, Ento. Record, xix., p. 224). St. Bees (P. J. Barraud, Entom., xl., p. 66). Victoria History, i., p. 126.

**Xylophasia sublustris**, Esp. Very local. Penrith district.—Great Salkeld, not uncommon (H. Britten). Lake district.—Occasionally taken at sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Rarer than *X. lithoxylea* in West Cumberland (G. Mawson). Victoria History, i., p. 126.

**Xylophasia monoglypha**, Hufn.; **polyodon**, L. Very common. Carlisle district.—vars. *aethiops* and *infuscata* not scarce (F.

H. Day). Longtown district.—Bolton Fell (J. E. Thwaytes, Entom., xxx., p. 250). Brampton district.—Common (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Excessively abundant at sugar at Keswick, very variable from lightish grey to black (H. A. Beadle, Ento. Record, vi., p. 278; ix., p. 91). Wythop (O. Whittaker, Entom., xxxiii., p. 356). Common everywhere in West Cumberland (G. Mawson). Cumberland coast.—Dark and intermediate forms at St. Bees (P. J. Barraud, Entom., xl., pp. 19, 16; Ento. Mo. Mag., xliii., p. 19). Victoria History, i., p. 126.

Variation.—I have the type form (abundant) also vars. *obscura*, Tutt; *brunnea*, Tutt; *infuscata*, Tutt, and *aethiops*, Stdgr., all vars. not uncommonly (G.B.R.). These black varieties seem to commence in the Northern Midlands, and are common in South Yorkshire, while in Scotch localities they predominate though the brown forms occur. The black form was considered a rare form in 1857.

**Xylophasia hepatica**, L. Seldom common. Carlisle district.—Scarce at Newbiggin and Upperby (F. H. Day, Ento. Record, xiv., p. 276). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, rare (G. B. Routledge). Penrith district.—Rare (H. Britten). Lake district.—Uncommon at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Rare in West Cumberland (G. Mawson). Victoria History, i., p. 126. Cumberland.—(Barrett's Brit. Lep., iv., p. 375). Variation.—I have taken vars. *epomidion*, Haw, and *charactea*, Hb. (G.B.R.). This species is far from common in the neighbouring counties, and there is only one record from Scotland, in the Tweed district.

**Xylophasia scolopacina**, Esp. Very rare; no recent captures. Carlisle district.—(Morris' Brit. Moths, ii., p. 99). Penrith district.—Barron Wood (T. Armstrong, Ento. Weekly Int., ii., p. 5). Rare in West Cumberland (G. Mawson). Cumberland (Barrett's Brit. Lep., iv., p. 379). This species is plentiful in South Yorkshire, round Sheffield and Rotherham. Very rare in Lancashire; no records from Durham, Northumberland, and Scotland.

**Dipterygia scabriuscula**, L. ; **pinastri**, L. Local and rare. Carlisle district.—“ Many years ago several were taken near Carlisle by Mr. Jardine ” (F. H. Day). Lake district.—Taken at sugar in Castle Head Wood, Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Rare in West Cumberland (G. Mawson). Cumberland.—Found in one wood (Barrett's Brit. Lep., v., p. 33). Victoria History, i., p. 126. This species is rare in Lancashire, not recorded from Durham and Northumberland. In Scotland recorded by Dr. F. B. White in Aberdeenshire and Moray only.

**Neuronia (Epineuronia) popularis**, F. Common, comes freely to gas lamps, males only ; females may be found sitting after dark upon grasses. Carlisle district.—Boustead's Grassing (F. H. Day). Brampton district.—Common at Hayton and Tarn Lodge (G. B. Routledge). Penrith district.—Males very common (H. Britten). Solway district.—Silloth (F. H. Day). Lake district.—Very common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Not uncommon in West Cumberland (G. Mawson). Victoria History, i., p. 126.

**Charaeas graminis**, L. Very common in meadows, males come freely to light. Carlisle district.—Very abundant (F. H. Day). Denton Holme (T. C. Heysham, Steph. Illust., ii., p. 199). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Solway district.—Silloth (F. H. Day). Penrith district.—Abundant (H. Britten). Lake district.—Very common at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Skiddaw (Morris' Brit. Moths, ii., p. 103). Honister (M. C. Dixon, Ento. Record, xiv., p. 49). Not uncommon in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 126.

Variation.—I have taken var. *gramineus*, Haw, and I have taken forms approaching vars. *rufa*, Tutt, and *rufa-costata*, Tutt. (G.B.R.).

In the Entomological Magazine of 1833, vol. i., p. 200, Mr. George Wailes has published some remarks on this moth :—“ Some years ago (in 1824, I believe) during the spring and early summer, the herbage of a large portion of

Skiddaw, comprising at least fifty acres, and extending some distance down the western side of the mountain, was observed, even from the town of Keswick, to assume a dry and parched appearance; and so marked was the line that the progress made by the larvæ down the mountain could be distinctly noted. Nor was the change of colour of the herbage the only thing that attracted the attention of the inhabitants of Keswick, large flocks of rooks preyed on the caterpillars day after day. Though the larvæ must have been greatly reduced, yet in August the moths swarmed throughout the neighbourhood. So completely was the vegetation destroyed that, on a visit to the spot in 1830, the extent of their ravages was distinctly visible, being very similar to the effect produced by the burning of heather, which is so much practised on our hills. Of course the quality of the newly-grown herbage was materially improved, thus affording another instance of indirect advantages derived from insects."

**Cerigo matura**, Hufn. Rare at sugar and comes to gas lamps in July and August. Carlisle district.—(Morris' Brit. Moths, ii., p. 105; J. B. Hodgkinson, Zool., v., p. 1,883). Scarce, several at light (F. H. Day). Solway district.—Silloth (G. Wilkinson). Brampton district.—Very scarce at sugar, Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Only one specimen (H. Britten). Rare in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 126.

**Luperina testacea**, Hb. Local, comes freely to light, never found at sugar. Carlisle district.—Very common at street lamps (F. H. Day, J. A. Malcolm). Solway district.—Pupæ under stones on the sandhills at Silloth (F. H. Day). Brampton district.—Hayton and Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Taken occasionally at Keswick (H. A. Beadle, Ento. Record, vi., p. 278; xiv., p. 206). Rather rare in West Cumberland (G. Mawson). Victoria History, i., p. 127. Variation.—I have taken the type form and also var. *lunato-strigata*, Haw. (G.B.R.).

- Luperina (Tholera) cespitis**, L. Occurs at light, not common. Carlisle district.—Several taken by C. Eales, and one bred from a larva taken at Wreay (F. H. Day). Brampton district.—Several taken at light at Hayton and Tarn Lodge (G. B. Routledge). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 278). Rare in West Cumberland (G. Mawson). Cumberland coast.—Eskdale (Rev. W. G. Whittingham, Entom., xl., p. 157). Cumberland.—(Barrett's Brit. Lep., iv., p. 141). Victoria History, i., p. 127.
- Mamestra (Hama) sordida**, Bork.; **anceps**, Hb. West Cumberland.—Not plentiful (G. Mawson). Cumberland coast.—Eskdale (P. J. Barraud, Entom., xl., p. 67).
- Mamestra albicolon**, Hb. Very rare. Of this species J. F. Stephens writes in 1829 :—"Of this plain, but remarkably distinct insect, I have seen six specimens only, which were captured in August, 1827, by Mr. Weaver, in Cumberland" (Steph. Illust., ii., p. 195). Humphrey and Westwood's Brit. Moths, i., p. 175; Wood's Index Entomologicus, p. 52. These moths are in the Stephen's collection. Scarce in West Cumberland (G. Mawson). Victoria History, i., p. 127.
- Mamestra (Hama) furva**, Hb. Very local. Brampton district.—One specimen at Tarn Lodge, in 1901 (G. B. Routledge). Lake district.—Moderately common at Keswick (H. A. Beadle, Ento. Record, vii., p. 89; ix., p. 91; xiv., p. 206). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Scarce in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 66). Cumberland.—Widely distributed (Barrett's Brit. Lep., iv., p. 354). Victoria History, i., p. 127.
- Mamestra (Barathra) brassicae**, L. Very common in all our districts. Sometimes very destructive to cabbages in our gardens. Victoria History, i., p. 127. The prevailing form that I have taken is the var. *albicolon*, Steph.
- Mamestra persicariae**, L. Rare. Brampton district.—One specimen (male) taken at sugar at Tarn Lodge, June 27th, 1910 (G. B. Routledge). Cumberland.—"Said to frequent the hills, and not to occur in the valleys or gardens" (Barrett's Brit. Lep., iv., p. 216). This is a common species in and around London.

**Apamea basilinea**, F. Common. Carlisle district.—Orton, Durdar (F. H. Day). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Common (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Fairly common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Rather scarce in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127.

**Apamea connexa**, Bork; **pabulatricula**, Brahm. Rare in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iv., p. 398; South's Brit. Moths, i., p. 273). This species is mostly found in the woods of South Yorkshire, around Sheffield and Rotherham, also at Wakefield and Barnsley. Also formerly occurred in Scotland, in the districts of the Clyde and Tay.

**Apamea gemina**, Hb. Very common. Carlisle district.—Orton, Durdar (F. H. Day). Cummersdale (J. A. Malcolm). Brampton district.—Very abundant (G. B. Routledge). Longtown district.—Bolton Fell (F. H. Day). Penrith district.—Abundant (H. Britten). Lake district.—Moderately common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279; ix., p. 91). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). West Cumberland (G. Mawson). Cumberland coast.—Schoose Wood (G. Wilkinson, Ento. Record, xix., p. 224). Victoria History, i., p. 127. Variation.—I have not met with the type form. The prevailing form is the var. *rufescens*, Tutt. I have also met with var. *intermedia-grisea*, Tutt, and var. *intermedia-rufa*, Tutt. G.B.R.

**Apamea unanimitis**, Tr. Not very common, is generally taken on the wing along hedgerows. Carlisle district.—Several specimens at Upperby (F. H. Day). Brampton district.—One specimen at Hayton (G. B. Routledge). Penrith district.—Very local (H. Britten). Lake district.—Moderately common at Keswick (H. A. Beadle, Ento. Record, ix., p. 91; xiv., p. 206). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Crummock (G. Wilkinson, Ento. Record, xix., p. 224). Cumberland.—(Barrett's Brit. Lep., iv., p. 391). Victoria History, i., p. 127.

**Apamea (Helotropia) leucostigma**, Hb.; **fibrosa**, Hb. Rare in West Cumberland (G. Mawson). This species is found in Lancashire, and in the Solway and Clyde districts in Scotland.

**Apamea didyma**, Esp.; **oculea**, Gn.; **secalis**, L. Very abundant and very variable. Carlisle district.—Little Orton (T. C. Heysham, Steph. Illust., iii., p. 324). Common (F. H. Day). Brampton district.—Very common (G. B. Routledge). Penrith district.—Abundant and variable (H. Britten). Lake district.—Very common at Keswick, varies very much, a common form, being black with white reniform (H. A. Beadle, Ento. Record, vi., p. 279). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127.

**Miana strigilis**, Clerck. Very common at sugar; dark forms usually predominate, in some years the light forms are fairly common. Carlisle district.—The type form and also var. *aethiops*, Haw (J. B. Hodgkinson, Zool., p. 889). Carlisle, abundant, black forms the most frequent (F. H. Day). Little Orton, type form and also var. *latruncula*, Haw (T. C. Heysham, Steph. Illust., iii., p. 324). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, in 1894 and 1896 the light form was most abundant (G. B. Routledge). Penrith district. Abundant (H. Britten). Lake district.—Very common at Keswick, also var. *aethiops* (H. A. Beadle, Ento. Record, vi., p. 279; ix., p. 91). Not common in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127.

Variation.—I have met with type form, also var. *praeduncula*, Haw; var. *rufa*, Tutt; var. *nigro-rufa*, Tutt; var. *unicolor*, Tutt, and var. *aethiops*, Haw. (G.B.R.).

**Miana fasciuncula**, Haw. Common at sugar. Carlisle district.—Carlisle, very common, red form not uncommon (F. H. Day). Orton, Cummersdale, Botcherby (J. A. Malcolm). Brampton district.—Very common (G. B. Routledge). Penrith district.—Moderately common (H. Britten). Lake district.—Very common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279; ix., p. 91). Scarce in West Cumberland (G. Mawson). Cum-

berland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127.

Variation.—I have taken the type form, also var. *rubencula*, Frey, (red form). and var. *pallida*, Tutt (pale grey-brown form). (G.B.R).

**Miana literosa**, Haw. Common at sugar, end of July and August. Carlisle district.—Carlisle and Orton (F. H. Day). Orton, Grinsdale (J. A. Malcolm). Solway district.—Silloth (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Not common (H. Britten). Rather rare in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67), Seascale (Rev. W. G. Whittingham, Entom., xl., p. 157). Cumberland.—(Barrett's Brit. Lep., iii., p. 9). Victoria History, i., p. 127.

**Miana bicoloria**, Vill. ; *furuncula*, Hb. Local, sometimes swarms on thistle heads. Carlisle district.—Common (F. H. Day, Ento. Record, ix., p. 297 ; J. A. Malcolm, (Entom., xxxvi., p. 142). Solway district.—Near Drumburgh (T. C. Heysham, Steph. Illust., iii., p. 324). Lake district.—Not uncommon at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (G. Mawson). Victoria History, i., p. 127.

**Miana (Petilampa) arcuosa**, Haw. Occurs sometimes freely in meadows at dusk. Carlisle district.—Cummersdale, Orton (F. H. Day). Orton (J. A. Malcolm). Newby Cross, Great Corby (J. E. Thwaytes). Brampton district.—Not common, at Hayton (G. B. Routledge). Lake district.—At Keswick H. A. Beadle has only met with the species on the side of Latrigg, about half-way up (Ento. Record, vi., p. 278 ; xiv., p. 206). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 60). Rare in West Cumberland (G. Mawson). Cumberland coast.—Schoose Wood, near Workington (G. Wilkinsons, Ento. Record, xix., p. 224). Cumberland.—(Barrett's Brit. Lep., v., p. 271. Victoria History, i., p. 127.

**Phothedes captiuncula**, Tr. ; *expolita*, Sta. Rare in West Cumberland (G. Mawson). Victoria History, i., p. 127. This species occurs commonly in Durham, at Hartlepool and Castle

Eden; it also occurs commonly in North Lancashire and Westmorland. It is a day-flier, and is on the wing from noon to about 4 o'clock. First recorded as British in 1854.

**Celaena haworthii**, Curt. Not uncommon on moors and mosses where Cotton-grass (*Eriophorum vaginatum*) occurs. Larva feeds in the stems down towards the root of the plant. Moth flies at dusk in August and September. Carlisle district.—Orton, Durdar, taken at sugar (F. H. Day). Todhills Moss (J. A. Malcolm). Longtown district.—Bolton Fell (J. E. Thwaytes). Brampton district.—Gelt Wood, Hayton Moss (G. B. Routledge). Lake district.—Plentiful in several woods at Keswick (H. A. Beadle, Ento. Record, vi., p. 279; vii., p. 89; ix., p. 91). Derwentwater, several at sugar (W. C. Marshall, Entom., iv., p. 201). Cumberland (C. E. Stott, Brit. Naturalist, i., p. 263; Barrett's Brit. Lep., iii., p. 5). Victoria History, i., p. 127. First noted as British in 1819.

**Grammesia trigrammica**, Hufn.; **trilinea**, Bork. Not very common at sugar; appears in June. Carlisle district.—Orton (J. A. Malcolm). Durdar, Grinsdale (F. H. Day). Orton, Newby Cross, Great Croby (J. E. Thwaytes). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, not very common at sugar (G. B. Routledge). Lake district.—Keswick (H. A. Beadle, Ento. Record, xiv., p. 206). Seathwaite (J. E. Thwaytes). Not uncommon in West Cumberland (G. Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 213). Cumberland (Humphrey and Westwood's Brit. Moths, i., p. 147; Barrett's Brit. Lep., v., p. 298). Victoria History, i., p. 127.

**Stilbia anomala**, Haw. Rare, occurs in July. Carlisle district.—(Morris' Brit. Moths, iii., p. 58). Lake district.—Keswick (Morris' Brit. Moths, iii., p. 58). Taken by W. Greenip (Ento. Weekly Int., i., p. 164). Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 279; ix., p. 91). Penrith district.—Messrs. H. Britten and G. Wilkinson took two specimens on Lazonby Fell, in July, 1899, (Victoria History, i., p. 127). Cumberland.—Thomas Armstrong records having captured a specimen (Ento. Weekly Int., vii., p. 30). Barrett's Brit. Lep., v., p. 279; South's Brit. Moths, i., p. 315.

**Caradrina morpheus**, Hufn. Carlisle district.—Carlisle (J. A. Malcolm, Entom., xxxvi., p. 142). Common in gardens and at gas lamps (F. H. Day, Ento. Record, ix., p. 238). Longtown district.—Bolton Fell (F. H. Day). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127.

**Caradrina alsines**, Brahm. A scarce species. Lake district.—Scarce at Keswick (H. A. Beadle, Ento. Record, xiv., p. 206). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127. Occurs in England more in the south and east, rare in the Midlands, local in Lancashire. Found in the Eastern districts in Scotland, but not commonly.

**Caradrina taraxaci**, Hb.; **blanda**, Tr. Carlisle district.—Moderately common at sugar at Durdar and Orton (F. H. Day). Great Corby (J. E. Thwaytes). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—One specimen at Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Moderately common at Keswick (H. A. Beadle, Ento. Record, vii., p. 89; xiv., p. 206). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127.

**Caradrina quadripunctata**, F.; **cubicularis**, Bork. Commonest species of the genus in the county. Carlisle district.—Very common (F. H. Day and J. A. Malcolm). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, Tarn Lodge (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Common everywhere at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Common in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 127.

**Hydrilla palustris**, Hb. The first two specimens were captured near Carlisle, the first in 1896, the second in 1897. This is a Fenland insect, and its occurrence so far north is interesting. More interesting still is the fact that these two Cumberland specimens appear to be the only females recorded from the British Isles. Both were captured while on the wing towards evening.

In the Entomologist's Record, Mr. F. H. Day writes :—  
 " My first specimen of *H. palustris* was taken late in the afternoon of May 30th, 1896, flying low down over the herbage in a marshy meadow, on the outskirts of a wood near Carlisle. The sun was shining brightly at the time. It was much worn, and the markings are hardly decipherable. The forewings are greyish-brown, with indications of two transverse lines, one near the base, and the other almost parallel with the hind margin. The space between these lines is of a somewhat deeper shade than the remainder of the forewings. A small dark spot marks the reniform. This specimen measures an inch across the wings. The second specimen was taken on June 12th, 1897, is similar to the first, but is an eighth of an inch less in expanse. Though in much better condition, the markings are still very obscure. It was taken in the same locality as the other, but on another side of the wood, and again the habitat was a marshy meadow. I well remember the occasion. It was about 7 o'clock in the evening of a scorching day, and though the sun was setting, it was still warm work collecting. I was engaged in netting insects when a dark-hued insect, flying rapidly in a straight line, like a *Zygaena*, caught my eye. In a trice it was netted, and as I transferred it to a pill-box, I saw that my unknown capture of May 30th, 1896, had been duplicated." (Ento. Record, x., p. 110). These two specimens were exhibited by Mr. G. B. Routledge at a meeting of the Entomological Society, of London, held on February 16th, 1898, and also at a meeting of the South London Entomological and Natural History Society, held on February 10th, 1898. Mr. J. W. Tutt, after asking for particulars of their capture, writes :—  
 " I have no hesitation in referring them to *Hydrilla palustris*."

Reference to these two specimens occur in (C. G. Barrett's Brit. Lep., v., p. 267 ; R. South's Brit. Moths, i., p. 322 ; Ento. Society of London, Trans., 1898 ; Ento. Mo. Mag., xxxiv., p. 87 ; Trans. of South London Entom. Society, 1898, p. 87 ; City of London Entom. Society Trans., 1898, p. 4 ; Ento. Record, x., pp. 86 and 110 ; xi., p. 114). Victoria History, i., p. 127.

*Male Specimens.*—The first male specimen was taken on the wing by Mr. J. E. Thwaytes, when sugaring near Carlisle, on June 10th, 1899, and was exhibited at a meeting of the Entomological Society of London, on March 20th, 1901. Mr. C. G. Barrett, in his remarks on the exhibit, stated: "that it was the most definitely marked specimen of any known, and that in this northern locality the lines on the wings seemed to be brought out with greater distinction than those taken in the Fen country and elsewhere." This specimen was also exhibited at a meeting of the South London Entom. Society, on March 14th, 1901. The next male specimen was netted near Carlisle while flying along a hedge about 9-10 p.m., on May 20th, 1901, (J. E. Thwaytes, Entom., xxxiv., p. 182; Ento. Mo. Mag., xxxvii., p. 129; South London Entom. Soc. Trans., 1901, p. 25; City of London Entom. Soc. Trans., 1901, p. 9). The third male specimen was taken near Carlisle in 1902 by Mr. M. C. Dixon (Entom., xxxvi., p. 142).

This is one of our rarest British Noctuids, and is very local in its distribution. Wicken Fen, in Cambridgeshire, has yielded the majority of British specimens. Newman (Brit. Moths, p. 312), mentions a specimen being taken "at Compton's Wood, near York, flying over grass in a damp place." This was before 1855. Between Wicken Fen and Carlisle lie nearly 200 miles of country, and it is surprising that the species has not turned up more often in the intervening country.

**Rusina tenebrosa**, Hb. Males uncommon at sugar in June and July, females are very scarce. Carlisle district.—At sugar, Durdar and Orton (F. H. Day). Newby Cross, Great Corby (J. E. Thwaytes). Brampton district.—Hayton, Hayton Moss, females very rare (G. B. Routledge). Penrith district.—Not uncommon (H. Britten). Lake district.—Common at sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 279; ix., p. 91). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Seathwaite (J. A. Malcolm). Scarce in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 239). Victoria History, i., p. 127.

- Agrotis (Euxoa) vestigialis**, Hufn.; **valligera**, Hb. Occurs rarely on the coast. Solway district.—Banks of the Solway Firth (J. B. Hodgkinson, Zool., v., p. 1,883). Silloth (F. H. Day). Plentiful in West Cumberland (G. Mawson). Cumberland coast.—Seascale (Rev. W. G. Whittingham, Entom., xl., p. 157). Victoria History, i., p. 127.
- Agrotis (Euxoa) puta**, Hb. Cumberland.—Recorded, though very rarely, (Barrett's Brit. Moths, iii., p. 305). Victoria History, i., p. 127. Rare in Cheshire and Yorkshire, no records from Durham and Northumberland. Said to have occurred at Dumfries.
- Agrotis suffusa**, Hb.; **ypsilon**, Rott. Sometimes not uncommon at sugar in August, September and October, somewhat irregular in its appearances, abundant some seasons, and scarce in others. Carlisle district.—Red Cat, Newby Cross (J. E. Thwaytes, Entom., xxx., p. 299). Orton, Durdar (F. H. Day). Red Cat and Newby Cross (J. A. Malcolm). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Sometimes common (H. Britten). Lake district.—A few at sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Rare in West Cumberland (Mawson's list). Cumberland.—(Barrett's Brit. Lep. iii., p. 287). Victoria History, i., p. 127.
- Agrotis (Peridroma) saucia**, Hb. Rare and uncertain in its appearance. Brampton district.—Hayton, Tarn Lodge, a few specimens taken at sugar in October and November (G. B. Routledge). Rare in West Cumberland (G. Mawson). Victoria History, i., p. 127.
- Agrotis (Euxoa) segetum**, Schiff. In some years very abundant; the larvæ feed from July to April, and are sometimes most destructive to turnips and swedes, making large cavities in the bulb, which it enters from just above the tap root. Carlisle district.—Very common (F. H. Day and J. A. Malcolm). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, was very abundant in 1893 at Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Abundant in West Cumberland (G. Mawson). Cumber-

land coast.—St. Bees (P. J. Barrand, Entom., xl., p. 67). Victoria History, i., p. 128.

Variation.—I have taken the type form, also var. *subatratus*, Haw. and var. *nigricornis*, Villers. I have also taken a specimen, the forewings being silvery with black lines, while the hind-wings are unusually white (South London Entom. Soc. Trans, 1897, p. 110). (G.B.R.).

**Agrotis (Feltia) exclamationis**, L. The commonest of the genus in the county. Carlisle district.—Very common (F. H. Day). Longtown district.—Very common at Bolton Fell (F. H. Day). Brampton district.—Very common (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Fairly common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Scarce in West Cumberland (Mawson's list). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 66). Victoria History, i., p. 128.

Variation.—I have taken the type form, also var. *rufescens*, Tutt, vars. *brunnea*, Tutt, *picea*, Haw., and five or six specimens of var. *lineolatus*, Tutt. (G.B.R.).

**Agrotis (Euxoa) corticea**, Hb. Carlisle district.—“One reported to have been taken at sugar at Lingey Close Head, near Dalston, some years ago” (F. H. Day). West Cumberland—scarce (G. Mawson).

**Agrotis (Euxoa) cinerea**, Hb. Carlisle.—A fine variety taken by T. Reeves, Jun., (Humphrey and Westwood's Brit. Moths, i., p. 118). Morris' Brit. Moths, ii., p. 125. Victoria History, i., p. 128.

**Agrotis (Lycophotia) ripae**, Hb. Coast species. Cumberland coast.—T. Armstrong, Ento. Weekly Int., vii., p. 30; C. S. Gregson, Ento. Weekly Int., vii., p. 55; “dark, rich, well marked Cumberland specimens” (C. S. Gregson, Entom., iv., p. 53). J. Jäger exhibited specimens from the Cumberland coast (South London Natural History Soc. Trans., 1889, p. 164). Rare (Mawson's list). Cumberland.—(Barrett's Brit. Lep., iii., p. 232). Victoria History, i., p. 128.

**Agrotis (Euxoa) cursoria**, Bork. Coast species. Solway district.—Banks of the Solway Firth (J. B. Hodgkinson, Zool., v., p. 1,883). Morris' Brit. Moths, ii., p. 128. Victoria History, i., p. 128.

**Agrotis (Euxoa) nigricans**, L. Locally common. Carlisle district.—On Ragwort flowers (F. H. Day, Ento. Record, ix., p. 297; J. A. Malcolm, Entom., xxxvi., p. 142; J. E. Thwaytes, Entom., xxxii., p. 48). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Rare at Keswick (H. A. Beadle, Ent. Record, vi., p. 279). Rather common (Mawson's list). Cumberland.—(Barrett's Brit. Lep., iii., p. 335). Victoria History, i., p. 128.

**Agrotis (Euxoa) tritici**, L. Coast species, sometimes found inland. Carlisle district.—(J. A. Malcolm, Entom., xxxvi., p. 142). Carlisle, one specimen in 1896 (J. E. Thwaytes). Brampton district.—Several specimens at Hayton (Mrs. M. G. Routledge, Entom. xxi., p. 280). Signal Cabin, Brampton Junction (J. E. Thwaytes). Solway district.—Banks of Solway Firth (J. B. Hodgkinson, Zool., v., p. 1,883). Morris' Brit. Moths, ii., p. 130. Silloth (F. H. Day). Lake district.—Derwentwater (W. C. Marshall, Entom., iv., p. 201). Scarce in West Cumberland (Mawson's list). Cumberland coast.—Seascale (Rev. W. G. Whittingham, Entom., xl., p. 157). Cumberland.—(Barrett's Brit. Lep., iii., p. 345). Victoria History, i., p. 128.

Variation.—Var. *cuneigera*, St., in July (Humphrey and Westwood's Brit. Moths, i., p. 120); var. *venosa*, Steph., taken in Cumberland in July (Tutt's Brit. Noctuae, ii., p. 55). Humphrey and Westwood's Brit. Moths, i., p. 120).

**Agrotis aquilina**, Hb. Scarce in West Cumberland (G. Mawson). Victoria History, i., p. 128. This species is regarded by many entomologists as merely a variety of **A. tritici** (Staudinger's Catalogue), and by others as distinct.

**Agrotis (Euxoa) obelisca**, Hb. Rare in West Cumberland (G. Mawson). Victoria History, i., p. 128. This species occurs in Lancashire, and on the south-west coast of Scotland.

**Agrotis (Eueretagrotis) agathina**, Dup. Occurs on the moors and mosses, where larvæ may be freely swept, but are seldom reared. Carlisle district.—Carlisle (J. B. Hodgkinson, Entom. Ann. 1869, p. 134). Todhills Moss in 1897 (F. H. Day, Ento. Record, ix., p. 182). Brampton district.—Hayton Moss (K. Bowman). Penrith district.—Lazonby Fell

(F. H. Day). Longtown district.—Bolton Fell (J. E. Thwaytes). Lake district.—Five specimens at sugar in 1894 at Keswick (H. A. Beadle, Ento. Record, vi., p. 279 ; vii., p. 89). Skiddaw (H.A.B., Ento. Record, xiv., p. 206). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Cumberland.—(Barrett's Brit. Lep., iii., p. 362). Victoria History i, p. 128.

**Agrotis (Lycophotia) strigula**, Thnb. ; **porphyrea**, Hb. Found on moorlands and mosses, sometimes on the wing in the day time, but usually at dusk, larvæ feeds on heather from August to May. Carlisle district.—Cobble Hall (T. C. Heysham, Steph. Illust., iii., p. 324, under name of *Scolophila porphyrea*). Kingmoor, Orton, Durdar (F. H. Day). Red Cat and Orton (J. A. Malcolm). Longtown district.—Bolton Fell (J. E. Thwaytes, Entom., xxx., p. 250). Bolton Fell (F. H. Day). Brampton district.—Hayton Moss, Gelt Wood, Bewcastle (G. B. Routledge). Cumwhitton Moss (J. E. Thwaytes). Penrith district.—Abundant (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279 ; ix., p. 91). Rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit Lep., iii., p. 365. Victoria History, i., p. 128.

**Agrotis (Hapalia) praecox**, L. Cumberland coast.—Seascale (B. H. Crabtree, Entom., xlv., p. 46). Rare in West Cumberland (Mawson). Victoria History, i., p. 128. Its English name is the "Portland Moth," not from the Island of Portland where it is very scarce, but from the fact that it formed one of the principal treasures of the collection of the Duchess of Portland, who seems to have been the first to rear it in this country at the latter end of the 18th century. The moth is sometimes taken inland (at Kendal, in 1899).

**Agrotis (Ogygia) obscura**, Brahm. ; **ravida**, Hb. Rare in West Cumberland (G. Mawson). Victoria History, i., p. 128. This species is of very uncertain appearance, found in the South of England, rare in Lancashire and Yorkshire, recorded from Durham, and occurs in Scotland.

**Agrotis (Pachnobia) simulans**, Hufn. ; **pyrophila**, Hb. Local, has not been recorded for many years. West Cumberland,—

Taken at sugar and on ragwort flowers (T. Armstrong, Ento. Weekly Int., vii., p. 30; Entom. Annual, 1860, p. 140). Rare in West Cumberland (Mawson's list). Cumberland (C. S. Gregson, Entom., xviii., p. 166; Barrett's Brit. Lep., iii., p. 379; Newman's Brit. Moths, p. 336; South's Brit. Moths, i., p. 214). Victoria History, i., p. 128.

**Agrotis (Spaelotis) lucerneæ**, L. Very local. Lake district.—Keswick (W. Greenip, Ento. Weekly Int., i., p. 164). (Morris. Brit. Moths, ii., p. 134; Barrett's Brit. Lep., iii., p. 391). Moderately common, found flying at the foot of the rocks under Falcon Crag, a dark form is taken (H. A. Beadle, Ento. Record, vi., p. 279). Skiddaw (H.A.B., Ento. Record, xiv., p. 206). Eskdale, near Ravenglass (Mrs. M. G. Routledge). Victoria History, i., p. 128.

var. **renigera**, Steph. A dark, melanic race confined to the Pennines and Cumbrian mountains (Ento. Record, xiv., p. 148).

**Noctua glareosa**, Esp. Sometimes common at sugar on the moors in August and September, larva feeds on grasses and various low plants from October to June. Carlisle district.—Durdar and Orton (F. H. Day). Red Cat (J. E. Thwaytes, Entom., xxx., p. 299). Brampton district.—Hayton (rare), sometimes not uncommon at Tarn Lodge (G. B. Routledge). Penrith district.—Not common (H. Britten). Lake district. Keswick, netted occasionally, also at sugar, not common (H. A. Beadle, Ento. Record, vi., p. 279; vii., p. 89; ix., p. 91). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Scarce in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iv., p. 34). Victoria History, i., p. 128.

Variation.—Occasionally fresh specimens are taken suffused with pink colour—var. *rosea*, Tutt. (G.B.R.).

**Noctua depuncta**, L. Has now become exceedingly rare in the County, the moth appears in July and August. Carlisle district.—(Morris' Brit. Moths, ii., p. 140). Carlisle (John Lattimer and James Merin, Ento. Weekly Int., ii., p. 190). One specimen in July, 1892, (F. H. Day). Carlisle (T. Armstrong, Ento. Weekly Int., ii., p. 5). Brampton district.—

One specimen at Hayton, July 29th, 1890, at Tarn Lodge, about 12 specimens in July, 1893, and one specimen in August, 1895, all taken at sugar (G. B. Routledge). Penrith district.—Barron Wood (J. B. Hodgkinson, Zool., v., p. 1,883). Several at sugar, August, 1856, was very abundant in 1855 in same wood (T. Armstrong, Ento. Weekly Int., ii., p. 5). Barrett's Brit. Lep., iv., p. 44; South's Brit. Moths, i., p. 221. Formerly abundant, but not seen for many years (H. Britten). Lake district.—Rare in Castle Wood, at Keswick, (H. A. Beadle, Ento. Record, vi., p. 279). Derwentwater, one at sugar, (W. C. Marshall, Entom., iv., p. 201). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Scarce in West Cumberland (G. Mawson). Victoria History, i., p. 128. This species is somewhat rare in England, its principal locality being at Savernake Forest, Wiltshire, it is very local in Yorkshire and Durham. It is abundant again in the woods at Forres, Morayshire, and Aberdeenshire.

Variation.—Carlisle specimens are occasionally a trifle greyer than those from Scotland (Tutt's British Noctuae, ii., p. 109).

**Noctua (Exarnis) augur**, F. Common at sugar. Carlisle district.—Common (F. H. Day). Brampton district.—Common (G. B. Routledge). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Scarce in West Cumberland (Mawson's list). Cumberland.—(Barrett's Brit. Lep., iv., p. 38). Victoria History, i., p. 128.

Variation.—I have taken the type form (reddish-brown) and the dark greyish-brown form—var. *hippophaes*, Hb. (G.B.R.).

**Noctua (Ochroleura) plecta**, L. Common at sugar. Occurs from May to middle of July. Carlisle district.—Very common (F. H. Day). Great Corby (J. E. Thwaytes). Brampton district.—Usually very abundant (G. B. Routledge). Longtown district.—Bolton Fell (J. E. Thwaytes). Penrith district.—Common (H. Britten). Lake district.—Common everywhere in the Keswick district (H. A. Beadle, Ento. Record, vi., p. 279). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Scarce in West Cumberland (Mawson's list).

Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128. I have only taken the type form. A second brood occurring in August and September, in Britain, is given in South's British Moths, i., p. 229. I have never met with it in Cumberland (G.B.R.).

**Noctua c-nigrum**, L. Common at sugar in June and July. Carlisle district.—Common (F. H. Day). Brampton district.—Common (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Occasionally at sugar in woods at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Rare in West Cumberland (Mawson's list). Cumberland.—(Barrett's Brit. Lep., iv., p. 54. Victoria History, i., p. 128.

Variation.—I have taken the type form, and also the form with the ground colour slightly rosy—var. *rosea*, Tutt. I have never met with the species in the autumn (G. B. R.).

**Noctua ditrapezium**, Bork. Only occurs in G. Mawson's West Cumberland list as rare. This species occurs in the southern counties, Norfolk, and in Wales (Swansea and Barmouth), it has also been taken in Perthshire.

**Noctua triangulum**, Hufn. Not uncommon at sugar in June and July. Carlisle district.—Cummersdale, Durdar (F. H. Day). Botcherby (J. A. Malcolm). Red Cat, Orton, Great Corby (J. E. Thwaytes). Solway district.—Rockcliffe Moss (T. C. Heysham, Steph. Illus., ii., p. 200). Longtown district.—Bolton Fell (J. E. Thwaytes). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Scarce at Keswick (H. A. Beadle, Ento. Record, vii., p. 89). Rare in West Cumberland (Mawson's list). Cumberland.—(Barrett's Brit. Lep., iv., p. 48). Victoria History, i., p. 128.

Variation.—The only form that I have taken is the grey form, tinted with red or purplish—var. *sigma*, Haw.—var. *intermedia*, Tutt (G.B.R.).

**Noctua stigmatica**, Hb.; **rhomboidea**, Tr. Lake district.—Scarce at Keswick (H. A. Beadle, Ento. Record, vii., p. 89; xiv., p. 206). Mawson's West Cumberland list. Has occurred in the Solway district of Scotland.

**Noctua brunnea**, F. Common at sugar. Carlisle district.—Durdar, Orton, Newby Cross, Cummersdale (F. H. Day).

Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Keswick, very common and variable, varieties inclining to darker colour (H. A. Beadle, Ento. Record, vi., p. 279). Not uncommon in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iv., p. 64. Victoria History, i., p. 128.

Variation.—I have taken the var. *lucifera*, Esp., this is the beautiful purplish variety, and also var. *rufa*, Tutt (bright red form). (G.B.R.).

**Noctua festiva**, Hb.; **primulae**, Esp. Common at sugar; a very variable species. Carlisle district.—Common at Durdar, Orton, Cummersdale (F. H. Day). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Eel Tarn, Eskdale (P. J. Barraud, Entom., xl., p. 67). Rather rare in West Cumberland (Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 212). St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128.

**Noctua dahlia**, Hb. Not common, occurs at sugar and on flowers of ragwort. Carlisle district.—(Morris' Brit. Moths, ii., p. 146). Red Cat (J. E. Thwaytes). Durdar, Orton (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Longtown district.—Bolton Fell (J. E. Thwaytes). Penrith district.—Barron Wood (J. B. Hodgkinson, Zool., v., p. 1,883). Great Salkeld, not common (H. Britten). Lake district.—A few each season at sugar, Keswick (H. A. Beadle, Ento. Record, vi., p. 279; vii., pp 89 and 233; ix., p. 91). Rather scarce in Mawson's West Cumberland list. Cumberland.—(Barrett's Brit. Lep., iv., p. 68; South's Brit. Moths, i., p. 226). Victoria History, i., p. 128.

**Noctua rubi**, View. Not very common. Carlisle district.—Carlisle (J. E. Thwaytes). Durdar and Orton (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, not

common (G. B. Routledge). Longtown district.—Bolton Fell (F. H. Day). Penrith district.—Not common (H. Britten). Lake district.—Rather uncommon at sugar at Keswick (H. A. Beadle, Entom. Record, vi., p. 279). Scarce in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom. xl., p. 67). Victoria History, i., p. 128.

Variation.—I have taken the type form (dark reddish-brown), and also var *quadratum*, Hb., a bright-red form. I have only taken this species in June and July (G.B.R.).

**Noctua umbrosa**, Hb. Taken on flowers of reeds, ragwort, &c. Carlisle district.—Orton, Red Cat (J. A. Malcolm). Cumbersdale (F. H. Day). Brampton district.—Hayton (G. B. Routledge). Gilsland (J. A. Malcolm). Penrith district.—Common (H. Britten). Lake district.—Rather uncommon at sugar at Keswick (H. A. Beadle, Entom. Record, vi., p. 279; vii., p. 89). Frequent in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 66). Victoria History, i., p. 128.

**Noctua baja**, F. Common at sugar. Carlisle district.—Botcherby, Orton (J. A. Malcolm). Common (F. H. Day). Brampton district.—Common (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Several each season at sugar at Keswick (H. A. Beadle, Entom. Record, vi., p. 279; xiv., p. 206). Not uncommon in West Cumberland (Mawson). Cumberland coast.—Workington (G. Wilkinson). St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128.

Variation.—I have met with a specimen of var. *coerulescens*, Tutt (G.B.R.).

**Noctua castanea**, Esp. Common on some of our heaths. Carlisle district.—(Morris' Brit. Moths, i., p. 149). Red Cat (J. E. Thwaytes, Entom., xxx., p. 299). Durdar, Orton, at sugar and on heather bloom in August, var. *neglecta*, Hb., predominates over the type form (F. H. Day). Brampton district.—Hayton Moss (G. B. Routledge). Penrith district.—Common on Wan Fell and in Barron Wood (H. Britten).

Frequently taken in West Cumberland (G. Mawson). Cumberland.—Specimens bred (T. Armstrong, Ento. Weekly Int., vii., p. 30). Barrett's Brit. Lep., iv., p. 101. Victoria History, i., p. 128.

Variation.—I have taken the type form (deep red), var. *neglecta*, Hb. (grey form), and var. *laevis*, Haw. (reddish-grey form) one specimen (G.B.R.).

**Noctua (Segetia) xanthographa**, F. Very common in the Carlisle, Brampton and Penrith districts. Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Common in West Cumberland (Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 212). St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128.

Variation.—I have never taken the type form, but have taken vars. *rufescens*, Tutt, *rufa*, Tutt, and var. *obscura*, Tutt (G.B.R.).

**Triphaena ianthina**, Esp. Not very common. Carlisle district.—Carlisle, common (T. Armstrong, Ento. Weekly Int., vii., p. 30). Orton, Cummersdale, rather scarce, usually on flowers (F. H. Day). Harraby (J. A. Malcolm). Great Corby (J. E. Thwaytes). Brampton district.—Hayton, Tarn Lodge, scarce (G. B. Routledge). Penrith district.—Not plentiful (H. Britten). Lake district.—Keswick, uncommon at sugar (H. A. Beadle, Ento. Record, vi., p. 279). Skiddaw (H. A. Beadle, Ento. Record, xiv., p. 206). Frequent in West Cumberland (G. Mawson). Victoria History, i., p. 128.

Variation.—I have taken the type form, and also the bright-red form—var. *rufa*, Tutt. (G.B.R.).

**Triphaena fimbria**, L. Not uncommon. Carlisle district.—(Morris' Brit. Moths, ii., p. 136). Durdar, Orton, Cummersdale (F. H. Day). Newtown, Harraby (J. A. Malcolm). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Moderately common (H. Britten). Lake district.—Common in some years, but generally scarce at Keswick (H. A. Beadle, Ento. Record, vi., p. 279; vii., p. 89). Derwentwater, common at sugar (W. C. Marshall, Entom., iv., p. 201). Cockermouth (W.

Robinson, Ento. Weekly Int., ix., p. 61). Common in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., iv., p. 9). Victoria History, i., p. 128.

Variation. I have taken the type form (pale wainscot brown to pale yellowish), and var. *virescens*, Tutt, (pale greenish); also one specimen of var. *rufa*, Tutt, (reddish-ochreous, almost red-brown), and one specimen of the mahogany brown form, var. *brunnea*, Tutt. (G.B.R.).

**Triphaena interjecta**, Hb. Scarce in West Cumberland (G. Mawson).

**Triphaena (Agrotis) comes**, Hb.; **orbona**, F. Generally common. Carlisle district.—Durdar and Floshe (T. C. Heysham, Steph. Illust., ii., p. 199). Carlisle, common, red form occasionally occurs (F. H. Day). Brampton district.—Common (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Fairly common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Common in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128.

Variation.—I have taken var. *grisea*, Tutt, var. *ochrea*, Tutt, and var. *rufa-ochrea*, Tutt. (G.B.R.).

**Triphaena (Agrotis) pronuba**, L. Common everywhere; larvæ sometimes a pest in gardens. Carlisle district.—New Moss (T. C. Heysham, Steph. Illust., ii., p. 199). Longtown district.—Bolton Fell (J. E. Thwaytes, Entom., xxx., p. 250). Common in Brampton and Penrith districts. Lake district.—Very abundant and variable at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Common in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128.

**Amphipyra pyramidea**, L. Rare. New Moss (T. C. Heysham, Steph. Illust., ii., p. 200). Rare in West Cumberland (G. Mawson). Victoria History, i., p. 128.

**Amphipyra tragopogonis**, L. Common at sugar, in outhouses, &c. Carlisle district.—Common near Carlisle in various odd places, sometimes numbers may be found inside hollow trees (F. H. Day). Brampton district.—Common at Hayton and Tarn Lodge (G. B. Routledge). Penrith district.—Abun-

dant ; very fond of hiding under fungi on trees (H. Britten). Lake district.—Fairly common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128. Its English name is "The Mouse," owing to the mouse-like way it scuttles off when discovered by the collector.

**Mania (Naenia) typica**, L. Locally common in gardens. Carlisle district.—Common in gardens in Carlisle (F. H. Day). Orton and Grinsdale (J. A. Malcolm). Brampton district.—Hayton, Tarn Lodge, have never found it common (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Common in gardens at Keswick (H. A. Beadle, Ento. Record vi., p. 279). Eskdale (Mrs. M. G. Routledge). Not uncommon in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 128.

**Mania (Mormo) maura**, L. At sugar on trees along the banks of rivers in July and August. Carlisle district.—At sugar and also at light, Cummersdale, Upperby, Grinsdale (F. H. Day). At sugar on banks of Rivers Petteril and Caldew, and at Great Corby (J. E. Thwaytes). St Nicholas and Flosches (T. C. Heysham, Steph. Illust., iii., p. 131). Solway district.—Castletown and Rockcliffe (T.C.H., Steph. Illust., iii., p. 131). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Abundant (H. Britten). Lake district.—Very common near water, especially on the river banks ; comes freely to sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 279 ; ix., p. 91). Keswick (G. Wailes, Steph. Illust., iii., p. 326). Plentiful in West Cumberland (G. Mawson). Victoria History, i., p. 128.

**Panolis piniperda**, Panz. ; **griseo-variegata**, Goeze. Common in fir plantations and visits willow bloom in March and April. Carlisle district.—(Morris' Brit. Moths, ii., p. 1151). Newby Cross, Orton (T. C. Heysham, Steph. Illust., iii., p. 324). Carlisle (T. Armstrong, Ento. Weekly Int., vii., p. 30). Carlisle, Durdar, Orton (F. H. Day). Newby Cross (J. A. Malcolm). Red Cat, Newby Cross (J. E. Thwaytes). Bram-

pton district.—Hayton, Gelt Wood, Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Thinly scattered at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Rather rare in West Cumberland (G. Mawson). Victoria History, i., p. 128.

Variation.—Type form only taken (G.B.R.).

**Pachnobia leucographa**, Hb. Not recorded for many years. Carlisle district.—Beaten from sallow in the spring (T. Armstrong, Ento. Weekly Int., vii., p. 30). (Morris' Brit. Moths, ii., pp. 152-3). Lazonby district.—Barron Wood, specimens were captured on April 28th, 1856 (T. Armstrong, Ento. Weekly Int., ii., p. 4). Lake district.—Cockermouth (Morris' Brit. Moths, ii., pp. 152-3; Stainton's Entom. Ann., 1855). Common in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 226). Victoria History, i., p. 128.

**Pachnobia rubricosa**, F. Common at sallow bloom in April. Carlisle district.—Rather common at Durdar, Orton, Newby Cross (F. H. Day). Harraby (J. A. Malcolm). Red Cat, Newby Cross (J. E. Thwaytes). Brampton district.—Hayton Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Not uncommon in Castle Head Wood, at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Common in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 229). Victoria History, i., p. 128.

**Taeniocampa gothica**, L. Abundant on sallow blossoms in the spring. Carlisle district.—Abundant; have taken var. *variegata*, Tutt. (F. H. Day, Ento. Record, ix., p. 182). Red Cat and Newby Cross (J. E. Thwaytes). Brampton district.—Very common at Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Excessively common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Common in West Cumberland (G. Mawson). Victoria History, i., p. 129.

Variation.—Have taken the type form, also vars. *variegata*, *suffusa* and *brunnea* (all of Tutt.) G.B.R.

**Taeniocampa incerta**, Hufn.; *instabilis*, F. Common in the spring at sallow blooms. Carlisle district.—Abundant in 1897; specimens were taken which varied from a pale-grey form to the extreme var. *fuscatus*, Haw. (F. H. Day, Ento. Record,

ix., p. 182). Red Cat and Newby Cross (J. E. Thwaytes). Brampton district.—Fairly common at Hayton, Hayton Moss and Tarn Lodge (G. B. Routledge). Lake district.—Keswick, very common and variable (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (G. Mawson). Victoria History, i., p. 129.

Variation.—I have taken the dark red-brown form—var. *instabilis*, Esp., which is a very common form, also forms approaching to var. *trigutta*, Esp., not so common (G.B.R.).

**Taeniocampa opima**, Hb. Rare. Carlisle district.—Very scarce at Newby Cross (F. H. Day). Brampton district.—One specimen at Hayton (G. B. Routledge). Lake district.—Very rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Rare in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 209. South's Brit. Moths, i., p. 331). Victoria History, i., p. 129.

**Taeniocampa populeti**, F. Not very common, local. Carlisle district.—Durdar, Orton (F. H. Day, Ento. Record, ix., p. 182). Orton (J. E. Thwaytes). Carlisle (J. A. Malcolm. Entom., xxxvi., p. 142). Brampton District.—Tarn Lodge, 1912 (G. B. Routledge). Lake district.—Rare at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Cumberland.—(Barrett's Brit. Lep., v., p. 206). Victoria History, i., p. 206.

**Taeniocampa stabilis**, View. Very abundant at sallow bloom in the spring. Carlisle district.—Abundant everywhere (F. H. Day). Brampton district.—Abundant (G. B. Routledge). Lake district.—Abundant at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (G. Mawson). Victoria History, i., p. 129.

Variation.—I have taken the type form, also var. *pallida*, Tutt, var. *obliqua*, Vill., common, and one specimen of var. *rufa*, Tutt. (G.B.R.).

**Taeniocampa gracilis**, F. Not very common, on sallow blooms, appears much later in the season than the others in the genus. Carlisle district.—Orton, Durdar, and American Wood, near Carlisle (F. H. Day). Harraby, Botcherby (J. A. Malcolm),

Solway district.—Bowness-on-Solway (J. A. Malcolm).  
 Brampton district.—Tarn Lodge, two specimens (G. B. Routledge). Lake district.—Not uncommon at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Not uncommon in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 223). Victoria History, i., p. 129.

**Taeniocampa miniosa**, F. Lake district.—Taken in April, 1856, at Cockermouth (C. S. Gregson, Ento. Weekly Int., i., p. 44). Plentiful in West Cumberland (Mawson's list). Occurs up to Yorkshire; not recorded in Scotland.

**Taeniocampa munda**, Esp. Local. Carlisle district.—Morton Park, very scarce (F. H. Day). Brampton district.—Tarn Lodge, three specimens (G. B. Routledge). Lake district.—Fairly common and variable at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (G. Mawson). Victoria History, i., p. 129. Is local and infrequent in the South of Scotland.

**Taeniocampa pulverulenta**, Esp.; **cruda**, Hb. Common at fallow bloom. Carlisle district.—Very common (F. H. Day). Brampton district.—Common (G. B. Routledge). Lake district.—Very abundant; have taken one pale variety at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 200). Victoria History, i., p. 129.

**Orthosia (Dyschorista) suspecta**, Hb. Locally common; occurs at sugar and on ragwort flowers. Carlisle district.—(Morris Brit. Moths, ii., p. 159). Swarmed at sugar at Orton in 1895 (F. H. Day). Orton (J. A. Malcolm and J. E. Thwaytes). Brampton district.—Not uncommon at sugar and ragwort flowers on Hayton Moss, first taken in 1895 (G. B. Routledge). Lazonby district.—Barron Wood [recorded as *Orthosia congener*] (J. B. Hodgkinson, Zool., v., p. 1,883). Lake district.—Keswick, fairly abundant, some specimens are light and distinctly marked, (H. A. Beadle, Ento. Record, vi., p. 279; vii., p. 89; ix., p. 91). Plentiful in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 306. South's Brit. Moths, ii., p. 7). Victoria History, i., p. 129.

Variation.—Have taken the type form, also var. *congener*, Gey, and var. *rufa*, Tutt. (G.B.R.).

**Orthosia (Dyschorista) ypsilon**, Bork. ; **fissipuncta**, Haw. Lake district.—Keswick "two specimens taken but I believe it is common by the river" (H. A. Beadle Ento. Record vi. p. 279). Scarce in West Cumberland (Mawson's list). Victoria History, i., p. 129.

**Orthosia (Amathes) lota**, Clerck. Not uncommon, but rather local. Carlisle district.—Common at Durdar and Orton (F. H. Day). Red Cat (J. A. Malcolm). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, not common (G. B. Routledge). Lake district.—Keswick, recorded by W. Greenip (H. A. Beadle, Ento. Record, vi., p. 279 ; xiv., p. 206). Not uncommon in West Cumberland (Mawson). Victoria History, i., p. 129.

Variation.—I have taken the type and var. *pallida*, Tutt. (G.B.R.).

**Orthosia (Amathes) macilenta**, Hb. Common at sugar. Carlisle district.—Orton and Durdar (F. H. Day). Red Cat, Newby Cross (J. A. Malcolm). Brampton district.—Extremely abundant (G. B. Routledge). Lake district.—Common at Keswick in the Great Wood (H. A. Beadle, Ento. Record, vi., p. 279 ; xiv., p. 206). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Frequent in West Cumberland (Mawson). Victoria History, i., p. 129.

Variation. I have taken type form and vars. *straminea*, *straminea-obsolata*, and *obsolata*, Tutt (G.B.R.).

**Anchocelis (Amathes) rufina**, L. ; **helvola**, L. Common. Carlisle district.—Common at sugar at Orton, Durdar (F. H. Day). Newby Cross, Red Cat (J. A. Malcolm). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Common at sugar at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Scarce in West Cumberland (Mawson). Victoria History, i., p. 129.

Variation.—I have taken type form *helvola*, L., also vars. *punica*, Bork., and *ochrea*, Tutt (G.B.R.).

**Anchocelis (Amathes) pistacina**, F. ; **lychnidis**, Schiff. Very rare. Lake district.—Keswick, "occurs here, but have not taken it" (H. A. Beadle, Ento. Record, vi., p. 279). Frequent in West Cumberland (Mawson). Local or scarce in Cumberland (Barrett's Brit. Lep., v., p. 342). Victoria History, i., p. 129.

**Anchocelis (Omphaloscelis) lunosa**, Haw. Usually somewhat scarce and local, comes to sugar and light in August and September. Carlisle district.—Durdar, Cummersdale, Carlerton (F. H. Day). Carlisle, Great Corby, Broadwath (J. E. Thwaytes). Harraby, Red Cat, Orton (J. A. Malcolm). Brampton district.—Was very common at Hayton in 1878, Hayton Moss, Tarn Lodge (G. B. Routledge). How Mill and Brampton Junction Signal Cabins (J. E. Thwaytes). Rather rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 349). Victoria History, i., p. 129.

Variation.—I have taken var. *agrotoides*, Gn., (predominates), and var. *obsoleta*, Tutt (G.B.R.).

**Anchocelis (Amathes) litura**, L. Common at sugar end of August to beginning of October. Carlisle district.—Durdar and Orton (F. H. Day, Ento. Mo. Mag., xxx., p. 62). Red Cat (J. A. Malcolm). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Fairly common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Rather rare in West Cumberland (G. Mawson). Victoria History, i., p. 129.

Variation.—I have taken var. *borealis*, Sp.-Schn., and vars. *rufa*, Tutt, and *rufa-pallida*, Tutt (G.B.R.).

**Cerastis (Orrhodia) vaccinii**, L. Common at sugar in the autumn, and appears in the spring after hibernation. Carlisle district.—Very common (F. H. Day). Brampton district.—Very common (G. B. Routledge). Lake district.—Common at sugar and at ivy at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (G. Mawson). Victoria History, i., p. 129.

Variation.—I have taken the type form, also var. *ochrea*, Tutt, var. *variegata*, Tutt, var. *rufa*, Tutt, var. *suffusa*, Tutt (G.B.R.),

**Cerastis (Orrhodia) ligula**, Esp. Locally common in the autumn. Carlisle district.—Durdar, Orton, Newby Cross (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, in some years it is common, in others absent or scarce (G. B. Routledge). Lake district.—Much commoner than *C. vaccinii* at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Uncommon in West Cumberland (Mawson). Cumberland. (Barrett's Brit. Lep., vi., p. 18). Victoria History, i., p. 18.

Variation.—I have taken var. *ochrea*, Tutt, var. *subnigra*, Haw., and var. *spadicea*, Haw. (G.B.R.).

**Scopelosoma (Eupsilia) satellitia**, L. Common in the autumn and spring. Carlisle district.—Common at Red Cat, Newby Cross (J. E. Thwaytes). Orton (F. H. Day). Brampton district.—Common (G. B. Routledge). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Plentiful in West Cumberland (Mawson). Victoria History, i., p. 129.

**Xanthia (Cirrha) citrargo**, L. Local. Carlisle district.—One specimen bred from a larva at Orton (G. Wilkinson). Brampton district.—Hayton, one specimen. Not uncommon at sugar at Tarn Lodge (G. B. Routledge). Lake district.—Observed by the late James Edmondson in St. John's Vicarage grounds, at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 363). Victoria History, i., p. 129.

Variation.—I mostly take var. *aurantiargo*, Tutt (orange-red), also type form (yellow), (G.B.R.).

**Xanthia fulvago**, L. ; **cerago**, F. Common, larvæ abundant in the catkins of the willow in the spring. Carlisle district.—Common, var. *flavescens*, Esp., not scarce (F. H. Day). Newtown and Great Orton (T. C. Heysham, Steph. Illust., iii., p. 325). Carlisle (Morris' Brit. Moths, ii., p. 174). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Barron Wood (T. Armstrong, Ento. Weekly Int., ii., p. 5). Great Salkeld (H. Britten). Lake district.—Common everywhere at Keswick ; var *flavescens*, fairly common (H. A. Beadle, Ento. Record, vi, p. 279 ; vii., p. 89 ;

xiv., p. 206). Plentiful in West Cumberland (G. Mawson). Victoria History, i., p. 129.

Variation.—I have taken the type form *fulvago*, L., also var. *flavescens*, Esp., var. *cerago*, Hb., and var. *cerago*, Newman = *suffusa*, Tutt. I have never met with the variety with the ground colour orange-yellow (G.B.R.).

**Xanthia flavago**, F.; **silago**, Hb.; **lutea**, Ström. Locally common, appears in August and September. Carlisle district.—Durdar, Orton (F. H. Day). Brampton district.—Hayton, Tarn Lodge, Hayton Moss, common on the flowers of the ragwort, 1911 (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Keswick, commoner than *X. fulvago*, but more local (H. A. Beadle, Ento. Record, vi., p. 279). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Rather rare in West Cumberland (Mawson). Victoria History, i., p. 129.

**Xanthia (Amathes) circellaris**, Hufn.; **ferruginea**, Hb. Generally common at sugar. Carlisle district.—Common at Red Cat, less so at Orton and Newby Cross (J. E. Thwaytes). Common at sugar at Durdar and Orton, some specimens are very dark, have taken var. *macilenta*, Hb. (F. H. Day). Brampton district.—Common at Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Very common at sugar, rather variable at Keswick (H. A. Beadle, Ento. Record, vi., p. 279). Penrith district.—Common (H. Britten). Not frequent in West Cumberland (Mawson's list). Victoria History, i., p. 129.

Variation.—The pale ochreous form (type form) and bright-red form—var. *ferruginea*, Hb., I have found equally common, whilst the suffused form—var. *macilenta*, Hb., is not uncommon (G.B.R.).

**Cirrhoedia (Atethmia) xerampelina**, Hb. Found in small numbers in the county resting on trunks of ash trees, or on gas lamps at night. Carlisle district.—Carlisle in 1863 (J. B. Hodgkinson, Entom. Ann., 1864, p. 127). Carlisle (C. Atkinson), also several taken at light by G. Wilkinson. One specimen at gas lamp on Wetheral Railway Bridge (J. E. Thwaytes). Penrith district.—Great Salkeld (H. Britten). Lake district.

—Occurs sparingly by the riverside at Keswick (H. A. Beadle, Ento. Record, vi., p. 279 ; ix., p. 91). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Friars Crag (H.A.B., Ento. Record, xiv., p. 206). Uncommon in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 359). Victoria History i., p. 129.

**Tethea (Plastenis) subtusa**, F. Rare. Carlisle district.—(Morris' Brit. Moths, ii., p. 173). Two specimens were bred by G. Wilkinson in 1897 from larvæ spun up between aspen leaves, one from Newby, and the other from Orton (F. H. Day). One from a larva taken at Orton (J. E. Thwaytes). Lake district.—Derwentwater (W. C. Marshall, Entom., iv., p. 201). Victoria History, i., p. 129. The occurrence of this species in any locality depends on the presence of the poplar and aspen.

**Cosmia paleacea**, Esp.; **fulvago**, Hb. Very rare and local. Penrith district.—Barron Wood, recorded as *C. fulvago* (J. B. Hodgkinson, Zool., v., p. 1,883). Barron Wood, one on flowers of ragwort (H. Britten). Cumberland, taken at sugar, September 16th (T. Armstrong, Ento. Weekly Int., ii., p. 5 ; vii., p. 30). Cumberland.—(Barrett's Brit. Lep., v., p. 310. South's Brit. Moths, ii., p. 6). Victoria History, i., p. 129.

**Calymnia trapezina**, L. Generally common, very variable, on the wing from July to September. Carlisle district.—Blackhall Woods (T. C. Heysham, Steph., Illust., iii., p. 325). Common round Carlisle (J. E. Thwaytes and F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Common (H. Britten). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Plentiful in West Cumberland (Mawson). Victoria History, i., p. 129.

Variation.—I have taken the type form, also var. *pallida*, Tutt, var. *rufa*, Tutt, var. *grisea*, Tutt, and sub-var. *obsoleta-rufa*, Tutt (G.B.R.).

**Calymnia affinis**, L. Very rare. Lake district.—Keswick, very rare, one taken sitting on a fallen elm leaf (H. A. Beadle, Ento. Record, vi., p. 280). Rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 326),

Victoria History, i., p. 129. Found in the southern and eastern counties of England, local in the Midland counties and Yorkshire, rare in Lancashire, no records from Durham, Northumberland and Scotland.

**Dianthoecia conspersa**, Esp.; **nana**, Rott. Carlisle district.—(Morris' Brit. Moths, iii., p. 2). Penrith district.—Barron Wood, T. Armstrong writes:—"The species is out on the 15th of June on the wing in the evening; wet or dry they will take to the wing; quick in motion, but not to any distance; they drop soon upon the flowers of *Lychnis flos-cuculi*; of this moth several were taken by me in 1856, as well as in 1855" (Ento. Weekly Int., ii., p. 4); also recorded Ento. Weekly Int., vii., p. 30. Lake district.—Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Broughton (G. Wilkinson, Ento. Record, xix., p. 212). Rare in West Cumberland (Mawson). Cumberland coast.—Common at Maryport (Victoria History, i., p. 129). Cumberland —(Barrett's Brit. Lep., iv., p. 253. Tutt's Brit. Noctuae, iii., p. 35).

**Dianthoecia capsicola**, Hb. Common. Carlisle district.—Not uncommon amongst white campion (F. H. Day). Great Corby (J. E. Thwaytes). Longtown district.—Bolton Fell (J. E. Thwaytes). Brampton district.—Hayton and Tarn Lodge (G. B. Routledge). Penrith district (H. Britten). Lake district.—Keswick (H. A. Beadle, Ento. Record, xiv., p. 206). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 129.

**Dianthoecia cucubali**, Fues. Always scarce. Carlisle district.—Taken on the wing in the evening in May (T. Armstrong, Ento. Weekly Int., vii., p. 30). One at Newby Cross, June, 1894 (G. Wilkinson, British Naturalist, 1894 (new series), p. 201). Newby Cross (J. E. Thwaytes). Brampton district.—Hayton and Tarn Lodge, rare (G. B. Routledge). Lake district.—Occurs sparingly at Keswick (H. A. Beadle, Ento. Record, vi., p. 280; xiv., p. 206). Cockermouth (W. Robinson, Ento. Weekly Int., vii., p. 30; ix., p. 61). Scarce in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 129.

**Dianthoecia carpophaga**, Bork. Scarce. Lake district.—Occurs sparingly at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Broughton (G. Wilkinson, Ento. Record, xix., p. 212). Scarce in West Cumberland (Mawson). Victoria History, i., p. 129.

**Dianthoecia capsophila**, Dup. (sub-species). Very scarce. Lake district.—Occurs sparingly at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Scarce in West Cumberland (Mawson). Cumberland Coast.—Whitehaven (E. Birchall, Ento. Weekly Int., ix., p. 109). These specimens were exhibited by C. S. Gregson at a meeting of the Historic Society of Lancashire, on December 20th, 1860, as a species new to the British list. The specimens were taken by Messrs. J. T. Tiltman and W. Nicholson, of Whitehaven (Ento. Weekly Int., ix., p. 133). Entom., iii., p. 104. Tutt's Brit. Noctua, iii., p. 32. Victoria History, i., p. 129.

**Hecatera serena**, F. Carlisle district.—Three specimens at Upperby (J. E. Thwaytes). Scarce in West Cumberland (G. Mawson). Victoria History, i., p. 129.

**Polia chi**, L. Common everywhere; at rest on stone walls, tree trunks, also at sugar, in August and September. Carlisle district.—Common; have taken two specimens of var. *olivacea*, Steph. (F. H. Day). Barrock Fell (G. Wilkinson, Ento. Record, xviii., p. 105). Brampton district.—Common (G. B. Routledge). Brampton (J. W. H. Harrison, Ento. Record, xviii., p. 64). Alston district.—Alston and Nenthead, specimens very white (J.W.H.H., Ento. Record, xviii., p. 64). Penrith district.—Common (H. Britten). Lake district.—Very plentiful on stone walls and on trees (H. A. Beadle, Ento. Record, vi., p. 280). Keswick (F. H. Wolley-Dod, Ento. Record, ii., p. 206). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Very common in West Cumberland (G. Mawson). Cumberland (Stephen's Illust., iii., p. 34; Wood's Index Entomologicus, p. 59). Victoria History, i., p. 129.

Variation.—I have only taken var. *olivacea*, Stp., also type form (G.B.R.).

**Dasypolia templi**, Thub. Frequents gas lamps; far from common. Carlisle district.—(Morris' Brit. Moths, iii., p. 5). Carlisle, one specimen taken at Carlisle, October 31st, 1846, the first known specimen taken in Cumberland (J. B. Hodgkinson, Zool., p. 1,658). Occasionally taken at lamps in Carlisle, in October (F. H. Day). Brampton district.—One specimen taken in the Signal Cabin at Brampton Junction, October, 1910 (J. E. Thwaytes). Cumberland.—(Barrett's Brit. Lep., iv., p. 293). Victoria History, i., p. 129.

**Aporophyla lutulenta**, Bork. Occurs at sugar in August and September; the typical form does not occur in the county. Carlisle district.—Rare at Durdar, also var. *sedī*, Gn., taken (F. H. Day, Ento. Mo. Mag., xxx., p. 62). Peastree Wood (Gilbertson). Brampton district.—Tarn Lodge, first taken in 1893, when it was very common (G. B. Routledge). Brampton Junction Signal Cabin, 1910 (J. E. Thwaytes). Cumberland.—(Barrett's Brit. Lep., iv., p. 276). Victoria History, i., p. 129.

Variation.—The only forms that I have taken are the var. *luneburgensis*, Frey., and var. *sedī*, Gn. (G.B.R., Ent. Record, v., p. 135; Brit. Naturalist, 1894, new series, p. 95).

**Aporophyla nigra**, Haw. Not uncommon at sugar in September to beginning of October. Carlisle district.—Red Cat (J. E. Thwaytes). Orton and Durdar, not very common (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, not uncommon (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Keswick, not uncommon (H. A. Boadle, Ento. Record, vi., p. 280; vii., p. 89). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Rather scarce in West Cumberland (G. Mawson). Cumberland (T. Marshall, Steph. Illust., ii., p. iii.). South's Brit. Moths, i., p. 284. Barrett's Brit. Lep., iv., p. 278. Two specimens from Cumberland (from G.B.R.) have been figured in that work (iv., plate clxvi., figs. 2a, 2b). Victoria History, i., p. 129.

**Cleoceris (Bombycia) viminalis**, F. Sometimes common at sugar and on flowers of Ragwort in July and August. The larvæ may be readily found between united willow leaves. Carlisle

district.—Fairly common at Durdar, Orton and Carleton, a few var. *obscura*, Staud., are taken (F. H. Day). Orton (J. E. Thwaytes). Near Bow (?district), July, 25th, 1830 (T. C. Heysham, Steph. Illust., iii., p. 325). Brampton district.—Gelt Wood (F. H. Day). Not uncommon at Hayton Moss (G. B. Routledge). Lake district.—Keswick, fairly plentiful, including black var. (H. A. Beadle, Ento. Record, vi., p. 280; ix., p. 91). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Rather scarce in West Cumberland (G. Mawson). Cumberland.—(Barrett's Brit. Lep., iv., p. 317). Victoria History, i., p. 129.

Variation.—I have taken var. *scripta*, Hb., and var. *obscura*, Staud., both of these are common; var. *intermedia*, Tutt, and var. *unicolor*, Tutt, are rare. I have not met with the type form which is rare in Britain (G.B.R.).

**Miselia oxyacanthae**, L. Common at sugar in September and October. Carlisle district.—Common (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Keswick (G. Wailes, Steph. Illust., iii., p. 326). Fairly common, richly coloured (H. A. Beadle, Ento. Record, vi., p. 280). Common in West Cumberland (Mawson). Victoria History, i., p. 129.

Variation.—I have only taken the type form, and have no record of var. *capucina*, Mill., from the county.

**Agriopis aprilina**, L. Sometimes common at sugar in September and October. Carlisle district.—Common (F. H. Day). Great Corby (J. E. Thwaytes). Rose Castle (T. C. Heysham, Steph. Illust., iii., p. 324). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Keswick, abundant, specimens vary to a dark-banded form (H. A. Beadle, Ento. Record, vi., p. 280). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Plentiful in West Cumberland (Mawson). Victoria History, i., p. 129.

**Euplexia lucipara**, L. Common at sugar. Carlisle district.—Orton, Durdar (F. H. Day). Carlisle (J. E. Thwaytes). Prior Rigg, taken in June (T. C. Heysham, Steph. Illust.,

iii., p. 324). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—(H. Britten). Lake district.—Generally common at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Wythop (O. Whittaker, Entom., xxxiii., p. 356). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Seathwaite, very common (J. E. Thwaytes). Plentiful in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 129.

**Phlogophora meticulosa**, L. Generally common. Carlisle district.—Common (F. H. Day). Red Cat, Newby Cross (J. E. Thwaytes). Blackhall (T. C. Heysham, Steph. Illust., iii., p. 84). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Keswick (G. Wailes, Steph. Illust., iii., p. 326). Abundant, second brood very rich in purple shades and reflections (H. A. Beadle, Ento. Record, vi., p. 280). Plentiful in West Cumberland (Mawson). Cumberland coast.—Schoose Wood, near Workington (G. Wilkinson, Ento. Record, xix., p. 224). Victoria History, i., p. 129.

**Aplecta (Eurois) prasina**, F. ; **herbida**, Hb. Seldom very common. Carlisle district.—(Morris' Brit. Moths, iii., p. 12). Orton (F. H. Day, J. Murray). Red Cat, Orton (J. E. Thwaytes). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, not common (G. B. Routledge). Penrith district.—Barron Wood, July 7th, 1831 (T. C. Heysham, Steph. Illust., iii., p. 324). Lake district.—Derwentwater (W. C. Marshall, Entom., iv., p. 201). Keswick (F. H. Wolley-Dod, Ento. Record, ii., p. 205). Moderately common (H. A. Beadle, Ento. Record, vii., p. 89 ; ix., p. 91 ; xiv., p. 206). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Rather rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., iv., p. 106). Victoria History, i., p. 130.

**Aplecta (Eurois) occulta**, L. Very rare. Brampton district.—Two specimens at Hayton, and two at Tarn Lodge (G. B. Routledge). Rare in West Cumberland. Cumberland.—(Barrett's Brit. Lep., iv., p. 110). Victoria History, i., p. 130. This species is principally found in Scotland.

**Aplecta (Mamestra) nebulosa**, Hufn. Common at sugar. Carlisle district.—(Morris' Brit. Moths, iii., p. 14). Carlisle (T. C. Heysham, Steph. Illust., iii., p. 29, under *Polia bimaculosa*). Orton, Durdar (F. H. Day). Red Cat, Newby Cross, Great Corby (J. E. Thwaytes). Brampton district.—Hayton (Mrs. M. G. Routledge Entom., xxi., p. 280). Hayton Moss, Tarn Lodge (G. B. Routledge). Lake district.—Keswick (G. Wailes, Steph. Illust., iii., p. 324, under *P. bimaculosa*). Common in Castle Head Wood, Keswick (H. A. Beadle, Ento. Record, vi., p. 280; ix., p. 91). Eskdale (P. J. Barraud, Entom., xl., p. 67). Plentiful in West Cumberland (Mawson). Victoria History, i., p. 130.

Variation.—I have only taken the type form (G.B.R.).

**Aplecta (Mamestra) tinctoria**, Brahm. Very local. Lake district.—Derwentwater (W. C. Marshall, Entom., iv., p. 201). Keswick, taken at sugar, common in 1892, scarce in 1893, absent in 1894 (H. A. Beadle, Ento. Record, vi., p. 280; vii., p. 89; ix., p. 91). Scarce in West Cumberland (Mawson). Victoria History, i., p. 130.

**Aplecta (Mamestra) advena**, F. Lake district.—Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). West Cumberland (Mawson's list). Stainton's Manual, i., p. 272. This species occurs in the Solway district of Scotland.

**Hadena (Eumicthis) adusta**, Esp. Moderately common. Carlisle district.—Scarce at Durdar (F. H. Day, Ento. Record, ix., p. 238). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, Tarn Lodge (G. B. Routledge). Lake district.—Moderately common at Keswick (H. A. Beadle, Ento. Record, xiv., p. 206). Derwentwater (H.A.B., Ento. Record, xiv., p. 206). West Cumberland (Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 213). Victoria History, i., p. 130.

**Hadena (Eumicthis) protea**, Bork. Common at sugar in the autumn. Carlisle district.—Orton, Wreay, Durdar (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, common (G. B. Routledge). Lake district.—Common at Keswick and extremely variable (H. A. Beadle, Ento. Record, vi., p. 280). Rather plentiful in West Cumberland

(Mawson). Penrith district.—(H. Britten). Victoria History i., p. 130.

Variation.—I have taken the type form, also var. *seladonia* Haw., var. *variegata*, Tutt, and var. *suffusa*, Tutt.

**Hadena (Mamestra) glauca**, Hb. Scarce. Carlisle district.—Occurs sparingly at Durdar and Orton in June (F. H. Day). Red Cat (J. E. Thwaytes). Longtown district.—Bolton Fell (J. E. Thwaytes). Brampton district.—One specimen taken in Gelt Wood, May 25th, 1892 (G. B. Routledge). Cumrew Fell (J. E. Thwaytes). Lake district.—Taken sparingly by W. Greenip, at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., iv., p. 194; South's British Moths., i., p. 246). Victoria History, i., p. 130.

**Hadena (Mamestra) dentina**, Esp. Not uncommon. Carlisle district.—Durdar, Orton (F. H. Day, Ento. Record, ix., p. 238). Orton, Newby Cross, Great Corby (J. E. Thwaytes). Longtown district.—Bolton Fell (F. H. Day and J. E. Thwaytes). Brampton district.—Hayton, Tarn Lodge, not very common (G. B. Routledge). Lake district.—Occurs sparingly at Keswick (H. A. Beadle, Ento. Record, vi., p. 280; xiv., p. 206). Ennerdale and Crummock (G. Wilkinson, Ento. Record, xix., pp. 223-4). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Seathwaite (J. E. Thwaytes). Rather plentiful in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 66). Victoria History, i., p. 130.

Variation.—I have taken the type form and also var. *ochrea*, Tutt (G.B.R.).

**Hadena (Mamestra) oleracea**, L. Very common in gardens. Carlisle district.—Common everywhere (F. H. Day). Brampton district.—Common everywhere (G. B. Routledge). Lake district.—Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Plentiful in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 67). Victoria History, i., p. 130.

**Hadena (Mamestra) pisi**, L. Carlisle district.—Orton, Newby Cross, Todhills (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Longtown district.—Bolton Fell (J. E. Thwaytes). Penrith district.—(H. Britten). Lake district.—A specimen of var. *splendens* beaten out of a hazel bush at Rosthwaite (J. B. Hodgkinson, Zool., 1844, p. 666). Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Eel Tarn, Eskdale (P. J. Barraud, Entom., xl., p. 67). Crummock (G. Wilkinson, Ento. Record, xix., p. 224). Plentiful in West Cumberland (Mawson). Victoria History, i., p. 130.

Variation.—Specimens of *Mamestra splendens*, Stph., taken by Mr. Weaver, July, 1827, in Stephen's Collection (Steph. Illust., ii., p. 192). Tutt's Brit. Noctux, iii., p. 91. Wood's Index Entomologicus, p. 51.

**Hadena (Mamestra) thalassina**, Rott. Common at sugar. Carlisle district.—Common at Durdar, Orton (F. H. Day). Longtown district.—Bolton Fell (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Great Salkeld, (H. Britten). Lake district.—Fairly plentiful at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Eel Tarn, Eskdale (P. J. Barraud, Entom., xl., p. 67). Crummock (G. Wilkinson, Ento. Record, xix., p. 224). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Not uncommon in West Cumberland (Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 213). Victoria History, i., p. 130.

**Hadena (Mamestra) contigua**, Vill. Not common; taken at sugar in June and July. Brampton district.—Hayton, Hayton Moss, not very common (G. B. Routledge). Lake district.—Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Scarce in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep. ib., p. 171). Victoria History, i., p. 130.

**Hadena (Hyppa) rectilinea**, Esp. Carlisle district.—Durdar, Orton, not scarce (F. H. Day, J. E. Thwaytes, G. Wilkinson; British Naturalist, new series, 1894, p. 201). Lake district.—Taken at Keswick by W. Groenip (H. A. Beadle, Ento. Record, vi., p. 280). Keswick (H. A. Beadle, Ento. Record, vii., p.

89; ix., p. 91; xiv., p. 206). Derwentwater, one taken at sugar (W. C. Marshall, Entom., iv., p. 201). Seathwaite (M. C. Dixon, Ento. Record, xiv., p. 49). Rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., v., p. 37; South's Brit. Moths, i., p. 265). Victoria History, i., p. 130. This species was at one time found in Yorkshire; it is principally found in Scotland.

**Xylocampa areola**, Esp.; **lithoriza**, Gn. Found resting on trees and walls in March and April. Carlisle district.—(Morris' Brit. Moths, iii., p. 25). Common all round Carlisle (F. H. Day). Red Cat, Orton, Newby Cross (J. E. Thwaytes). Carlisle, at rest on old palings (T. Armstrong, Ento. Weekly Int., vii., p. 30). Orton (G. B. Routledge). Brampton district.—Hayton, Hayton Moss, Gelt Wood, Tarn Lodge, at rest, and from sallow blossoms (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—A few on tree trunks, one or two feet from the ground (H. A. Beadle, Ento. Record, vi., p. 280). Rather rare in West Cumberland (Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 212). Victoria History, i., p. 130.

Variation.—I have only taken the rosy form = var. *rosea*, Tutt = *lithoriza*, Gn. (G.B.R.).

**Calocampa vetusta**, Hb. Rare. Carlisle district.—(Morris' British Moths, iii., p. 26). Brampton district.—One taken at sugar at Hayton (G. B. Routledge). Lake district.—Keswick (J. B. Hodgkinson, Zool., 1844, p. 666). Scarce in West Cumberland (Mawson). Victoria History, i., p. 130. Not plentiful in England; common in Scotland.

**Calocampa exoleta**, L. Fairly plentiful; appears at end of September and after hibernation again in the spring. Carlisle district.—(Morris' Brit. Moths, iii., p. 27). Common at Durdar and Orton (F. H. Day). Red Cat, Orton, Newby Cross (J. E. Thwaytes). Carlisle (C. Eales, Ento. Record, iii., p. 115). Brampton district.—Hayton, Hayton Moss, Tarn Lodge (G. B. Routledge). Penrith district.—Barron Wood (T. Armstrong, Ento. Weekly Int., ii., p. 4). Great Salkeld (H. Britten). Lake district.—Rather rare at Kes-

wick (H. A. Beadle, Ento. Record, vi., p. 280). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Rather plentiful in West Cumberland (Mawson) Victoria History, i., p. 130.

**Calocampa (Lithomoia) solidaginis**, Hb. Found on moors, mosses, and in hilly districts, in August and September. Brampton district.—Gelt Wood, Hayton Moss, and Tarn Lodge (G. B. Routledge). Penrith district.—Lazonby Fell, Penrith Beacon (H. Britten). Lake district.—Keswick, fairly plentiful in woods on the west side of Derwentwater (H. A. Beadle, Ento. Record, vi., p. 280; vii., p. 89; ix., p. 91). Cumberland.—(Barrett's Brit. Lep., vi., p. 48; South's Brit. Moths, ii., p. 32). Victoria History, i., p. 130.

**Xylina (Graptolitha) ornithopus**, Hufn.; **rhizolitha**, F. Scarce in West Cumberland (G. Mawson). This species is found in the south of England, rare in the Midlands, scarce in Lancashire, Cheshire and Yorkshire. Rare in South of Scotland, recorded from the Solway and Tweed districts.

**Xylina (Lithophane) semibrunnea**, Haw. Lake district.—Taken on ivy by W. Greenip at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Cumberland.—(Barrett's Brit. Lep., vi., p. 26).

**Xylina (Lithophane) socia**, Rott.; **petrificata**, F. Lake district.—Taken on ivy by W. Greenip at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Common in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., vi., p. 29; South's Brit. Moths, ii., p. 29).

**Asteroscopus (Brachionycha) sphinx**, Hufn.; **cassinea**, Hb. Occurs sparingly at gas lamps in October. Carlisle district.—(T. Armstrong, Ento. Weekly Int., ii., p. 5; vii., p. 30; Morris' Brit. Moths, ii., p. 50; Stainton's Manual, i., p. 126; Hunter, "Substitute," p. 151). One specimen (male) at light at Great Corby (J. E. Thwaytes). Brampton district.—Two specimens at light at Hayton (G. B. Routledge). One larva beaten from crab, near Gelt Woods (F. H. Day). Barrett's Brit. Lep., iii., p. 157. South's Brit. Moths, i., p. 288. Penrith district.—Great Salkeld, bred from oak (H. Britten). Victoria History, i., p. 130. This species is rare in the northern counties,

**Cucullia chamomillae**, Schiff. Carlisle district.—Scarce; sometimes taken near Carlisle (F. H. Day, *Victoria History*, i., p. 130). Rare in West Cumberland (Mawson). Penrith district.—Great Salkeld, at flowers of Azalea (H. Britten).

**Cucullia umbratica**, L. Generally common; visits flowers of garden rocket and valerian in June and July. Carlisle district.—Common (F. H. Day). Carlisle and Great Corby (J. E. Thwaytes). Brampton district.—Hayton, Tarn Lodge (G. B. Routledge). Lake district.—In gardens at Keswick (H. A. Beadle, *Ento. Record*, vi., p. 280). Honister (M. C. Dixon, *Ento. Record*, xiv., p. 49). Rather plentiful in West Cumberland (Mawson). *Victoria History*, i., p. 130.

**Gonoptera (Scoliopteryx) libatrix**, L. Occurs at sugar from August to October, and after hibernation appears in the spring, and may be met with even in June. Carlisle district.—Carlisle (T. C. Heysham, *Steph. Illust.*, iii., p. 50). River Caldew, at Carlisle (J. E. Thwaytes). Durdar, Orton, Cummersdale (F. H. Day). Brampton district.—Hayton, Hayton Moss, Tarn Lodge, not very common (G. B. Routledge). Castlecarrock (Rev. J. Prowde). Penrith district.—(H. Britten). Lake district.—Keswick, a few each season at sugar (H. A. Beadle, *Ento. Record*, vi., p. 280). Rather rare in West Cumberland (Mawson). *Victoria History*, i., p. 130.

**Habrostola (Abrostola) tripartita**, Hufn.; **urticae**, Hb. Common at flowers in gardens in June and July. Carlisle district.—Carlisle (T. Armstrong, *Ento. Weekly Int.*, vii., p. 30). Not very common (F. H. Day). Carlisle and Great Corby (J. E. Thwaytes). Brampton district.—Hayton and Tarn Lodge, common (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Not common at Keswick (H. A. Beadle, *Ento. Record*, vi., p. 280). Cockermouth (W. Robinson, *Ento. Weekly Int.*, ix., p. 61). Rather scarce in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, *Entom.*, xl., p. 68). Cumberland.—(Barrett's *Brit. Lep.*, vi., p. 138). *Victoria History*, i., p. 130.

**Habrostola (Abrostola) triplasia**, L. Rarer than *H. tripartita*; occurs in gardens at flowers in June and July. Carlisle district.—Carlisle (F. H. Day). Carlisle and Great Corby (J. E.

Thwaytes). Brampton district.—Rare at Hayton and Tarn Lodge (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Not common at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Scarce in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., vi., p. 142; South's Brit. Moths ii., p. 74). Victoria History, i., p. 130.

**Plusia chrysitis**, L. Common amongst nettles in June and July. Carlisle district.—Common (F. H. Day). Carlisle, Great Corby and Broadwath (J. E. Thwaytes). Brampton district.—Hayton, Tarn Lodge (G. B. Routledge). Penrith district.—(H. Britten). Lake district.—Keswick, fairly plentiful, there are two distinct shades in the metallic spots, green and yellowish brass (H. A. Beadle, Ento. Record, vi., p. 280; ix., p. 91). Rather scarce in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 68). Victoria History, i., p. 130.

Variation.—I have taken type form and also var. *juncta*, Tutt (G.B.R.).

**Plusia bractea**, F. Partial to flowers in gardens, but is usually of rare occurrence. Carlisle district.—Near Carlisle (J. B. Hodgkinson, Zool., p. 889). Morris' Brit. Moths, iii., p. 49. Wreay, one specimen in 1897 (G. Wilkinson). Brampton district.—One specimen at Hayton (Mrs. M. G. Routledge). One specimen at Tarn Lodge (G. B. Routledge). Lake district.—Keswick (Morris' Brit. Moths, iii., p. 49). Found on ragwort flowers in Castle Head Field (W. Greenip, Ento. Weekly Int., i., p. 164). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., vi., p. 112). Victoria History, i., p. 130.

**Plusia festucae**, L. Moderately common; visits flowers in gardens in June and July. Carlisle district.—Meadows, near Prior Rigg (T. C. Heysham, Steph. Illust., iii., p. 326). Not uncommon at Currock, Newby and Morton (F. H. Day). Carlisle, Orton, Newby Cross (J. E. Thwaytes). Brampton district.—Hayton, Tarn Lodge (G. B. Routledge). Penrith district.—Great Salkeld (H. Britten). Lake district.—Rare

at Keswick (H. A. Beadle, Ento. Record, vi., p. 280 ; xiv., p. 206). Derwentwater (W. C. Marshall, Entom., iv., p. 201). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Rather rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., vi., p. 115). Victoria History, i., p. 130.

**Plusia iota**, L. Occurs at flowers in June and July ; not uncommon. Carlisle district.—Common (F. H. Day). Great Corby (J. E. Thwaytes). Solway district.—Rockcliffe (T. C. Heysham, Steph. Illust., iii., p. 326). Brampton district.—Hayton and Tarn Lodge (G. B. Routledge). Penrith district.—(H. Britten). Lake district.—Derwentwater (W. C. Marshall, Entom., iv., p. 201). Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 280 ; ix., p. 91). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Plentiful in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 68). Victoria History, i., p. 130. Variation.—I have taken the type form and also var. *percontationis*, Tr. (G.B.R.).

**Plusia pulchrina**, Haw. ; **v-aureum**, Gn. Common in gardens at flowers of garden rocket and valerian in June and July. Carlisle district.—Common (F. H. Day). Carlisle and Great Corby, more common than *P. iota* (J. E. Thwaytes). Brampton district.—Hayton and Tarn Lodge, more common than *P. iota* (G. B. Routledge). Penrith district.—(H. Britten). Lake district.—Derwentwater (W. C. Marshall, Entom., iv., p. 201). Common at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Wythop (O. Whittaker, Entom., xxxiii., p. 356). Plentiful in West Cumberland (Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 68). Seascale (F. H. Day). Victoria History, i., p. 130. Variation.—Most of my specimens have the metallic **y** mark in two parts. I have two specimens with the **y** mark complete on one side. (G.B.R.).

**Plusia gamma**, L. This species occurs in May and June (probably immigrants, as they are somewhat faded) and again more commonly in the autumn. Carlisle district. Common near Carlisle (T. C. Heysham, Steph. Illust., iii., p. 103). Common

(F. H. Day). Longtown district.—Common at Bolton Fell (F. H. Day). Brampton district.—Common some years (G. B. Routledge). Penrith district.—(H. Britten). Lake district.—Keswick, generally distributed, but never in numbers (H. A. Beadle, Ento. Record, vi., p. 280). Wythop (O. Whittaker, Entom., xxxiii., p. 356). Common in West Cumberland (G. Mawson). Cumberland coast.—St. Bees (P. J. Barraud, Entom., xl., p. 68). Victoria History, i., p. 130.

**Plusia interrogationis**, L. Local. Carlisle district.—(J. B. Hodgkinson, Zool., p. 889; Morris' Brit. Moths, iii., p. 52). One taken near Newtown in 1893 (G. Wilkinson). Longtown district.—Fairly common at Bolton Fell (J. E. Thwaytes). Brampton district.—Castlecarrock Fell, one specimen July, 1892 (G. B. Routledge). Penrith district.—Lazonby Fell (F. H. Day). Wan Fell, Barron Wood (H. Britten). Lake district.—Rare, found on the Borrowdale Road, Keswick, by W. Greenip (H. A. Beadle, Ento. Record, vi., p. 280). Keswick (H. A. Beadle, Ento. Record, vii., p. 89; ix., p. 91; xiv., p. 206). Rare in West Cumberland (Mawson). Cumberland.—(Barrett's Brit. Lep., vi., p. 134). Victoria History, i., p. 130.

**Anarta myrtili**, L. Common on our heaths and mosses; it flies rapidly during the heat of the day from May to July. Carlisle district.—Orton (T. C. Heysham, Illust., iii., p. 326). Orton, Newby Cross (F. H. Day and J. E. Thwaytes). Morris' Brit. Moths, iii., p. 40. Solway district.—Drumburgh (T.C.H., Steph. Illust., iii., p. 326). Bowness Moss (J. E. Thwaytes). Longtown district.—Bolton Fell (Day and Thwaytes). Brampton district.—Gelt Wood and Hayton Moss (G. B. Routledge). Cumwhitton Moss (J. E. Thwaytes). Penrith district.—(H. Britten). Lake district.—Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Cockermouth (W. Robinson, Ento. Weekly Int., ix., p. 61). Victoria History, i., p. 130.

**Heliaca tenebrata**, Scop.; **arbuti**, F. Occurs in meadows. Carlisle district.—Moderately common at Orton, and in a field near Morton, also at Kirkbampton (F. H. Day). Common at Orton (J. E. Thwaytes). Lake district.—Rare at Keswick

(H. A. Beadle, Ento. Record, vi., p. 280). Cumberland.—(Meyrick's Handbook, p. 167). Victoria History, i., p. 130. Penrith district.—Little Salkeld (H. Britten).

**Heliothis scutosa**, Schiff. Very rare. First recorded as British by Curtis, who figures and describes it in his "British Entomology," folio 595; the specimen from the collection of Mr. T. C. Heysham, "was taken on the banks of the River Caldew, a little below the village of Dalston, in July, 1833." This specimen was taken by James Cooper, who carried it alive to Mr. Heysham, and by him forwarded to Mr. Curtis, who figured it in his work (J. W. Harris, Entom., x., p. 212). The next capture appears to have been three specimens taken near Skinburness, on the shore of the Solway Firth, by R. R. Rothwell, then a boy at school, about the same date one of these examples came into the possession of the Rev. H. Burney, another in the collection of the late J. Sidebotham, the third is said to have been destroyed. The specimen in the Rev. H. Burney's collection, is a female in good condition and darker in colour, and more strongly marked than those obtained in Norfolk by W. H. Thorntwaite in 1875. When the Rev. H. Burney's collection was sold, in 1893, this specimen was purchased by J. B. Hodgkinson for £5 10s., and when his collection was sold in November, 1897, went for £2 15s. Barrett's Brit. Lep., vi., p. 167; Stainton's Manual, i., p. 292; Humphrey and Westwood's British Moths, i., p. 237; Entom., x., p. 212; Ento. Mo. Mag., xxv., p. 225; Tutt's Brit. Noctuæ, iii., p. 123; South's Brit. Moths, ii., p. 49. Victoria History, i., p. 130.

**Chariclea (Pyrrhia) umbra**, Hufn.; **marginata**, F. Local; larva feeds on restharrow (*Ononis*). Brampton district.—Cowran Railway Banks, and several at sugar at Tarn Lodge (G. B. Routledge). Cumberland.—(Barrett's Brit. Lep., vi., p. 149). Victoria History, i., p. 130.

**Erastria (Hapalotis) fasciana**, L.; **fuscula**, Bork. Lake district.—Keswick (H. A. Beadle, Ento. Record, ix., p. 91). Scarce in West Cumberland (Mawson's list).

**Hydrelia (Erastria) uncula**, Clerck. Carlisle district.—(Morris' Brit. Moths, iii., p. 44). Orton (J. B. Hodgkinson, Zool., v.,

p. 1,883). G. Wilkinson had specimens in his collection which were captured at Orton many years ago. T. Armstrong reports it as common, but does not mention precise locality (Ento. Weekly Int., vii., p. 30). Cumberland.—(Barrett's Brit. Lep., vi., p. 188; South's Brit. Moths, ii., p. 59). Victoria History, i., p. 130.

Variation.—Mr. C. G. Barrett writes :—" Usually not variable ; but there is in the Museum, at Carlisle, a specimen believed to have been captured in the neighbourhood by C. Eales, in which the pale costal stripe is supplemented by another equally broad, joined to it for three-fourths of its length, occupying the middle portion of the wing from the base, and throwing out a long spur toward the hind margin ; in the middle of the wing is a spot of the darker ground colour. So far as I know, this variation is unique." (Brit. Lep., vi., p. 186).

**Phytometra (Prothymnia) viridaria**, Clerck ; **aenea**, Hb. Common on heaths in June. Carlisle district.—Cobble Hall (T. C. Heysham, Steph. Illust., iii., p. 121). Common at Durdar and Orton (F. H. Day). Newby Cross (J. E. Thwaytes). Brampton district.—Hayton Moss (G. B. Routledge). Lake district.—Taken at Keswick occasionally (H. A. Beadle, Ento. Record, vi., p. 280). Victoria History, i., p. 130. Penrith district.—Wanfell, etc. (H. Britten).

**Euclidia mi**, Clerck. In meadows in May and June. Carlisle district.—Davidson's Bank, Blackhall, rather common (T. C. Heysham, Steph. Illust., iii., p. 140). Wreay, Durdar (F. H. Day). Newby Cross, Wetheral (J. E. Thwaytes). Longtown district.—Bolton Fell (Thwaytes). Brampton district.—Cowran Hills (T. Armstrong, Ento. Weekly Int., vii., p. 29). Cowran Railway Banks, Hayton Moss (G. B. Routledge). Lake district.—Taken at Falcon Crag, Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Plentiful in West Cumberland (Mawson). Cumberland coast.—Seascale (F. H. Day). Victoria History, i., p. 130. Penrith district.—Wanfell, Newton Reigny Moss (H. Britten).

**Euclidia glyphica**, L. Common in grassy places. Carlisle district.—Pretty common at Durdar and Orton (T. C. Heysham,

Steph. Illust., iii., p. 139). Common at Wreay (F. H. Day, Ento. Record, ix., p. 238). Solway district.—Rockcliffe (T. C. Heysham, Steph. Illust., iii., p. 139). Brampton district.—Cowran Hills (T. Armstrong, Ento. Weekly Int., vii., p. 29). Abundant on Cowran Railway Banks, Hayton Moss (G. B. Routledge). Penrith district.—Newton Reigny Moss (G.B.R.). Lake district.—Falcon Crag, Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Wythop (O. Whittaker, Entom., xxxiii., p. 356). Rare in West Cumberland (Mawson) Cumberland.—(Barrett's Brit. Lep., vi., p. 272). Victoria History, i., p. 130.

**Catocala nupta**, L. Carlisle district.—Davidson's Bank (T. C. Heysham, Steph. Illust., p. 133). This species is common in the South of England, scarcely noticed north of Bucks. and Hunts. in the Midlands, has occurred once in Yorkshire, and there is a doubtful record from Berwickshire.

**Rivula sericealis**, Scop. Lake district.—Keswick (Morris' Brit. Moths, iii., p. 69). Taken occasionally (H. A. Beadle, Ento. Record, vi., p. 280). Victoria History, i., p. 130. Scarce in the Midlands and northwards, occurs in the South of Scotland and is local and rare.

**Zanclognatha grisealis**, Hb. Widely distributed. Carlisle district.—Newbiggin Wood (G. Wilkinson). Orton, Newby (F. H. Day). Newby Cross (J. E. Thwaytes). Brampton district.—Hayton (G. B. Routledge). Lake district.—Taken occasionally at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Cumberland.—(Barrett's Brit. Lep., vi., p. 301). Victoria History i., p. 131. Uncommon in Scotland, recorded from the south only.

**Herminia cribralis**, Hb. : **cribrumalis**, Hb. Lake district.—Taken by W. Greenip at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). "Occurs in the southern counties and fens in the eastern counties. This seems to be extent of its range with us, unless the single record in Cumberland should be confirmed, which appears unlikely" (Barrett's Brit. Lep., vi., p. 303).

**Hypena proboscidalis**, L. Abundant amongst nettles in July and August. Carlisle district.—Abundant (F. H. Day). Bramp-

ton district.—Abundant (G. B. Routledge). Lake district.—Keswick (G. Wailes, Steph. Illust., iv., p. 11). Common in lanes and railway banks (H. A. Beadle, Ento. Record, vi., p. 280). Cumberland coast.—St. Bees (P. J. Barraud, Entom. xl., p. 67). Schoose Wood, near Workington (G. Wilkinson, Ento. Record, xix., p. 224). Victoria History, i., p. 131. Penrith district.—Great Salkeld (H. Britten).

Variation.—I have taken the dark-brown form (the type), and the ochreous tinted form = var. *brunnea*, Tutt (G.B.R.).

**Hypenodes costastrigalis**, St. Not common; occurs on the mosses in August. Carlisle district.—Two specimens near Carlisle (F. H. Day). Kingmoor (G. Wilkinson). Brampton district.—Hayton Moss, uncommon (G. B. Routledge). Lake district.—Keswick, fairly common in one place, a boggy wood (H. A. Beadle, Ento. Record, vi., p. 280; vii., p. 89; xiv., p. 286). Cumberland.—(Meyrick's Handbook, p. 150). Victoria History, i., p. 131.

**Tholomiges turfosalis**, Wk.; *humidalis*, Dbl. Lake district.—Keswick (Morris' Brit. Moths, iii., p. 68). In the Zoologist, 1851, p. 3,244, Mr. Harrison, of Keswick, writes:—"From the middle of July up to the 8th of August, it might be seen any fine evening between the hours of 6 and 8 flying on most of our swamps in great plenty" (Entom. Annual, 1855, p. 45). Common in boggy places (H. A. Beadle, Ento. Record, vi., p. 280). Cumberland.—(Barrett's Brit. Lep., vi., p. 312; South's Brit. Moths, ii., p. 97). J. H. Leech's Brit. Pyralides p. 9. Victoria History, i., p. 131.

**Brephos parthenias**, L. Appears in March and April, and on sunny days the males may be seen flying high up among birches growing on heaths. Carlisle district.—Common at Orton (F. H. Day and J. E. Thwaytes). Brampton District.—Hayton Moss, (G. B. Routledge). Penrith district.—Barron Wood (H. Britten), specimens were taken in April, 1835, by Mr. Hodgkinson, Sen. (J. B. Hodgkinson, Entom., xxvii., p. 22), and later by J. B. Hodgkinson (Entom., xxvii., p. 22). Lake district.—Fairly common amongst birch at Keswick (H. A. Beadle, Ento. Record, vi., p. 280). Near Lodore Falls (F. H. Day). Scarce in West Cumberland

(Mawson). Cumberland coast.—Workington (G. Wilkinson, Ento. Record, xix., p. 212). Victoria History, i., p. 131.

**Brephos notha**, Hb. Penrith district.—Barron Wood (Morris' Brit. Moths, iii., p. 46). Scarce in West Cumberland (Mawson). Victoria History, i., p. 131. This species has been found in Yorkshire and in the Altyre Woods, Moray, in Scotland. Occurs amongst aspens.

### DOUBTFUL RECORDS.

The 13 following species require further confirmation before being admitted to the *Cumberland* list.

**Acronycta aceris**, L. Rare in West Cumberland (Mawson). This species is not common in our southern and eastern counties, but is fairly common in and around London. Its range extends to Warwickshire and Herefordshire, but it is scarce.

**Calamia phragmitidis**, Hb. Rather rare in West Cumberland (Mawson). Abundant in the Fens of Norfolk and Cambridgeshire. Yorkshire and South Lancashire seem to be its northern limit.

**Coenobia rufa**, Haw. ; **despecta**, Tr. Rather rare in West Cumberland (Mawson). Occurs in the fens of Norfolk, Cambridgeshire and Suffolk, several localities in Yorkshire, and a doubtful record in Lancashire ; one record from Scotland, in Argyllshire.

**Mamestra (Hama) abjecta**, Hb. Lake district.—Keswick, common and very variable (H. A. Beadle, Ento. Record, vi., p. 278), inserted by mistake, not taken at Keswick (H.A.B., Ento. Record, xiv., p. 206). Victoria History, i., p. 127. This species is obtained in our southern and eastern counties on the coast, occasionally in Lancashire, Yorkshire and Durham ; in Scotland, in Moray, and in the Shetlands.

**Acosmetia caliginosa**, Hb. Rare in West Cumberland (Mawson). This species is very local, and almost confined to the New Forest, in Hants., also been taken in the Isle of Wight, and from Bloxworth, in Dorset, in 1854. It may be possible that G. Mawson may have taken *Hydrilla palustris*, Hb. (G.B.R.).

**Oporina (Hoporina) croceago**, F. Rare in West Cumberland (Mawson). Found in our southern counties, also in Herts., Herefordshire and Worcestershire. In Wales, has been taken in Glamorganshire, and also at Dolgelly.

**Xanthia (Ochria) aurago**, F. Rather rare in West Cumberland (Mawson). This species has extended its range into Yorkshire, 1890.

**Hecatera chrysozona**, Bork. ; **dysodea**, Hb. Scarce in West Cumberland (Mawson). Has been recorded from several localities in Yorkshire.

**Polia flavicincta**, F. Scarce in West Cumberland (Mawson). occurs in our eastern counties, also Berks., Oxfordshire, Somerset and Gloucestershire, extending to Herefordshire ; rare in Lancashire, also occurred in Yorkshire and Durham ; not recorded from Northumberland. Doubtfully recorded from Scotland.

**Epunda lichenea**, Hb. Rather scarce in West Cumberland (Mawson). Chiefly found in the Isle of Wight, and Portland ; common on the coasts of Devon and Cornwall. Common in Cheshire, Lancashire, and at Scarborough. Only two records from Scotland.

**Hadena (Mamestra) dissimilis**, Knoch ; **suasa**, Bork. Plentiful in West Cumberland (Mawson). Found on most of our seaboard southern and eastern counties. Locally common in Cheshire, Lancashire, and widely distributed in Yorkshire. Recorded from Ayr and Kirkcudbright.

**Hadena (Mamestra) trifolii**, Rott. ; **chenopodii**, F. Rather scarce in West Cumberland (Mawson). Principally found in Norfolk and Suffolk ; found in market gardens around London. Scarce in Cheshire and Yorkshire. Found rarely in Scotland.

**Toxocampa pastinum**, Tr. Rare in West Cumberland (Mawson). Has been recorded from Yorkshire.

(To be continued).

## THE DUCKS AND GEESE (ANSERES) OF THE SOLWAY.

BY LINNÆUS E. HOPE.

(Read December 3rd, 1908).

In the *Anseres* we undoubtedly have the most important group of the Solway avifauna, not only in numbers, but from an economic point of view. Most ducks and geese find a ready market on account of their edible qualities, and for this reason, as well as for the sport they afford, are persistently pursued. Perhaps the most interesting feature of the bird-life of the Solway is the vast number of wild geese of several species which gather on the Solway marshes at certain seasons of the year. On the wide flat stretches of grass marsh these birds are nearly as safe and unapproachable as on the mud flats of the Firth, and appear to greatly appreciate the food and rest to be obtained there. On the 25th of April, 1906, Mr. Eric B. Dunlop and I estimated the numbers of Grey geese on Rockcliffe marsh at not less than 2,000 birds, comprising several species, *i.e.*, Pink-footed, Bean and Grey Lag. The pink-footed goose is the predominating species, but the combined numbers of bean and grey lag at the present period run it very closely, the latter species having become more numerous during the last eight or nine years, quite 30% of the grey geese I have noticed in the Carlisle game shops being of this species. Eight days ago (November 25th, 1908) there were grey geese in two shops, all grey lags.

Thirty-two species of *Anatidæ* have been recorded for the Solway, including the mute swan and the doubtful Polish swan, *Cygnus immutabilis*, and no new species has been recorded since the publication of the "Fauna of Lakeland" and the "Victoria History of Cumberland," 1900 (H. A. Macpherson). These thirty-two species are divisible into several well-defined groups, *i.e.* :—

- (1) GEESE.—Which are again divisible into three smaller groups, grey, white, and black; the first containing the Grey lag, pink-footed, bean and white-fronted, the second the rare snow-goose, and the third the barnacle and brent;
- (2) SWANS.—Only one genus, *Cygnus*, comprising the Whooper Bewick's, Mute and Polish (?)
- (3) DUCKS.—Twenty-one species, clearly divisible into four groups, the first being the shelddrakes, the second the surface-feeding ducks, of which the mallard and gadwell are typical; third, the diving ducks, the goldeneye and pochard being typical though of different genera, and the eider and scoters somewhat aberrant; lastly the mergansers or fish-eating ducks.

There is thus a complete gradation from the grass-eating geese to the fish-eating mergansers; the nearest allies of the geese, after the swans, being the shelddrakes. The chief distinctive characters of the geese as a group are the uniform coloration of male and female, and the hard horny nail extending across the tip of the beak. The first of these characters is shared to some extent by the shelddrakes the difference in coloration between male and female being simply one of degree of brightness. In all the other ducks, however, there is a well-defined sexual dimorphism, the drakes being usually bright coloured, and the females more sober tinted. The nail on the tip of the beak is present in all the or less aborted in the ducks, and in the *Anatidæ*, but is more mergansers it becomes a useful hook.

The specific differences of the geese are well defined in the typical examples. The grey lag is the largest species, and sometimes weighs over 10lbs., the largest I have weighed was 10½lbs., and the lightest, a young bird in first autumn, 6lbs. Bean geese average about 7½lbs., and pink-footed geese about 6lbs. The white-fronted is the smallest of the grey geese, and weighs on an average about 5lbs. The grey lag and the white-fronted, although the two species are most dissimilar in size, are most nearly allied, having much coloration in common, both species having orange-coloured legs and white nails to their beaks. The white-fronted species takes its common name from the conspicuous patch of white feathers on the forehead, whilst it has broad black bars on

the abdomen and lower breast. In very old birds of the grey lag both these characters begin to appear, proving the relationship, but apart from size, the blue colour of wing coverts of the grey lag, as opposed to the brown of the white-front, are sufficiently distinctive. The bean and pink-footed species are also nearly related to each other, the chief differences being the coloration of the legs and feet, and the comparative size of the beaks; the beak of the bean being much larger and longer than that of the pink-foot, but both have the nail blackish. The bean is the darker bird of the two, and its legs and feet are orange, whilst those of the pink-foot are flesh-coloured—hence his common name; the specific name, *brachyrhyncus*, (short beak), refers to the other distinctive character of the pink-foot.

The barnacle and brent are known as black geese, owing to the predominance of that shade in their coloration, and are altogether smaller birds than the grey geese. The barnacle does not usually weigh more than four pounds, and the brent is a lighter weight. The barnacle is a common goose on the Solway and, according to Mr. W. Nichol, is most regular in its arrival in autumn, which usually takes place in the first week of October. It occasionally arrives earlier, as Mr. Harold Carr reported to me their presence at Ruthwell on the Scottish Solway, on September 15th, 1905. Mr. Nichol also says he has not known them stay later at Skinburness than April 28th, but on May 9th, 1907, Mr. Eric B. Dunlop, Mr. D. Losh Thorpe, and myself, saw over 200 on Rockcliffe Marsh. The brent goose is a smaller bird than the barnacle, and darker in colour, it lacks the white markings on the head so conspicuous in the barnacles, but has a rectangular white patch on each side of the neck.

The circumstances of geese being noted on the upper reaches of the Solway earlier than at Silloth in autumn and later in spring, leads me to think that they arrive and leave in an easterly direction. This supposition is also supported by the fact that numerous flocks are heard and seen passing inland, S.E. or over Carlisle from E. or N.E. That there is a continuation movement S.E. in autumn from the Solway cannot be doubted, for during the autumn months flocks are frequently seen passing S.E. inland, as also flocks are seen going west. On February 25th, 1906, Mr. Dunlop noted a

flock of 50 or 60 flying west. Whether the westward flight is continued further than the Solway I cannot say definitely, but from the fact that they are seen later at Rockcliffe than Skimburness, it might be inferred that they leave the Solway in a N. Easterly direction.

The two species of wild swans which visit the Solway resemble each other greatly, and at a short distance it is difficult to separate the species. The chief point of distinction is size, the whooper being much the larger bird, weighing 20 to 24 lbs. against the 12 or 14 lbs. of the Bewick's. The only other distinctive character being the amount of yellow skin on the cere and beak, which in the whooper extends beyond the nasal openings, whilst in Bewick's swan it does not quite reach the nostrils.

Amongst our twenty-one species of ducks there is considerable diversity of colour and form, and with the exception of the sheldrakes there is a well-defined sexual difference, whilst in most species the males, after the young are hatched, assume a more sober-coloured dress nearly resembling that of the females. The males take no part in incubation, some species packing together whilst the females are sitting. They moult the whole of the primary feathers of the wing at once, and are thus deprived of the power of flight for a short time; it is then that a sober-coloured and less conspicuous dress is useful. A useful character in the classification of birds is the structure of the feet and beak, and accordingly we find certain characters in these members universal in the family *Anatidæ*. These are—the presence of a web or connecting membrane between the three front toes or digits of the foot, of laminations or transverse raised ridges upon the edges of the mandibles and of a horny nail at the tip of the beak. There is some variation in the form of the web of the foot, being generally slightly indented or arched inwards from the tips of the toes. This membrane reaches its highest development in the diving ducks, which possess a small lobe on the hind toe or hallux, but not connected with the other toes. The lamination of the beak takes several distinct forms:—in the geese it consists of hard bony ridges, which act as teeth when cropping the grass upon which they feed; largely developed in the shoveler, forming broad plates, which intersect between

the upper and lower mandibles, and act as a sieve when the bird is feeding upon the minute organisations which form part of its diet, whilst in the mergansers it takes the form of four rows of backwardly directed teeth, which are of the greatest service to these fish-eating species in retaining their slippery prey. The nail at the tip of the beak has its highest development in the geese, whilst it is smallest in the surface-feeding ducks, but is fairly well developed in the goldeneye, long-tailed duck, and eider duck.

There is a great amount of uniformity in the eggs of the *Anatidæ* all being self-coloured, either a pale green or buffish white, almost oval in form, there being little difference, as a rule, in the shape of the ends.

During recent years very successful experiments in the breeding and rearing of various species of ducks under artificial conditions have been conducted in the Solway district, viz. :—at Netherby, Sir Richard Graham, Bart., has bred large numbers of mallard for sporting purposes, and has found the experiment to answer very well, although I believe the mallard do not stay very well and teal are being bred to a greater extent. The species bred up to the present are teal, mallard, wigeon, pintail, shoveler, gadwall, gargany and pochard, the first four in considerable numbers. He has also succeeded in rearing hybrids between mallard x shelddrake, mallard x pintail, wigeon x gadwall, and tufted duck x pochard; and also recrossed gadwall x wigeon with wigeon, and pintail x mallard with mallard and pintail. He hopes to re-cross the tufted duck x pochard with the parent species.

The pursuit of the *Anatidæ* with both shoulder gun and punt-gun is carried on steadily by professional fowlers on both sides of the Solway, and also to a lesser extent by amateur sportsman with undoubted diminishing effect upon the species, especially the ducks, punt-guns frequently sweeping off family parties or small flocks, and causing deadly havoc amongst a large flock. In the case of the geese, however, little impression is made upon their numbers, and with the exception of disturbing their rest, little harm is done, but if it were not for this persistent pursuit, what a paradise of the *Anatidæ* the Solway would be!

As a criterion of the numbers of geese and ducks killed on the Solway, Mr. Nichol, of Skinburness, who is perhaps the most

successful of the local wild fowlers, furnishes me with the numbers of his largest bags in a single season, these are barnacle geese, 96 ; bean geese, 7 ; white-fronted, 9 (the last, by the way, being one shot of the punt-gun), pink-footed goose, 3 ; brent, 7 ; Wigeon, 196 ; mallard, 160 ; teal, 15.

#### MUTE SWAN.

Of those mute swans, *Cygnus olor*, which visit the Solway in winter, it is difficult if not impossible to say which, if any, are migrants, and which are birds bred in a semi-domesticated state upon the ponds and tarns of the county.

It is quite possible that some of the mute swans seen on the Firth during winter are genuine migrants, for most of our tame birds are at home at that time where food is more plentiful and existence less precarious than on the open waters.

In the autumn of 1906, Mr. W. Nichol fell in with a party of swans and shot two, both immature birds. He wrote describing them to me, asking if they might not possibly be Polish swans, as the legs and feet were grey, these characters are possessed by the young of the mute swan, and possibly also by those of the Polish swan, *Cygnus immutabilis*, but it does not appear that the specific characters attributed to the Polish swan are sufficient to distinguish it from the mute species, and it is unsafe to base a new species upon variation from the normal type, however marked the variation may be, unless something more definite regarding the history and distribution of the species can be produced. Mistakes have frequently been made in this way.

#### WHOOPEE SWAN.

The visits of the whooper swan, *Cygnus musicus*, to the Solway, appear to have been less frequent during the last ten years or so than during the residence of the late H. A. Macpherson in the county. Still it has occurred more or less frequently. An immature male was shot on Burgh Marsh on November 7th, 1903, by W. Peal, and is now in the Museum. In December, 1904, a young whooper appeared on the River Eden, at Carlisle, and made its home with the herd of mute swans belonging to the Corporation. It was observed by the park-keeper on its arrival, but was not specifically identified until the 26th of April, when Mr. Thorpe

noticed it, and immediately communicated with me. We decided not to give publicity to the occurrence, but to allow the bird a chance to settle down, and ourselves the opportunity of observing it. It became quite tame, and frequently allowed us to approach within half-a-dozen yards. We kept it under daily observation for about three weeks, and on the 8th of May it was seen by the keeper to rise and fly in the direction of the Solway, after having spent over four months in the company of the mute swans. On its arrival it was in the grey dress of immaturity, but before leaving it had moulted, and assumed the white dress and yellow cere of the adult. We scarcely hoped to see it again, and were agreeably surprised when it returned to the same quarters on the 16th of November, 1905, and remained with the mute swans, of whom it now installed itself as champion and protector, until April 29th, of 1906. It returned again on the 30th of November in that year, and this time stayed until the 7th of May, 1907. This was the third successive season it had spent with us, and we anxiously looked forward to a fourth visit, the bird being now two years old and in its third year. November came and went, but no appearance of *Cygnus*, December passed, and our hopes sank low. Then January of the new year, 1908, worked through, and by that time we had quite given up the hopes of seeing it again, but on the first day of February we were delighted to see our friend once more in its wonted place, as much at home as if it had never been absent. It again stayed until the first week of May (the 6th). At the time of writing (November 30th, 1908), it has not again returned, but we are looking forward to another and fifth visit. It appears that such an incident in the case of wild swans is without parallel in the annals of the history of British Birds. The late Prof. Newton, to whom I mentioned the matter, was much interested, and remarked that mute swans usually show hostility rather than friendship to their wild brethren. Since writing the foregoing notes on the visits of the whooper swan to the Eden, up to the date of publication in 1912, we have had much pleasure in seeing not only the bird which we now call "our old whooper," (which proved to be a female,) but also her mate and offspring.

In the winter of 1908-9 she did not return until February 28th, and left again on April 21st. This was the last time she came alone.

On the 24th of December of the same year (1909), four wild swans appeared on the Eden at the same place, one of which proved to be "our old whooper," (identified by a circular black spot on the side of the yellow cere,) her mate, and a second pair of birds. These four birds stayed until April 2nd, when they were missing from their accustomed haunt; two, including "our old whooper," returned the following day, and after being missing at intervals of a day or two, finally left us on April 14th, 1910. Next winter, 1910-11, we had a still more interesting experience. On the morning of November 16th, about 9 a.m., *seven* whooper swans arrived on the Eden, four adults and three immature birds in the dress of the first autumn. These proved to be our old bird and her mate and one young, and another pair of adults and two young. After passing the day on the river at the usual place, this whole party flew off before nightfall, and did not return until evening of the next day, when it was seen that one bird, an adult, one of the second pair of parent birds, was missing. Evidently some misfortune had occurred to it during the intervening day. This reduced the party to six, three adults and three young, but on the 18th they were joined by two more adults, apparently a third pair without offspring, and probably part of the herd to which our old friend had attached herself. These two additional birds were very shy for some time, but eventually became quite accustomed to their surroundings. We had the pleasure of the presence of these eight birds until March 26th, 1911, when three left us, strangely enough three adults, leaving three young birds and two adults until April 4th, when they also left.

During the winter of 1911-12, none of these birds have returned, and we are much afraid that the Eden at Carlisle has ceased to be a haunt of wild swans. The mild open weather may have had an influence in preventing a visit, as we noticed on former occasions that during mild weather the single bird was late in arrival. On the other hand, one of the many accidents to which wild birds are subject may have befallen our old friend, and the others have not the same long association or attachment for Carlisle as a winter haunt.

## BEWICK'S SWAN.

Bewick's swan, *Cygnus bewicki*, occurs much more frequently on the Solway, and in larger numbers than the whooper. On January 3rd, 1907, Mr. W. Nichol says two herds of Bewick's swans, numbering twenty and forty birds respectively, were on the estuary of the River Waver, near Silloth. On the 23rd of December, 1902, he saw a large flock pass up the Solway, on the 28th of January, 1905, six alighted on Skinburness Marsh; on October 24th, 1905, he saw a flock of twenty flying up the Solway; on February 14th, 1906, he saw two on the Solway; and on November 23rd, of the same year, he again saw two. Two single birds, both immature birds, in first year dress, were shot on Burgh Marsh by T. Poal, one in November of 1903, and the other in December of 1906.

## GREY LAG.

The grey lag goose, *Anser cinereus*, is the largest and handsomest of the four species of grey geese which visit the Solway. The late H. A. Macpherson thought it was the rarest, but in recent years it has visited the marshes in fair numbers, its loud sonorous tones being easily distinguished from those of the bean or pink-foot when the flocks are in full cry. An old male in the Museum has narrow black bars across the breast as well as an incipient white forehead, denoting its affinity with the white-fronted goose.

## BEAN GOOSE.

The bean goose, *Anser segetum*, is a somewhat smaller, slenderer, and darker coloured bird than the last. It has become less numerous during recent years, at least I have seen fewer of this species obtained during the last eight or ten years than of either the last or next species.

## PINK-FOOTED GOOSE.

The pink-footed goose, *Anser brachyrhynchus*, can only be distinguished from the bean goose at a short distance by its generally paler colouration.

Recent writers have sought to prove from variations in the size of beak and coloration that this species, as well as others of the genus, may be divided in several species or sub-species. There can be no doubt of the existence of racial differences and geo-

graphical forms amongst many species of birds, but my remarks upon the instability of mere departures from the type as proof of specific identification, without other evidence, apply here as well. I believe there is considerable variation from the normal type in geese, and possibly some inter-breeding. In October, 1898, I purchased in the flesh a goose shot by T. Peal on the Solway. It was a small bean goose in general appearance, but the size and form of its beak was that of *brachyrhynchus*, thus combining characters of two species.

#### WHITE-FRONTED GOOSE.

The white-fronted goose, *Anser albifrons*, the most uncommon of our four species of wild grey geese, only small "gaggles" making their appearance irregularly. They are easily recognised by their small size and their note, by which they are known as "cheepers" to the Solway gunners. Four of these birds were shot at Allonby, two old males and two females, in December of 1902; one, an old male, was shot on Rockcliffe marsh on February 26th, 1906, and a small gaggle was noted on Rockcliffe marsh by Miss Heysham in the same month.

#### BARNACLE GOOSE.

The barnacle goose, *Bernicla leucopsis*, is the best known goose of the Solway, and its annual arrival is an event eagerly looked forward to by the local fowlers, both amateur and professional. The grass marshes on both sides of the Firth are frequented by this bird in turn; it is fond of the young tender grass growing on newly-formed marsh, and wherever new marsh is being formed, the barnacle will be attracted. When they cannot reach the shoots, they will pull out or crop off the long coarse grass of earlier growth, to enable them to do so, and leave the coarser grass where plucked, as noted by Mr. D. Losh Thorpe in 1902. The barnacle is not often seen inland, but in the November of 1901, I saw a gaggle of four birds fly up the River Eden, passing over the bridge on the Stanwix side, quite low down.

Being handsome birds, barnacles are frequently kept as ornamental fowl in captivity, Messrs. Mann, of Seymour House, Lee-gate, late of Aigle Gill, have several amongst their large collection of wildfowl, and in 1903 an old male barnacle paired with a white Chinese goose, and produced hybrid offspring.

## BRENT GOOSE.

The brent goose, *Bernicla brenta*, is not a frequent visitor to the Solway, but occurs from time to time. On the 7th of January, 1907, Mr. T. Peal shot, at Ruthwell, a very young bird of this species, the youngest I have seen.

There are two forms of this goose, a light and a dark-breasted form, thought to be geographical races. It is the dark-breasted form which occurs most frequently on the Solway, though both forms have been obtained.

Although the wild geese are so persistently pursued by the local fowlers, comparatively few are obtained, their wariness is proverbial, and after a sojourn of two or three weeks on the Solway, it is almost impossible to get within a quarter-of-a-mile of them in daylight.

## SHELDDRAKE.

The sheldrake, *Tadorna cornuta*, is a handsome, conspicuous species, and is the duck most in evidence on the Solway at all times. It nests in numbers along both sides of the firth, usually occupying the burrow formed by a rabbit, but occasionally under the thick gorse bushes which grow upon the higher parts of the marshes. I fancy the sheldrake does not breed until several years old, for many apparently unpaired birds are to be seen on the estuaries during nesting time. The nests are not easy to locate, and when located are frequently five to ten feet from the mouth of the burrow. Mr. Harold Carr, in 1907, noted on the Scottish side of the Solway, a nest in a hole which penetrated fifteen feet beneath a roadway in front of his residence at Sandy Hills, Kirkcudbrightshire. These birds find ready market as ornamental fowl, the eggs being collected and hatched under domestic fowls. In the summer of 1907, James Smith, of Drumburgh, reared between thirty and forty birds in this way, and disposed of them all.

## MALLARD.

The mallard, *Anas boschas*, the common wild duck, or "grey duck" of the local fowlers, although the commonest British duck, and perhaps the most numerous duck of the county, is seldom so much in evidence on the Solway as some other species, owing to

## THE DUCKS AND GEESE OF THE SOLWAY. 195

its shy habits during the day. It has become more plentiful during the last ten years, possibly owing to the systematic breeding of the species at Netherby. In the February of 1897, Mr. W. Nichol shot one hundred (a century) of these birds, and he has killed one hundred and sixty in a season. On January 9th, 1904, he saw over 1,500 on the Solway, the most he ever saw at one time. The mallard nests sparingly on the mosses and flows of the Solway, also on inland waters, and frequently at some distance from any sheet of water.

### THE GADWALL.

The gadwall, *Anas streperus*, was never a common bird on the Solway, and does not appear to have been reared in large numbers at Netherby.

### SHOVELER.

The shoveler, *Spatula clypeata*, was first shown to be a breeding bird in the Solway district by J. Smith, of Drumburgh, who took eggs in 1886 and again in 1887. Since that year a few pairs have continued to breed in the district. On August 12th, 1904, Col. H. W. Fielden, writing to me from Crofton, says: "A small party of three shovelers have frequented the mere at Crofton, one was shot, a young bird in first year dress, probably a locally bred bird. In 1903 I saw a clutch of eggs which were obtained near Monkhill Lough. On June 13th, 1906, I saw a female shoveler on Salta Moss, which appeared to be nesting, and on August 14th of the same year, Mr. T. Williamson, of Salta, informed me that a brood of young shovelers were ready to fly there. In the spring of 1908, two pairs of shovelers frequented Rockcliffe Marsh, and on the 21st of May, Mr. Eric B. Dunlop and I saw an empty nest, with a little down laying near, apparently that of the shoveler, and a few hours afterwards we saw a clutch of 5 eggs which had been taken off the marsh. So long as the shoveler continues to nest on the open marsh, there is little chance of it becoming numerous on the Solway.\*

### PINTAIL.

The Pintail, *Dafla acuta*, is a bird of more frequent occurrence, though still one of our rarer species. It has been successfully reared at Netherby, where hybrids between it and the mallard have been bred. These hybrids are fertile, and breed back to

## 196 THE DUCKS AND GEESE OF THE SOLWAY.

any extent with either parent species, thus showing close affinity. Messrs. Mann, of Leegate, have bred the hybrids back with pintail until no trace of mallard could be seen.

On the 16th of November, 1906, Mr. Heywood Thompson, of Nunwick Hall, obtained a fine male hybrid pintail x mallard shot on the Eden, near Nunwick, a handsome bird, showing most distinctly the characters of both species, the long graceful neck of the pintail, the rich ruddy breast of the mallard, partaking of both in the long-pointed, but upturned tail, and having the white neck-ring and iridescent green head of mallard. There is no evidence of this species nesting in a wild state on the Solway.

### TEAL.

The Teal, *Querquedula crecca*, is pretty generally distributed over the county as a breeding bird, but except at Netherby, where large numbers are bred annually, it rarely nests in the Solway district. On December 6th, 1905, I saw a fair sprinkling of teal along with other species at Monkhill Lough.

### GARGANEY.

The garganey, *Querquedula circia*, is a rare bird on the Solway. A few are bred annually at Netherby, but it does not appear to stray much.

On December 22nd, 1906, Mr. W. Nichol saw one on the Solway, near Silloth, and on 23rd of September, 1908, Mr. W. Wood, of Bowness, shot a blue-winged teal, probably this species. It was unfortunately not saved.

### WIGEON.

The Wigeon, *Mareca penelope*, is in winter the commonest duck of the Solway, and was especially numerous in the winter of 1905-6. Mr. W. Nichol said there were many more than usual that winter. They are known to the local fowlers as "lough ducks," an old name which it has earned from its habit of frequenting inland freshwater lakes or "loughs" by day. On the 6th of December, 1905, Mr. Dunlop and I saw several hundred wigeon on Monkhill Lough, from whence they flight to the estuaries at dusk. The wigeon arrives on the Solway in October, and usually stays until April, although sometimes a few stay later. On May 17th, 1906,

## THE DUCKS AND GEESE OF THE SOLWAY. 197

Mr. Dunlop and I saw a pair at Anthorn, on the River Wampool.

They have been noticed more than once to even spend the whole summer on some of our inland waters. Captain W. J. Farrer, of Bassenthwaite, informs me that many wigeon stay all summer upon Bassenthwaite Lake, and that on 22nd of April, 1903, he found a wigeon nesting, sitting on 10 eggs. He further informs me that he found another nest on the 26th of April, 1906, with three eggs, but this was destroyed by floods. Again, in April of 1908, he found a nest of 6 eggs; this also was destroyed by flood. These are the first records of the breeding of wigeon in this country.

### POCHARD.

The pochard, *Fuligula ferina*, used to be accounted a rare bird in Lakeland, and Macpherson, in "Fauna of Lakeland," says he never saw more than twenty birds of this species together. In the Solway district I do not think that number is frequently exceeded, but on the 18th of January, 1905, Mr. Thorpe and I counted not less than 200 pochards on Talkin Tarn, about 15 miles from the Solway. This is perhaps a record number for the district. The pochard frequently stays late into spring or early summer on our inland waters. On April 1st, 1907, Mr. Eric B. Dunlop observed a pair on Brotherswater, but no record of its nesting is yet to hand.

### TUFTED DUCK.

The tufted duck, *Fuligula cristata*, although perhaps not so well-known on the Solway as the next species, is a fairly common winter visitor, but is more especially a bird of the "loughs" and "Tarns" of the county. It is one of the birds which we hope to record as a breeding species in the near future. Why it has not yet nested in the county where many places are apparently well suited to its habits, is strange, especially as it nests within sight of the Solway on the Scottish side, on Loch Kinder, beneath the shadow of mighty Criffel. Captain Farrer informs me that this species also spends the summer on Bassenthwaite Lake. He feels sure they breed there, but has not yet succeeded in finding the proof. Ten is the largest number Mr. Nichol has seen on the Solway.

On May 20th, 1909, Mr. Heywood Thompson, and Mr. Brockholes, of Brockholes, flushed a female Shoveller off her clutch of eight eggs on Rockcliffe Marsh. I subsequently photographed this nest and eggs, which I believe were safely hatched off.

## SCAUP.

The scaup, *Fuligula marila*, is better known on the Solway than the last species, although it is more erratic in its visits. It is generally well into the winter, not usually before November, when they arrive. They leave about the end of February. During the five or six years following 1900, comparatively few scaup visited the Solway, but in 1906-7 and 1907-8 fair numbers were in the game shops of Carlisle. They are seldom seen on inland waters, but in October, 1897, I saw a pair in the flesh said to have been shot on Ullswater, and on January 26th, 1904, Mr. H. E. Rawson reported scaup on Windermere.

## GOLDENEYE.

The goldeneye, *Clangula glaucion*, is a fairly common visitor to the Solway, arriving in small parties in November, which in severe frost unite into flocks. Unlike the last species, it is equally at home upon our inland waters, both lake and river, as far from the coast as Derwentwater and Haweswater, as upon our estuaries. I have frequently examined females and young males killed upon the rivers Eden and Eamont, but the adult males in the beautiful black and white livery, are seldom obtained.

## LONG-TAILED DUCK.

The long-tailed duck, *Harelda glacialis*, was first recorded as a Solway bird by T. C. Heysham, in 1834, but was not again seen or recognised in the district until 1884, when an immature male was shot on Monkhill Lough. Since that time its visits have been tolerably regular, birds being obtained in 1887-89-90-91, and succeeding years to 1898, as recorded by Macpherson.

In 1902, W. Peal, of Burgh, shot one on November 27th, an immature male. Another was bought in a shop in Carlisle in September. An immature male was killed at Rockcliffe on October 14th, 1903, another on November 3rd by T. Peal, at Burgh, and four were seen by W. Nichol at Skinburness on November 7th. All these birds were in immature dress or eclipse, and the only adult in full winter dress obtained on the Solway was a bird killed on Rockcliffe Marsh in February, 1906, but which proved to be an escape from Netherby.\*

\* On November 2nd, 1909, an adult Long-tailed Duck in full winter dress was shot near Gretna. It is now in the Carlisle Museum.

## THE DUCKS AND GEESE OF THE SOLWAY. 199

### EIDER DUCK.

The visits of the common eider, *Somateria mollissima*, have hitherto been very few, but as many as thirteen have been seen as once. On June 2nd, 1904, Mr. D. Losh Thorpe saw two at Silloth, they flew close over him on the golf links, and in June, 1908, Mc.Coll, a fisherman of Port Ling, Kirkcudbrightshire, informed Mr. Harold Carr that he had seen three eiders frequenting the shore at Port Ling.

### SCOTER.

The common scoter, *Edemia nigra*, is chiefly a winter and spring visitor to the Solway, and at the latter season have lately occurred in increasing numbers. Mr. W. Nichol wrote on April 19th, 1906: "There are over 2,000 common scoters on the Solway now, the most I have ever seen." On June 4th, 1908, on the occasion of an attempted visit to Balcary Head by four members of this Society, which nearly culminated in disaster, we saw nearly if not quite that number. Parties of them, numbering from three to a dozen birds flew round and round our boat, well within gunshot, but had a gun been on board they were quite safe, as the four members were engaged in a desperate struggle with wind and wave, and had eventually to be towed to land by a fishing boat. I have seen scoter on Ullswater in July, once over 50, and have had birds minus the flight feathers sent to me from there in August.

### VELVET SCOTER.

A pair of velvet scoters, *Edemia fusca*, were seen on November 21st, 1905, at Silloth, they stayed three or four days. They were not molested.

### GOOSANDER.

The goosander, *Mergus merganser*, is a regular winter visitor to the Solway, but appears more partial to inland waters. Mr. Thorpe and I saw seven on Talkin Tarn on January 18th, 1905, four old males in full dress, and three females. Several frequented the Eden, at Nunwick, from January to April, 1903. The only male goosander I have seen in change of plumage was one killed at Bowness-on-Solway, on September 23rd, 1908, an early date for goosander on the Solway.

## RED-BREASTED MERGANSER.

The red-breasted merganser, *Mergus serrator*, is somewhat irregular in its visits to the Solway, and between 1897 and 1908 I have only seen some half-dozen examples. On November 30th, 1905, Mr. Dunlop noticed three in a Carlisle gameshop, and ascertained that they had been killed on the Solway. Mr. T. L. Johnston saw one on Talkin Tarn on January 20th, 1905. T. Peal shot an immature male on November 6th, 1906, and W. Nichol saw one at Silloth on October 10th, 1907.

## SMEW.

The smew, *Mergus albellus*, has always been accounted a rare bird in this district, and the late Rev. H. A. Macpherson only records some dozen instances of its occurrence. On December 15th, of 1902, I observed two immature males in a gameshop window in Carlisle, and ascertained that they had been bought from a local fowler some few minutes previously. On the 25th of the same month, T. Peal shot an immature male on the Eden, at Burgh. On the 18th of January, 1905, when Mr. Thorpe and I visited Talkin Tarn, having been informed that some strange ducks were on the tarn, we found the ducks in question to be a pair of smews, an adult male in full nuptial dress and a female. It was a pleasant experience to observe these rare visitors, and we spent some time watching them with the aid of binoculars. The tarn on this day was swarming with water fowl—pochards being especially numerous, there were also mallards, tufted ducks, goldeneyes, and seven goosanders, an assortment of water fowl such as would be a credit to any zoological garden, but much more pleasing to find in their wild state, free, and with their natural habitat as a setting.\*

\* Later occurrences of the Smew are, an adult female shot by W. Nichol, at Silloth, December 1906, a female shot at Riggfoot, Gretna January, 1907, presented by Dr. Hy. Barnes to Carlisle Museum.

An immature male shot at Rockcliffe, Cumberland, February 7th, 1907, an immature male showing signs of change of plumage, shot on the River Eden, below Carlisle, on February 1st, 1912, presented to Carlisle Museum, by Mr. Johnstone.

# THE COLEOPTERA OF CUMBERLAND.

## PART II.

By FRANK H. DAY, F.E.S.

(Read January 14th, 1909, and January 12th, 1911).

Continued from Vol. 1. page 150.

As in Part I. of this Catalogue, the localities are tabulated thus—

No. 1.—The area of low-lying flat ground or plain. This area covers the greater portion of the centre of the county, in fact, all ground other than coast or mountain.

No. 2.—The sea coast and Eden estuary.

No. 3.—The mountains.

## HALIPLIDÆ.

### BRYCHIUS.

**elevatus**, Pz. In streams and rivers, local.

1. Great Salkeld, Barron Wood (Britten); in the Petteril at Woodbank (Day); River Irthing (Donisthorpe).
2. Allonby (Day).

### HALIPLUS.

**obliquus**, F. Cumberland (Bold, Zoologist, iv., 1,238).

1. Cumwhinton brick ponds, common in 1909 (Day).

**confinis**, Steph. In fresh water, local.

1. Talkin Tarn (Bold); Thurstonfield Lough (Day).

**flavicollis**, Stm. In fresh water, local.

1. Great Salkeld (Britten); Edenhall (Day).

**fulvus**, F. In both running and stagnant water, local.

1. Great Salkeld (Britten); Orton, River Petteril at Woodbank (Day); Cardew Mire (Heysham).
3. Wan fell (Britten).

**ruficollis**, De G. In streams, ponds, &c., common on peat mosses.

1. Carlisle district (Day) ; Great Salkeld, Newton Reigny Moss (Britten).
2. Allonby, Silloth, Burgh Marsh (Day).
3. Wan fell, Cross fell (Britten) ; Cumrew fell (Day).

**wehnckeii**, Gerh. In ponds and streams, common.

1. Great Salkeld, Edenhall (Britten) ; Carlisle, Thurstonfield, Monkhill (Day).
2. Allonby (Day).

**lineatocollis**, Marsh. In ponds, &c., common.

1. Hayton Moss, Gelt (Routledge) ; Great Salkeld, Barron Wood (Britten) ; Cardew Mire (Heysham).
2. Burgh Marsh (Day).
3. Wan fell, Cross fell (Britten) ; Cumrew fell (Day).

## DYTISCIDÆ.

### LACCOPHILUS.

**interruptus**, Pz. " Near Morton, Carlisle, Dr. Leach " (Ste. Man., p. 71 ; Ste. Illus., ii., p. 64).

**obscurus**, Pz. In clear ponds and streams, common.

1. Great Salkeld (Britten) ; Carlisle, Thurstonfield (Day).

### HYPHYDRUS.

**ovatus**, L. \*In clear waters, locally common.

1. Thurstonfield, Monkhill (Day).

### CCELAMBUS.

**quinquelineatus**, Zett. In clear waters, locally common.

1. Thurstonfield, Monkhill (Day).

**inæqualis**, F. Streams and ponds, common.

1. Tarn Lodge (Routledge) ; Great Salkeld, Newton Reigny Moss (Britten) ; Carlisle (Heysham) ; Monkhill, Thurstonfield (Day).

**confluens**, F. Streams, &c., uncommon.

1. Great Salkeld (Britten).
2. Anthorn (Britten).

**novemlineatus**, Steph. In clear water, uncommon.

1. Thurstonfield, Monkhill (Day).

\* There is an erroneous record of this species from Crosby-on-Eden in the Victoria History of Cumberland. F.H.D.

**impressopunctatus**, Schal. In ponds, rather scarce.

1. Carlisle, Orton (Day).
2. Burgh Marsh (Day).
3. Ullswater, Dr. Leach (Ste. Illus., ii., p. 53).

### DERONECTES.

**latus**, Steph. "Taken in 1855 near Lanercost, on a common locally known as Mrs. Bell's common" (Bold, Zoologist, xiii., p. 5,004). "Moors near Lanercost" (Fowler Col. Brit. Isles, i., p. 170).

**assimilis**, Pk. In clear waters, locally common.

1. "Near Carlisle in rivulets" (Heysham); Keswick (Francis, E.M.M., xii., p. 175); Thurstonfield, Monkhill (Day).

**griseo-striatus**, De G. "Near Carlisle" (Ste. Man., p. 66).

**depressus**, F. Running water and clear tarns, local.

1. Talkin Tarn (Bold); Great Salkeld (Britten); River Petteril near Carlisle, Cumwhinton (Day).

**12-pustulatus**, F. Clear waters, local.

- 1. "Near Carlisle, Dr. Leach" (Ste. Illus., ii., p. 52); Great Salkeld (Britten).

### HYDROPORUS.

**pictus**, F. Ponds, locally abundant.

1. Cumwhinton, not scarce in a quarry hole, 1909 (Day).
2. Anthorn (Britten, Day).
3. Wan fell (Britten).

**granularis**, L.

1. Cardew Mire (Heysham, Ste. Man., p. 69).

**lepidus**, Ol. Running water, &c., local.

1. "Near Carlisle, Dr. Leach" (Ste. Illus., ii., p. 49); Great Salkeld (Britten); Carlisle, Durdar (Day).
3. Wan fell (Britten).

**rivalis**, Gyll. In streams, common.

1. "River Caldew, in April, Dr. Leach" (Curt. Brit. Entom.); River Gelt (Routledge); Great Salkeld (Britten); River Irthing (Donisthorpe).
3. Cross fell (Day).

**septentrionalis**, Gyll. In streams, locally common.

1. River Gelt (Routledge) ; River Eden at Great Salkeld (Britten) ; River Irthing (Day).

**davisi**, Curt. In clear streams, local.

1. River Gelt, at Edmond Castle, common (Routledge) ; Barron Wood (Day).
3. Stream at the foot of Cross fell (Britten, Day) ; Croglin water (Day).

**halensis**, F. Not taken for many years.

1. " Near Carlisle in rivulets, Dr. Leach " (Ste. Illus., ii., p. 50). Carlisle (Ste. Man., p. 66).

**lineatus**, F. In clear waters usually, rarely in boggy ponds.

1. Great Salkeld (Britten) ; Orton, Thurstonfield (Day).
3. Wan fell (Britten).

**tristis**, Pk. Ponds on peat mosses, common.

1. Hayton Moss (Routledge) ; Orton (Day) ; Newton Reigny Moss (Britten).
3. Cumrew fell (Day) ; Wan fell, Cross fell (Britten).

**umbrosus**, Gyll. Boggy ponds, local.

1. Newton Reigny Moss (Britten) ; Orton (Day).
3. Wan fell (Britten).

**angustatus**, Stm. Ponds, locally abundant.

1. Clear pools on the outskirts of Newton Reigny Moss (Britten, Day).

**gyllenhali**, Schiöd. Ponds, both boggy and clear, common.

1. Gelt, Hayton Moss (Routledge) ; Great Salkeld (Britten) ; Orton, &c. (Day).
3. Wan fell (Britten) ; Saddleback (Day).

**morio**, Dj. Boggy ponds in mountain districts, common.

3. Cumrew fell (Routledge) ; Wan fell (Britten) ; Cross fell, Sprinkling Tarn, Saddleback (Day).

**vittula**, Er. Boggy and other ponds.

1. Great Salkeld, Newton Moss (Britten) ; Orton, Cummersdale (Day).
3. Cross fell (Britten).

**palustris**, L. In clear and boggy ponds, the commonest **Hydroporus** in Cumberland.

**incognitus**, Shp. Boggy ponds, locally common.

1. Orton (Day).
3. Wan fell (Britten).

**erythrocephalus**, L. Ponds, common.

1. Great Salkeld, Newton Reigny Moss, Edenhall (Britten) ; Orton, &c. (Day).
2. Silloth (Day).
3. Wan fell (Britten).

**rufifrons**, Duft. Boggy ponds, rare.

1. Orton (Day).

**melanarius**, Stm. Scarce.

1. " In mossy holes on the moors, Cumberland " (Bold, E.M.M., vi., p. 161) ; " Near Lanercost " (Bold, Zoologist xiii., p. 5,214) ; Hayton Moss (Routledge).
3. High up on Saddleback in a boggy pond (Day).

**memnonius**, Nic. Boggy ponds, &c., common.

1. Gelt, Hayton Moss (Routledge) ; Great Salkeld (Britten) ; Orton (Day).
3. " Ullswater, twice captured by Dr. Leach " (Ste. Illus., ii., p. 56) ; Wan fell (Britten).

**obscurus**, Stm. Boggy ponds, common.

1. Hayton Moss (Routledge) ; Orton (Day).
3. Wan fell, Cross fell (Britten) ; near Scaw fell (Day).

**nigrita**, F. Ponds, both clear and boggy.

1. Gelt, Hayton Moss (Routledge) ; Lanercost (Bold) ; Durdar (Day) ; Great Salkeld (Britten).
3. Cross fell, Wan fell (Britten) ; Cumrew fell (Day).

**discretus**, Fair. Ponds and running water, scarce.

1. Great Salkeld (Britten) ; River Irthing (Day).
2. Silloth, Bowness Moss (Day).
3. Wan fell, Cross fell (Britten).

**pubescens**, Gyll. Ponds, &c., common.

1. Great Salkeld (Britten) ; Orton, Durdar (Day).
2. Silloth (Day).
3. Wan fell, Cross fell (Britten) ; Cumrew fell (Day).

**planus**, F. In boggy ponds, common.

1. Hayton Moss (Routledge) ; Great Salkeld (Britten) ; Orton (Day).

2. Seascale (Day).

3. Wan fell (Britten).

**litturatus**, F. Ponds, local.

2. Burgh Marsh (Britten, Day) ; Silloth (Day).

**ferrugineus**, Steph. In clear streams, local.

1. Great Salkeld (Britten, Day) ; Cumwhinton (Day).

**obsoletus**, Aub. In flood refuse, rare.

1. Great Salkeld (Britten) ; Wetheral (Day).

### AGABUS.

**guttatus**, Pk. Streams, &c., common.

1. Cardew Mire (Heysham, Ste. Illus.) ; Great Salkeld (Britten) ; Newby Cross, Orton, Kirkbampton (Day).

3. Cross fell (Britten) ; Sty Head (Day).

**paludosus**, F. Streams, local.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Wetheral (Day).

2. Bowness Moss (Day).

**uliginosus**, L. Ponds, rare.

3. Cross fell (Day).

**affinis**, Pk. Boggy ponds, locally common.

1. Newton Reigny Moss (Britten) ; Orton (Day).

3. Wan fell (Britten).

**unguicularis**, Thoms. In clear water, local.

1. Thurstonfield (Day).

**congener**, Pk. Boggy ponds in high districts, common.

1. Hayton Moss (Routledge).

3. Scaw fell, Cross fell, Saddleback (Day) ; Wan fell (Britten) ; Sty Head (Blackburn).

**nebulosus**, Forst. Ponds, rather scarce.

1. Edmond Castle (Routledge) ; Great Salkeld (Britten) ; Carlisle, Orton (Day).

2. Silloth (Day).

3. Wan fell (Britten).

**conspersus**, Marsh. Ponds near the coast, scarce.

2. Burgh Marsh (Britten).

**femoralis**, Pk. Ponds, usually of clear water, locally common.

1. Orton, Thurstonfield (Day).

2. Silloth (Day).

**aroticus**, Pk. Ponds at considerable elevations, local, but common at times.

3. " Taken by Mr. Binstead from a shallow pool near Angle Tarn " (A. Thornley, E.M.M., v., p. 280); Cross fell, and near Sprinkling Tarn under Scawfell (Britten and Day).

**sturmi**, Gyll. Ponds, usually on boggy ground, common.

1. Hayton Moss (Routledge); Great Salkeld (Britten); Orton, and elsewhere near Carlisle (Day).
3. Wan fell (Britten); Cross fell (Day).

**chalconotus**, Pz. Ponds, both clear and boggy, common; very variable in size.

1. Hayton Moss (Routledge); Great Salkeld (Britten); Carlisle district (Day); Cardew Mire (Heysham).
2. Silloth, ponds among the dunes (Day).
3. Cross fell, Wan fell (Britten); Cumrew fell (Day).

**bipustulatus**, L. Very common in ponds, also in streams.

#### PLATAMBUS.

**maculatus**, L. Generally in running water, not very common.

1. In the Gelt at Edmond Castle (Routledge); Great Salkeld (Britten); Rivers Petteril and Irthing (Day).
- var. **immaculatus**, Donis. Ullswater (Britten, Day).

#### ILYBIUS.

**fuliginosus**, F. Streams, tarns, &c., fairly common.

1. River Gelt (Routledge); Great Salkeld, Newton Reigny Moss (Britten); Durdar, Orton, Thurstonfield, Monkhill (Day).

**ater**, De G. Ponds, both clear and boggy, rather scarce.

1. In the lake at Tarn Lodge (Routledge); Great Salkeld (Britten); Durdar, Orton, Thurstonfield (Day).
2. Anthorn (Day).

**guttiger**, L. Ponds on the mosses, local and scarce.

1. Hayton Moss (Routledge); Newton Reigny Moss (Britten).
3. Wan fell (Britten, Day).

**ænescens**, Th. Much oftener met with than the last.

1. East Cumberland (Bold, E.M.M., 9, p. 60); Hayton Moss (Routledge); Newton Reigny Moss (Britten); Orton (Day).
3. Wan fell, Cross fell (Britten); Styhead (Day).

**RHANTUS.**

**exoletus**, Forst. Ponds, both clear and boggy, not uncommon.

1. Carlisle (Heysham) ; Cumberland (Fowler, vol. i., p. 202) ; Edenhall, Great Salkeld (Britten) ; Orton, Thurstonfield (Day).

3. Wan fell (Britten).

**pulverosus**, Steph. Local.

1. Taken in a pond near the Waterworks, Carlisle, by Mr. F. W. Aitken.

**notatus**, Berg. Not taken for many years.

1. Carlisle (Ste. Man., p. 72).

**bistriatus**, Berg. Ponds, scarce but widely distributed.

1. Hayton Moss (Routledge).
3. Wan fell (Britten) ; Sprinkling Tarn (Day).

**COLYMBETES.**

**fuscus**, L. Ponds on the mosses, also near the coast, common.

1. Cardew Mire (Heysham) ; Great Salkeld and Langwathby (Britten) ; Orton and elsewhere in the neighbourhood of Carlisle (Day).
2. Silloth, ponds among the sand hills (Day).

**DYTISCUS.**

**punctulatus**, F. Generally, but not always, in boggy water, fairly abundant in Cumberland.

1. Cardew Mire (Heysham) ; Hayton Moss (Routledge) ; Great Salkeld and Barron wood (Britten) ; Orton (Day).
2. Burgh Marsh (Day).
3. Wan fell (Britten).

**marginalis**, L. Commoner than the last, and often occurring with it so that localities need not be repeated. Abundant among the Silloth sandhills.

**ACILIUS.**

**sulcatus**, L. Boggy ponds, local.

1. Orton, Hayton Moss (Day).
2. Anthorn (Day).
3. Wan fell (Britten).

## GYRINIDÆ.

## GYRINUS.

**minutus**, F. Ponds, local but not scarce.

1. Newton Reigny Moss (Britten, Day).

3. Sty Head (Blackburn, E.M.M., ii., p. 88).

**natator**, Scop. Common and widely distributed.

**elongatus**, Aub. Local.

1. Newton Reigny Moss (Britten).

**marinus**, Gyll. Not taken for many years in Cumberland.

1. " Abundant near Carlisle " (Dr. Leach, Ste. Illus., vol. ii., p. 96).

## ORECTOCHILUS.

**villosus**, Müll. Under stones by edges of streams, not uncommon.

1. Small stream near Cummersdale (Heysham) ; Great Salkeld (Britten) ; River Irthing, and River Eden in Barron wood (Day).

3. Ullswater (Britten, Day).

## HYDROPHILIDÆ.

## HYDROBIUS.

**fuscipes**, L. Ponds and ditches, common.

1. Hayton Moss and Gelt Valley (Routledge) ; Great Salkeld (Britten) ; Carlisle, Orton, Durdar, &c. (Day).

2. Silloth, Burgh Marsh (Day).

var. **æneus**, Sol. This striking variety occurs rarely near the sea.

2. Burgh Marsh (Britten) ; Silloth (Day).

var. **picicrus**, Th. The common form of the mosses and mountain ponds.

## PHILYDRUS.

**nigricans**, Zett. Generally in boggy water, common.

1. Hayton Moss (Routledge) ; Great Salkeld, Newton Reigny Moss (Britten) ; Orton (Day).

3. Wan fell (Britten).

**melanocephalus**, Ol. Ponds, both clear and boggy, common.

1. Great Salkeld and Newton Reigny Moss (Britten).

2. Silloth (Day).

3. Wan fell (Britten).

**minutus**, F. Ponds, both clear and boggy, common.

1. Hayton Moss (Routledge); Newton Reigny Moss (Britten); Orton (Day).
2. Silloth, Saltah Moss (Day).
3. Wan fell (Britten).

**coarctatus**, Gred. Ponds, &c., locally common.

1. Orton (Britten); Newton Reigny Moss (Day).

#### ANACÆNA.

**globulus**, Payk. Ditches, streams and ponds, very common.

**ovata**, Reiche. Much more local than the last, but quite common.

1. Wreay (Routledge); Newton Reigny Moss (Day).
2. Seascale (Day).
3. Cross fell (Britten).

**limbata**, F. Not uncommon.

1. Thurstonfield, &c. (Day); Great Salkeld (Britten).

#### HELOCHARES.

**lividus**, Forst. Apparently rare in Cumberland. Mr. Routledge has it from Hayton Moss, which is the only record.

**punctatus**, Sharp. Ponds, very local, but not uncommon.

1. Hayton Moss (Routledge); Orton, in a pond on the peat, where many of the water beetles recorded from this locality occur (Day).

#### LACCOBIUS.

**nigriceps**, Th. Ponds, ditches, &c., common.

1. River Irthing (Routledge); Great Salkeld (Britten); Durdar (Day).
3. Wan fell (Britten, Day).

See E.M.M., 1908, p. 90, for note on the occurrence in Cumberland of a form of this species differing from the type in being alutaceus on the thorax.

**alutaceus**, Th. Ponds and streams, common, but local.

1. Great Salkeld (Britten); Carlisle, Orton (Day).
3. Wan fell (Britten).

**minutus**, L. Running water, ponds and ditches, common.

1. Great Salkeld (Britten); Carlisle (Day).
2. Burgh Marsh, Allonby (Day).

**bipunctatus**, F. Hitherto only found in the Carlisle district, abundant in Monkhill Lough, rare at Orton (Day).

**LIMNEBIUS.**

**truncatellus**, Thunb. Small streams and ponds, common.

1. River Gelt (Routledge) ; Great Salkeld and Edenhall (Britten) ; Carlisle, Orton, Durdar, &c. (Day).
3. Wan fell, Cross fell (Britten).

**nitidus**, Marsh. Apparently very local. Our only record is from Great Salkeld, where Mr. Britten takes it abundantly in a ditch.

**CHÆTARTHRIA.**

**seminulum**, Pk. Muddy margins of ponds and in wet moss, locally common.

1. Great Salkeld, Newton Reigny Moss (Britten); Edenhall (Day).

**HELOPHORUS.**

**rugosus**, Ol. Not taken in Cumberland for many years.

1. Cardew Mire (Heysham).

**nubilus**, F. Local.

1. Cardew Mire (Heysham) ; Great Salkeld (Britten, Day).

**mulsanti**, Rye. In brackish ponds, local.

2. Burgh Marsh, Newton Marsh (Day).

**aquaticus**, L. Ponds and streams, very common in all three areas.

var. **æqualis**, Th. Not uncommon.

1. Great Salkeld (Britten) ; Orton, Heads Nook (Day).
2. Burgh Marsh (Day).
3. Wan fell (Britten).

**æneipennis**, Th. Common in all the areas.

**affinis**, Marsh. Very local, but perhaps overlooked.

1. Great Salkeld, not scarce (Britten) ; Thurstonfield (Day).
3. Wan fell (Britten).

**brevipalpis**, Bed. Very common in ponds, streams and flood refuse throughout the county.

**arvernicus**, Muls. Sandy margins of streams, rather local but widely distributed, and at times abundant.

1. River Irthing (Routledge) ; Gilsland and Wetheral (Murray) ; River Petteril at Upperby, River Gelt, Armathwaite, &c. (Day) ; Great Salkeld (Britten).
3. Borrowdale (Day).

**HYDROCHUS.**

**brevis**, Herbst. Clear water.

1. One specimen in Thurstonfield Lough, May, 1908 (Day).  
Common in same place, May, 1909.

**augustatus**, Germ. One specimen on Burgh Marsh, 1909 (Day) ;  
several at Anthorn in 1910.

**HENICOCERUS.**

**exsculptus**, Germ. Clinging to stones in streams, &c., locally  
common.

1. Great Salkeld (Britten).
3. Cross fell (Day).

**OCHTHEBIUS.**

**marinus**, Pk. Brackish ponds, scarce.

2. Burgh Marsh, &c. (Day).

**viridis**, Peyron. 2. Anthorn, one specimen in 1910 (Britten).

**pygmæus**, F. In clear water, local and not very common.

1. Thurstonfield and Monkhill Loughs (Day).

**bicolon**, Germ. Brackish ponds, &c., fairly common.

1. Great Salkeld (Britten).
2. Burgh Marsh, Skinburness (Day).

**rufimarginatus**, Steph. On the edges of streams, and in wet moss,  
not uncommon.

1. Great Salkeld (Britten) ; River Petteril at Carleton, New-  
ton Reigny Moss (Day); River Irthing (Routledge).

**auriculatus**, Rey. Brackish ponds, common.

2. Burgh Marsh (Britten) ; Skinburness and Floriston (Day).

**HYDRÆNA.**

**riparia**, Kug. Streams and ponds, often clinging to stones and  
submerged wood, common.

1. Great Salkeld (Britten) ; Orton, Durdar, River Irthing,  
Thurstonfield (Day).
3. Wan fell and Cross fell (Britten).

**nigrita**, Germ. Recorded from the River Caldew, near Carlisle,  
in Stephen's "Illustrations" and "Manual" on the author-  
ity of Dr. Leach. The species has not been detected by  
present-day collectors, and possibly Leach's insect was

the next species, which has recently been separated by Dr. Joy from *riparia* and *nigrita*. Although more nearly related to the former, it has been often confused with the latter.

**Britteni**, Joy. Rather local, but common.

1. Great Salkeld and Edenhall (Britten) ; Newton Reigny Moss (Day).

For specific characters of this insect see E.M.M., 1907, p. 79.

**longior**, Rey. Not common.

1. Great Salkeld (Britten).
3. Wan fell (Britten).

**gracilis**, Germ. Clinging to mossy stones in streams, local but not scarce.

3. Cross fell (Day) ; Wan fell (Britten).

**atricapilla**, Wat. Occurs similarly to the last, but is much scarcer.

1. River Eden at Great Salkeld (Day).

### CYCLONOTUM.

**orbiculare**, F. Sides of ponds, also in wet sphagnum, &c., common.

1. Great Salkeld (Britten) ; Upperby, Orton and Newton Reigny Moss (Day).

### SPHÆRIDIMUM.

**scarabæoides**, L. In dung, common.

1. Blackhall and Great Orton (Heysham) ; Tarn Lodge (Routledge) ; Great Salkeld, Barron wood and Newton Reigny Moss (Britten) ; Durdar, Petteril Valley, &c. (Day).
3. Wan fell (Britten) ; Cumrew fell (Day).

**bipustulatum**, F. Widely distributed, but much scarcer than the last.

1. Great Salkeld, Barron wood and Newton Reigny Moss (Britten) ; Orton and Petteril valley (Day).
2. Rockcliffe Moss (Heysham).

### CERCYON.

**littoralis**, Gyll. A maritime species, abundant on the beach at Silloth below rejectamenta.

**hæmorrhous**, Gyll. Muddy margins of ponds, local but common in places.

1. Great Salkeld (Britten) ; Upperby (Day).

**hæmorrhoidalis**, F. In dung, flood refuse, &c., common throughout the county.

**obsoletus**, Gyll. Rather scarce, but perhaps overlooked.

1. Great Salkeld (Britten) ; Orton (Day).
3. Wan fell (Britten).

**flavipes**, F. Very common and widely distributed.

**lateralis**, Marsh. Very common and widely distributed.

**melanocephalus**, L. Very common and widely distributed.

**unipunctatus**, L. Scarcer than the three preceding species, but still a common insect.

1. Great Salkeld (Britten) ; Gelt, Orton, &c. (Day).
2. Silloth (Day).
3. Wan fell (Britten).

**quisquilius**, L. Fairly common.

1. Great Salkeld (Britten) ; Carlisle district (Day).
2. Skinburness (Day).
3. Wan fell (Britten).

**nigriceps**, Marsh. Rather uncommon.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten).
2. Silloth (Day).

**pygmæus**, Ill. Common and widely distributed, often in flood refuse.

**terminatus**, Marsh. Locally common.

1. Great Salkeld, Skirwith (Britten).

**analís**, Payk. In flood refuse, &c., fairly common.

1. Hayton Moss (Routledge) ; Great Salkeld and Newton Reiguy Moss (Britten) ; Banks of the Irthing and Petteril (Day).
2. Silloth and Whitrigg (Day).

**minutus**, F. Muddy margins of ponds, local but not uncommon.

1. Great Salkeld and Edenhall (Britten, Day).

### MEGASTERNUM.

**boleotophagum**, Marsh. Common throughout the county.

**CRYPTOPLEURUM.**

**atomarium**, Ol. Hardly so common as the last species, but occurs in all the county divisions.

**ALEOCHARA.**

**ruficornis**, Grav. On roads, in dead leaves, hedge cuttings, &c., scarce.

1. Rare at Lanercost (Bold) ; Gelt, Cowran Cut, Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Blackwell (Day).
3. Castle Carrock (Routledge).

**fuscipes**, F. In carcases, putrid fungi, &c., common.

1. Common in the Brampton district (Routledge) ; Great Salkeld, Skirwith (Britten) ; Carlisle district (Day).
2. Allonby, Silloth (Day).
3. Cross fell, Wan fell (Britten).

**brevipennis**, Grav. Rare.

1. One specimen at Orton in carrion (Day).

**fumata**, Grav. Rare.

1. One specimen at Durdar in moss (Day).

**bipunctata**, Ob. In dung, &c., not very common.

1. Great Salkeld (Britten) ; Cummersdale (Day).

**cuniculorum**, Kraatz. In and near the burrows of rabbits, fairly common.

1. Tarn Lodge (Routledge) ; Great Salkeld, Langwathby (Britten) ; Newby Cross (Day).
2. Silloth (Day).
3. Wan fell (Britten).

**lanuginosa**, Grav. Common in vegetable refuse, dung, &c., throughout the county.

**lygæa**, Kr. Rare.

2. One specimen at Silloth in seaweed (Day) ; one near An-thorn on the Wampool (Britten).

**villosa**, Mann. In dung, &c., scarce.

1. Great Salkeld (Britten) ; banks of the Irthing (Routledge).

**mœsta**, Grav. In cowsheds, hay barns, &c., not uncommon.

1. Great Salkeld, Langwathby (Britten) ; Newby Cross (Day) ; Hayton (Routledge).

**succicola**, Thoms. In vegetable refuse, seaweed, &c., common.

1. Tarn Lodge, Gelt (Routledge); Great Salkeld, Langwathby (Britten); Carlisle district (Day).
2. Allonby (Routledge); Seascale (Day).
3. Wan fell (Britten).

**mœrens**, Gyll. Rare.

1. Two specimens in fungi at Great Salkeld (Britten).

**nitida**, Grav. In carrion, &c., common throughout the county.

var. **bilineata**, Gyll. Apparently scarce.

1. Great Salkeld (Britten); Carlisle (Day).
2. Silloth (Day).

**morian**, Grav. In dung, common.

1. Great Salkeld (Britten); How Mill, Lanercost, Newton Reigny Moss, Cummersdale (Day).
2. Silloth, Seascale (Day).
3. Cross fell (Britten).

**spadicea**, Er. "Taken by Mr. J. J. Brewer, in Cumberland, in the autumn of 1863" (E.M.M., vol. i., p. 124); this record is also noted by Fowler (vol. 2, p. 21).

I know of no recent capture in Cumberland, but the species has occurred freely elsewhere in England in moles' nests.

**grisea**, Kr. Under seaweed, rather common.

2. Silloth, Allonby, Seascale (Routledge, Day).

**algarum**, Fauv. Under seaweed, scarce.

2. Silloth, Allonby (Routledge).

**obscura**, Er. Under seaweed, very common.

2. Silloth, Allonby, Seascale (Routledge, Day).

### MICROGLOSSA.

**suturalis**, Mann. In hay barns, cow sheds, &c., locally common.

1. Great Salkeld, Newton Reigny Moss (Britten, Day).

**nidicola**, Fairm. In the burrows and nests of the sand-martin, locally common.

1. Barron wood (Routledge); Great Salkeld (Britten); banks of the Irthing (Day).

**pulla**, Gyll. In the nesting holes in trees of tits and starlings, not scarce but local.

1. Great Salkeld (Britten); Orton (Day).

## OXYPODA.

**spectabilis**, Maerk. Among dead leaves, in wasps' nests, &c., rather scarce.

1. Great Salkeld (Britten); Newbiggen wood near Carlisle (Day).

**lividipennis**, Mann. In flood refuse, beneath haystacks, &c., not uncommon.

1. Hayton Moss, Tarn Lodge (Routledge); Great Salkeld (Britten); Wetheral, Edenhall (Day).
2. Burgh Marsh (Day).

**vittata**, Maerk. In wasps nests, under haystacks, and in flood refuse, somewhat scarce.

1. Great Salkeld (Britten); Wetheral, on the Petteril near Carleton (Day).

**opaca**, Grav. In flood refuse, &c., common throughout the county.

**alternans**, Grav. In fungi, generally common.

**exoleta**, Er. In decaying straw, &c., scarce.

2. Silloth (Britten, Day); Seascale (Day).

**edinensis**, Sharp. In fungi, rare.

1. Great Salkeld (Britten).

**lentula**, Er. In flood refuse and carrion, scarce.

1. Great Salkeld, Barron wood (Britten, Routledge).

**umbrata**, Grav. In moss, &c., not uncommon.

1. Hayton Moss, Tarn Lodge (Routledge); Ullswater, Great Salkeld (Britten); Newton Reigny Moss, Woodbank near Carlisle (Day).

**pectita**, Sharp. In rotten wood, pond refuse and rabbit burrows, scarce.

1. Great Salkeld, Edenhall (Britten).

**nigrina**, Wat. In moss and carrion, scarce.

1. Great Salkeld (Britten); Durdar (Day).

**exigua**, Er. Under stones with red ants, scarce.

3. Wan fell (Britten).

**longiuscula**, Er. In flood refuse, at grass roots, &c., common and widely distributed.

**rupicola**, Rye. A mountain species, local.

3. Scawfell (Britten); Skiddaw (Day).

**formiceticola**, Maerk. In the nests of the wood ant (*F. rufa*), locally abundant.

3. Ashness wood near Keswick (Britten, Day).

**hæmorrhœa**, Mann. In haystack refuse, ants' nests, &c., common.

1. Tarn Lodge, Hayton Moss (Routledge). Great Salkeld (Britten); near Carlisle (Day).
2. Bowness Moss, Silloth (Day).
3. Ashness wood near Keswick (Britten, Day).

**soror**, Th. Another alpine species, rare.

3. Saddleback, Skiddaw (Day).

**annularis**, Sahlb., var. **pallidula**, Sahlb. In moss, local.

1. Great Salkeld (Britten).
3. Cross fell (Britten).

**brachyptera**, Steph. In flood refuse, rare.

1. Banks of the Irthing (Bold); on the River Waver at Newton Arlosh near Abbeytown (Day).

**tarda**, Sharp. A small **Oxypoda** occurred in profusion in the spring of 1903 in hollows in the loose sand on the banks of the River Eden, at Great Salkeld, and was sent out by Mr. Britten and myself as this species. **O. tarda**, is however, such a badly defined species, that it is doubtful if it can be kept separate from **brachyptera**, Steph.

### THIASOPHILA.

**angulata**, Er. In the nests of **Formica rufa**, locally common.

3. Ashness wood near Keswick (Britten, Day).

### ISCHNOGLOSSA.

**prolixa**, Grav. Under bark of trees, occasionally in flood refuse, rather scarce.

1. Great Salkeld (Britten); banks of the River Petteril near Carlisle (Day).

**corticina**, Er. At the Meeting of the Entom. Soc. of London, December 2nd, 1861, "Mr. Waterhouse exhibited a specimen of **I. corticina**, a species hitherto unrecorded as British, which he had detected in the collection of the late Mr. Heysham, of Carlisle." (*Zoologist*, Vol. xx., 1862).

**OCYUSA.**

**incrassata**, Er. In moss, dead leaves, &c., not uncommon.

1. Tarn Lodge (Routledge); Edenhall (Britten); on the River Irthing near Easby (Day); Durdar (Murray).
3. Cross fell (Britten); Ashness wood, Dockray-in-Matterdale (Day).

**maura**, Er. In moss in marshy places, locally common.

1. Great Salkeld (Britten); Edenhall, Newton Reigny Moss (Day).

**PHLÆOPORA.**

**reptans**, Grav. Under the bark of Scotch fir, common.

1. Tarn Lodge (Routledge); Great Salkeld, Edenhall (Britten); Gelt, Orton, Durdar (Day).

**OCALEA.**

**castanea**, Er. In moss, flood refuse, &c., common.

1. Wetheral, Barron wood (Britten); Orton, Carleton, Monkhill (Day); Gelt, (Donisthorpe).
- 3 Cross fell (Britten).

**latipennis**, Sharp. In flood refuse, not uncommon.

1. Great Salkeld (Britten); Gelt, banks of the Petteril near Carlisle (Day).

**badia**, Er. In flood refuse, not uncommon.

1. On the Irthing (Bold); Gelt (Routledge); on the Eden at Wetheral (Day).

**ILYOBATES.**

**nigricollis**, Payk. In flood refuse, &c., scarce.

1. "On a moor, near Lanercost, specimens are more than one half as large as those from other localities" (Bold); Great Salkeld (Britten); on the Irthing near Ruleholme (Day).

**CALODERA.**

**riparia**, Er. In wet sphagnum, not uncommon locally.

1. Orton (Day).
3. Wan fell (Britten).

**æthiops**, Grav. In moss in damp places, not as frequent as the last.

1. Great Salkeld (Britten) ; Newton Reigny Moss (Day).

2. Silloth (Day).

**umbrosa**, Er. In flood refuse, scarce.

1. Great Salkeld (Britten).

#### CHILOPORA.

**longitarsis**, Er. In flood refuse, of fairly frequent occurrence.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Gelt, Wetheral (Day).

**rubicunda**, Er. On the sandy banks of streams, rare.

1. On the Irthing (Bold, Day) ; Cumberland (Fowler, vol. ii., p. 50) ; Great Salkeld, Newton Reigny Moss (Britten).

#### DINARDA.

**Maerkeli**, Kies. Found in the nests of the wood ant (*F. rufa*), not scarce.

3. Ashness wood near Keswick (Britten, Day).

#### MYRMEDONIA.

**collaris**, Payk. In moss, generally in company with red ants, scarce.

1. Hayton Moss, Orton (Routledge) ; Great Salkeld (Britten) ; Newton Reigny Moss (Day).

**humeralis**, Grav. In moss and under stones near the nests of the wood ant, sometimes abundant.

3. Ashness wood near Keswick (Day).

#### ASTILBUS.

**canaliculatus**, F. In moss, usually associated with various species of ants, common generally.

#### CALLICERUS.

**obscurus**, Grav. In moss, rare.

1. Gelt (Day).

**rigidicornis**, Er. On the margins of ponds, &c., of rather more frequent occurrence than the last species.

1. Great Salkeld (Britten) ; Newby Cross, Edenhall (Day).

#### NOTOTHECTA.

**flavipes**, Grav. In the nests of the wood ant (*F. rufa*), common.

3. Ashness wood near Keswick (Britten, Day).

**anceps**, Er. In company with the last, common.

**HOMALOTA.**

**currax**, Kr. On the margins of streams, locally common.

1. On the banks of the Irthing and Gelt (Routledge) ; Cummersdale (Day).
3. Seathwaite in Borrowdale (Britten) ; Aira Force, over Ullswater (Day).

**insecta**, Thoms. Occurs similarly to the last, not uncommon.

1. On the Irthing (Bold) ; Gelt (Routledge) ; Carleton, Wetheral (Day) ; Great Salkeld (Britten).
2. At the mouth of the Waver on the Solway (Day).
3. Ullswater (Britten).

**pavens**, Er. Another stream-side species, rather scarce.

1. On the Irthing (Routledge) ; Gelt (Day) ; Great Salkeld (Britten).
3. Ullswater (Britten).

**cambrica**, Woll. Among shingle in river beds, sometimes abundant.

1. On the Irthing and the Gelt (Day) ; Great Salkeld (Britten).

**gregaria**, Er. In flood refuse, hedge cuttings, moss, &c., generally abundant.

**fragilis**, Kr. Stream sides, rare.

1. Great Salkeld (Britten).

**longula**, Heer. Among shingle in river beds, not scarce.

1. Great Salkeld (Britten) ; on the Irthing (Day).

**subtilissima**, Kr. On damp sand and under stones in river beds, not uncommon, but owing to its small size easily overlooked.

1. Great Salkeld (Britten) ; Barron wood (Day).

**imbecilla**, Wat. In seaweed, rare.

2. Skinburness (Day).

**luridipennis**, Mann. On the edges of streams and ponds, rather common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; on the Irthing and Gelt, Orton (Day).
2. Silloth (Day).

**Gyllenhali**, Thoms. In damp moss, scarce.

1. Orton, Great Salkeld (Britten).

**hygrotopora**, Kr. On the edges of streams and ponds, not uncommon.

1. Great Salkeld (Britten) ; Carleton, Hallbankgate (Day).

3. Cumrew fell (Routledge) ; Aira Force (Day).

**elongatula**, Grav. In flood refuse, marshy places, &c., very common in the county.

**volans**, Scriba. Occurs similarly to the last, and nearly as commonly.

**tibialis**, Heer. In moss, usually in mountain districts, but sometimes found in flood refuse brought down from thence, common.

1. Wetheral, Gelt (Day).

3. Cross fell (Britten) ; Skiddaw, Saddleback, Helvellyn, Aira Force, Tindale fell (Day).

**vestita**, Grav. A maritime species, common in seaweed, &c., on the coast and the Solway marshes.

**alpestris**, Heer. In flood refuse, rare.

1. On the Petteril near Carlisle (Day) ; Gelt (Britten).

**nitidula**, Kr. In moss, &c., not uncommon.

1. Barron wood, Great Salkeld (Britten) ; Wetheral, Blackwell, Carleton, Orton (Day).

3. Cumrew fell (Routledge) ; Wan fell (Britten).

**silvicola**, Fuss. In moss, rather rare.

1. Gelt (Routledge) ; Orton (Day).

3. Aira Force (Day) ; Wan fell (Britten).

**vicina**, Steph. In flood refuse, &c., common throughout Cumberland.

**pagana**, Er. Rare.

1. Edenhall (J. C. Varty Smith).

**crassicornis**, Gyll. In fungi, scarce.

1. Gelt (Day) ; Great Salkeld (Britten).

**graminicola**, Gyll. Very common in the county.

**halobrectha**, Sharp. On mudbanks, locally common.

2. Burgh Marsh, at the estuary of the Eden (Day).

**puncticeps**, Thoms. Under seaweed, rare.

2. Silloth (Britten).

**occulta**, Er. In fungi, &c., not uncommon.

1. Great Salkeld (Britten, Day) ; Edenhall (Britten).

3. Near Sty Head (T. Blackburn, E.M.M., Vol. ii., p. 88).

**fungivora**, Thoms. In fungi, under haystacks, &c., not uncommon.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Carleton (Day).

**picipes**, Thoms. A **Homalota**, which appears to be this species, was taken rather freely by Mr. Britten and myself from a decaying beech stump at Great Salkeld, in the autumn of 1909.

**excellens**, Kr. By sweeping bleaberry, scarce.

3. Gamblesby fell (Britten).

**monticola**, Thoms. In fungi, rare.

1. Great Salkeld (Britten).

**æquata**, Er. Under bark of Scotch fir, rare.

1. Durdar (Day).

**angustula**, Gyll. In flood refuse, scarce.

1. Gelt (Routledge) ; Great Salkeld (Britten).

**linearis**, Grav. Under bark on fallen trees, common.

1. Near Ruleholme on the Irthing (Routledge) ; Great Salkeld, Edenhall (Britten) ; Orton, Wreay, Durdar (Day).

**pilicornis**, Thoms. Under bark, &c., rather scarce.

1. Great Salkeld (Britten) ; Gelt, Wetheral (Day).
2. Burgh-by-Sands (Murray).

**debilis**, Er. In flood refuse, local and not common.

1. Great Salkeld (Britten).

**fallaciosa**, Sharp. In moss, scarce.

1. Barron wood (Britten).
3. Wan fell (Britten).

**circellaris**, Grav. In moss, &c., generally common in the county.

**immersa**, Er. Under the bark of Scotch fir, widely distributed, but hardly a common insect.

1. Tarn Lodge (Routledge) ; Edenhall, Great Salkeld (Britten) ; Orton, Ruleholme (Day).
3. Lazonby fell (Britten).

**cuspidata**, Er. Under bark, much commoner than the last.

1. Edenhall, Great Salkeld, Barron wood (Britten) ; Orton, Durdar (Day).

**eremita**, Rye. In moss, fairly common, especially on mountains.

1. Hayton Moss (Routledge) ; Orton (Day).
2. Burgh Marsh (Day).
3. Cumrew fell (Routledge) ; Cross fell, Scaw fell (Britten) ; Skiddaw, Helvellyn (Day).

**Aubei**, Bris. In moss in damp places, scarce.

1. Great Salkeld (Britten) ; Newton Reigny Moss (Day).

**gemina**, Er. In moss, not uncommon.

1. Edenhall, Newton Reigny Moss (Britten) ; Orton (Day).

**curtipennis**, Sharp. In moss and among haystack rubbish, scarce.

1. Orton (Britten) ; Carleton (Day).
3. Helvellyn (Day).

**analis**, Grav. In moss, at roots of grass, in dead leaves, &c., very common in the county.

var. **major**, Sharp. Less abundant than the type.

**cavifrons**, Sharp. In moss and flood refuse, not scarce.

1. Grinsdale (Murray) ; Great Salkeld, Langwathby (Britten) ; Hayton Moss (Routledge).
3. Skiddaw (Day).

**soror**, Kr. Under haystacks, in dead leaves, &c., of fairly frequent occurrence.

1. Great Salkeld (Britten) ; Gelt, Carleton, Barron wood (Day).
3. Wan fell (Britten).

**exilis**, Kr. In moss in damp places, scarce.

1. Edenhall (Britten) ; Orton (Day).

**pallens**, Redt. In flood refuse, &c., scarce.

1. Great Salkeld (Britten) ; banks of the Petteril near Carlisle (Day).

**parallela**, Mannh. In the nests of the wood ant (*F. rufa*), very common locally.

3. Ashness wood near Keswick (Britten, Day).

**depressa**, Gyll. By sweeping in woods, also on walls, fairly common.

1. Tarn Lodge, Gelt, Easby (Routledge) ; Great Salkeld, Barron wood (Britten) ; Wreay (Day) ; Orton, Beaumont (Murray).

**hepatica**, Er. On the margins of ponds, in moss, &c., scarce.

1. Great Salkeld (Britten) ; Edenhall (Day).
3. Cumrew fell (Britten).

**aquatica**, Thoms. In flood refuse, &c., locally common.

1. Great Salkeld, Edenhall (Britten) ; Wetheral, Durdar (Day) ; Gelt, Carleton (Murray).
2. Burgh Marsh (Britten).

**æneicollis**, Sharp. In fungi, &c.

1. Great Salkeld (Britten) ; Wetheral (Day).
2. Skinburness (Britten).

**xanthoptera**, Steph. In fungi, very common throughout the county ; rarely in carrion.

**valida**, Kr. In fungi, dead leaves and carrion, rare.

1. Great Salkeld (Britten) ; Gelt (Day).

**euryptera**, Steph. In decaying vegetable matter, sometimes very common at the exuding sap of Cossus-infested trees.

1. On the Irthing (Routledge) ; Great Salkeld, Edenhall (Britten) ; Orton, Durdar, &c. (Day).
2. Burgh Marsh (Day).

**trinitata**, Kr. Under haystacks, &c., common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Carleton, Durdar, Orton (Day).

**xanthopus**, Thoms. In fungi, &c., not very common.

1. Great Salkeld (Britten) ; Orton (Day).

**triangulum**, Kr. In fungi, flood refuse, &c., fairly common.

1. Great Salkeld, Skirwith (Britten) ; Wetheral (Day).
3. Near Sty Head (T. Blackburn, E.M.M., Vol. ii., p. 88) ; Cross fell (Britten).

**fungicola**, Thoms. A very common species in fungi throughout the county.

**boletobia**, Thoms. In fungi, locally common.

1. Tarn Lodge (Routledge) ; Gelt (Day).

**coriaria**, Kr. In squirrel's and crow's nests, local.

1. Great Salkeld (Britten).
3. Wan fell (Britten).

**sodalis**, Er. In flood refuse, fungi, &c., not very common.

1. Gelt (Murray) ; Great Salkeld (Britten) ; Edenhall (Day).
3. Wan fell (Britten).

**gagatina**, Baudi. In fungi, fairly common.

1. Hayton Moss, Gelt (Routledge) ; Barron wood (Britten) ; Orton (Day).

**divisa**, Maerk. In carrion, fairly common.

1. Great Salkeld (Britten) ; Durdar (Day).
2. Silloth (Day).

**nigricornis**, Thoms. In carrion, moss, &c., less frequent than the last.

1. Great Salkeld (Britten) ; Southwaite (Day).
3. Wan fell (Britten).

**ravilla**, Er. In mole's nests, fungi, &c., not uncommon.

1. Great Salkeld (Britten) ; Carleton (Day).

**corvina**, Thoms. In carrion, local and not common.

1. Great Salkeld (Britten).

**oblita**, Er. In fungi, rare.

1. Gelt (Day).

**autumnalis**, Er. In refuse by the edges of ponds, occasionally in fungi, local and not common.

1. Edenhall (Britten) ; Gelt (Day).

**sericea**, Muls. In fungi, cut grass, &c., common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten).
2. Silloth, Seascale (Day).

**indubia**, Sharp. In carrion, scarce.

1. Great Salkeld (Britten) ; Tarn Lodge (Routledge).

**mortuorum**, Thoms. Rare.

1. Great Salkeld, two specimens (Britten).

**atricolor**, Sharp. In carrion, seaweed, &c., common.

1. Great Salkeld (Britten) ; Orton, Barron wood (Day).
2. Seascale (Day).
3. Helvellyn (Day).

**inquinula**, Er. In cow dung, very rare.

1. Langwathby (Britten).

**nigra**, Kr. Under haystacks, in dead leaves, moss, &c., very common in the county.

**hodierna**, Sharp. In refuse by the sides of ponds, rare.

1. Edenhall (Britten).

**germana**, Sharp. In moss, dead leaves and flood refuse, of fairly frequent occurrence.

1. Great Salkeld (Britten) ; Orton, Kirkhampton (Day).
2. Anthorn on the Solway Firth (Day).
3. Wan fell, Keswick (Britten).

**sordidula**, Er. In moss, scarce.

1. Great Salkeld, Armathwaite (Britten).

**canescens**, Sharp. In moss, rare.

1. Great Salkeld (Britten).
3. Cross fell (Britten).

**cauta**, Er. In carrion, dung, &c., not uncommon.

1. Great Salkeld, Armathwaite (Britten) ; Durdar, Carleton (Day).
3. Wan fell, Cross fell (Britten) ; Helvellyn (Day).

**villosula**, Kr. In dung, &c., widely distributed, but not very common.

1. Great Salkeld, Edenhall (Britten) ; Durdar (Day).
2. Silloth (Day).
3. Cross fell, Keswick (Britten).

**lævana**, Muls. In dead leaves, scarce.

1. Great Salkeld (Britten).
3. Ashness wood near Keswick (Day).

**cinnamoptera**, Thoms. In moss, carrion, &c., not scarce.

1. Wetheral (Britten) ; Cummersdale, Carleton (Day).
3. Wan fell, Cross fell, Keswick (Britten).

**macrocera**, Th. In dung, rare.

1. Wreay (Day).

**atramentaria**, Gyll. In dung, seaweed, &c., very common throughout the county.

**marcida**, Er. In carrion, scarce.

1. Great Salkeld (Britten).

**intermedia**, Thoms. In haystack refuse, &c., scarce.

1. Great Salkeld (Britten).
3. Keswick (Britten).

**longicornis**, Grav. In haystack refuse, &c., common in the county.

**sordida**, Marsh. In old straw, vegetable refuse, &c., very common in the county.

**testudinea**, Er. In moss, &c., scarce.

1. Great Salkeld, Orton (Britten).

**aterrima**, Grav. In dung, vegetable refuse, &c., common in the county.

**pygmæa**, Grav. In flood refuse, &c., rather scarce, but probably overlooked.

1. Great Salkeld, on the Petteril near Carleton (Britten).

**muscorum**, Bris. In moss, &c., common in the county.

**pilosiventris**, Thoms. In fungi, dung, &c., scarce.

1. Great Salkeld (Britten, Day).

3. Wan fell, Cross fell (Britten).

**laticollis**, Steph. In hedge trimmings, flood refuse, &c., rather scarce.

1. Blackwell, on the Petteril near Carleton (Day); Newton Arlosh (Britten).

**orbata**, Er. In rotting straw on the coast, locally common.

2. Silloth (Day).

**fungi**, Grav. In moss, flood refuse, dead leaves, &c., very common throughout the county, the vars. **dubia**, Sharp, and **clientula**, Er., also occur.

#### GNYPETA.

**labilis**, Er. On mud by the sides of ponds and streams, common in the county.

**cœrulea**, Sahlb. On mossy rocks in river beds, also in flood refuse, not uncommon.

1. Great Salkeld (Britten); Wetheral (Day).

3. Cross fell (Britten); Helvellyn, Dockray-in-Matterdale (Day).

#### TACHYUSA.

**constricta**, Er. On sand banks on river sides, locally abundant.

1. On the Irthing (Bold); junction of the Irthing and Gelt near Edmond Castle (Routledge); on the Petteril near Carleton (Day).

2. Anthorn at the mouth of the Wampool (Day).

**scitula**, Er. Banks of streams, rare.

1. Banks of the Irthing (Bold); on the Irthing near Ruleholme (Day).

**flavitarsis**, Sahlb. Banks of streams, common.

1. On the Irthing (Routledge) ; Great Salkeld, Barron wood (Britten) ; on all the streams near Carlisle (Day).

**atra**, Grav. Margins of ponds and streams, in sphagnum, &c., common.

1. Great Salkeld, Langwathby, Newton Reigny Moss (Britten) ; Monkhill, Easby (Day) ; Wetheral (Murray).
2. Whitrigg, Silloth, Seascale (Day).

### **XENUSA.**

**sulcata**, Kies. In seaweed, rare.

2. Seascale (Day).

### **FALAGRIA.**

**sulcata**, Payk. In old straw, &c., locally abundant.

1. Skirwith (Britten).
2. Silloth (Britten, Day).

**sulcatula**, Grav. In moss, rare.

1. Barron wood (Britten).

**thoracica**, Curt. At roots of grass near the sea shore, common but local.

2. Seascale (Day).

**obscura**, Grav. Under stones, in moss, flood refuse, &c., fairly common.

1. Stainton (Murray) ; Great Salkeld (Britten).
2. Anthorn, Newton Marsh, Skinburness, Silloth (Day).

### **AUTALIA.**

**impressa**, Ol. In fungi, common in the county.

**rivularis**, Grav. In dung, &c., moderately common.

1. Great Salkeld, Edenhall (Britten) ; Cummersdale, Upperby (Day).
2. Burgh Marsh (Britten).
3. Cross fell (Day).

**puncticollis**, Sharp. Rare.

3. Two specimens swept from long grass at Dockray-in-Matterdale (Day, Britten).

### **ENCEPHALUS.**

**complicans**, Westm. Roots of grass and by sweeping, scarce.

1. Great Salkeld (Britten) ; Wreay (Day).

**GYROPHÆNA.**

**affinis**, Mann. In fungi, fairly common.

1. Tarn Lodge (Routledge); Great Salkeld (Britten); Gelt (Day).

**gentilis**, Er. In fungi, not so frequently met with as the last.

1. Tarn Lodge (Routledge); Gelt, Orton (Day).

**nana**, Payk. In fungi, not scarce.

1. Edmond Castle (Routledge); Great Salkeld (Britten); Penton (Day).

**lævipennis**, Kr. In fungi, scarce.

1. Great Salkeld (Britten).

**manca**, Er. In fungi, very local.

1. Great Salkeld, abundant (Britten, Day).

**strictula**, Er. In a hard woody fungus (*Dædalea quercina*), growing on oak stumps.

1. Great Salkeld (Britten, Day).

**AGARICOCHARA.**

**lævicollis**, Kr. In boleti on old fences, local.

1. Durdar, Penton (Day); Great Salkeld (Britten).

**PLACUSA.**

**complanata**, Er. Under bark of Scotch fir, common but local.

1. Great Salkeld (Britten); Durdar (Day).
3. Wan fell (Britten).

**EPIPEDA.**

**plana**, Gyll. Under elm bark, local and rare.

1. Great Salkeld (Britten).

**LEPTUSA.**

**fumida**, Er. Under bark of fir and other trees, generally common.

**SIPALIA.**

**ruficollis**, Er. Under bark of sycamore, scarce.

1. Gelt (Day).

**BOLITOCHARA.**

**lucida**, Grav. In fungi on old tree stumps, not very common.

1. Hayton Moss (Donisthorpe); Gilsland (Bold); Great Salkeld (Britten).
3. Near Sty Head (T. Blackburn, E.M.M., Vol. ii., p. 88); Ullswater (Britten).

**lunulata**, Payk. In fungi on tree stumps, rare.

3. Ullswater (Britten).

**obliqua**, Er. Under bark of fir and other trees, generally common.

### PHYTOSUS.

**balticus**, Kr. Under seashore refuse, not uncommon at times.

1. Silloth (Britten, Day).

### DIGLOTTA.

**submarina**, Fairm. A maritime species, sometimes very abundant on sandy shores below high-water mark.

2. Silloth (Britten, Day).

### HYGRONOMA.

**dimidiata**, Grav. By sweeping in marshy places, locally common

1. Newton Reigny Moss (Britten, Day).

### OLIGOTA.

**inflata**, Mann. Under haystacks, in old straw, &c., common in the county.

**pusillima**, Grav. On mud, scarce.

1. Great Salkeld (Britten).

**atomaria**, Er. In moss, scarce.

1. Great Salkeld (Britten).

### MYLLÆNA.

**dubia**, Grav. In marshy places, locally common.

1. Tarn Lodge (Routledge) ; Newton Reigny Moss, Edenhall (Britten) ; Orton (Day).

**elongata**, Matth. In muddy places, local.

1. Great Salkeld (Britten).

**infuscata**, Matth. In marshy places, not uncommon.

1. Newton Reigny Moss, Edenhall (Britten, Day).

**brevicornis**, Matth. In wet sphagnum, fairly common in Cumberland.

### GYMNUSA.

**brevicollis**, Payk. In wet sphagnum, rather scarce.

1. Orton, Newton Reigny Moss (Day).

2. Silloth (Britten).

3. Wan fell (Britten) ; Skiddaw (W. E. Sharp).

**variegata**, Kies. Occurs similarly to the last, not common.

1. Banks of the Irthing (Bold) ; Great Salkeld (Britten).

3. Cross fell (Britten).

**HYPOCYPTUS.**

**longicornis**, Payk. At roots of grass, under haystacks, &c., fairly common in the county.

**læviusculus**, Mann. In moss and under bark, scarce.

1. Great Salkeld (Britten).

3. Wan fell (Britten).

**seminulum**, Er. Under bark and by sweeping under trees, scarce.

1. Great Salkeld, Edenhall (Britten).

**punctum**, Mots. In dry dung, rare.

1. Great Salkeld (Day, Britten).

**apicalis**, Bris. Among ivy on old walls, rare.

1. Great Salkeld (Britten).

**CONOSOMA.**

**littoreum**, L. In flood refuse, not very common.

1. Great Salkeld (Britten); on the Petteril near Carlisle (Murray, Day).

**pubescens**, Grav. In flood refuse, under haystacks, &c., generally common in the county.

**immaculatum**, Steph. In moss, &c., not very common.

1. Hayton Moss (Routledge); Great Salkeld (Britten);  
Orton, Durdar (Day); Gelt (Murray).

**lividum**, Er. Under haystacks, at roots of grass, &c., common throughout the county.

**TACHYPORUS.**

**obtusus**, L. Common.

var. **nitidicollis**, Steph. Occasionally taken.

1. Durdar, Orton, Great Salkeld (Day); Belle Vue (Murray).

**formosus**, Matth. In grass tufts on hedge banks, scarce.

1. Orton (Murray).

**solutus**, Er. In grass tufts, moss, &c., not uncommon.

1. Great Salkeld (Britten).

2. Burgh (Britten); Silloth, Seascale (Day).

**pallidus**, Sharp. Usually by sweeping under hedges and in damp places, locally abundant.

1. Great Salkeld (Britten); Hayton Moss (Day).

2. Burgh, Seascale (Day).

**chrysomelinus**, L. Very common.

**humerosus**, Er. Under haystacks, in moss, &c., somewhat scarce but widely distributed.

1. Great Salkeld (Britten) ; Orton, Durdar, Wreay (Day).

3. Cross fell (Britten).

**tarsus**, Er. In flood refuse, rare.

1. Carleton, Cummersdale (Day).

**hypnorum**, F. Very common.

var. **meridionalis**, Fairm. Cross fell (Britten).

**pusillus**, Grav. Common, especially so in flood refuse.

**brunneus**, F. In flood refuse, &c., common.

**transversalis**, Grav. In sphagnum, wet moss, &c., locally common.

1. Hayton Moss (Routledge) ; Durdar, Orton (Day).

2. Silloth (Day).

3. Wan fell (Britten).

### LAMPRINUS.

**saginitus**, Grav. In flood refuse, moss, &c., rare.

1. On the Irthing (Bold) ; Great Salkeld, Barron wood (Britten) ; on the Petteril near Carleton (Day).

### CILEA.

**silphoides**, L. In dung-heaps, garden refuse, &c., sometimes on the wing, locally common.

1. Great Salkeld (Britten) ; Carlisle (Day).

### TACHINUS.

**flavipes**, F. In dung, &c., rare.

1. Banks of the Irthing (Bold) ; Hayton (Routledge).

2. Seascale (Day).

**rufipennis**, Gyll. Very rare.

3. One specimen on Cumrew fell (Britten).

**humeralis**, Grav. In dung and rotten fungi, fairly common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Orton, Gelt, Brampton (Day).

**proximus**, Kr. Occurs similarly to the last, and is by no means a scarce insect.

1. Gelt (Routledge) ; Great Salkeld (Britten) ; Orton (Day).

3. Borrowdale (Day).

**scapularis**, Steph. Rare.

3. Near Keswick (Britten).

**rufipes**, L. In dung, fungi, &c., common in the county.

**subterraneus**, L. In fungi, rotten turnips, &c., common.

1. Tarn Lodge, Hayton Moss (Routledge) ; Great Salkeld (Britten) ; Durdar, Cummersdale (Day).

2. Allonby, Bowness Moss (Day).

var. **bicolor**, Grav. Great Salkeld (Britten).

**marginellus**, F. In dung, &c., common.

**laticollis**, Grav. Nearly as common as the last.

**collaris**, Grav. Very common in flood refuse, sometimes in rotten turnips.

1. Great Salkeld (Britten) ; on the Petteril, Caldew, and Eden near Carlisle (Day, Murray).

**elongatus**, Gyll. Usually on the banks of streams, of fairly frequent occurrence.

1. Banks of the Irthing (Bold) ; Tarn Lodge (Routledge) ; Newton Reigny Moss (Britten) ; on the Petteril at Carleton (Day).

3. Castle Carrock fell (Routledge) ; Cross fell (Britten) ; Dockray-in-Matterdale (Day).

#### MEGACRONUS.

**cingulatus**, Mann. In moss, somewhat scarce, but widely distributed.

1. Gelt, Hayton Moss (Routledge) ; Gilsland (Bold) ; Newton Reigny Moss (Britten) ; Orton (Day).

3. Castle Carrock fell (Routledge) ; Keswick, Sty Head, Wanfell (Britten).

**analis**, F. Under stones, much commoner than the last.

**inclinans**, Grav. Under stones, rare.

1. Great Salkeld (Britten, Day).

3. Castle Carrock (Routledge).

#### BOLITOBIUS.

**lunulatus**, L. In fungi, fairly common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Durdar, Orton, Gelt (Day).

3. Ashness wood near Keswick (Day).

**trinotatus**, Er. In fungi, generally common.

**exoletus**, Er. In fungi, not uncommon.

1. Great Salkeld (Britten) ; Durdar, Orton (Day).

3. Wan fell (Britten).

**pygmæus**, F. In fungi, generally common.

### MYCETOPORUS.

**lucidus**, Er. In moss, &c., scarce.

1. Great Salkeld (Britten).

3. Keswick (Britten).

**punctus**, Gyll. In moss, &c., scarce.

1. Durdar (Murray) ; Great Salkeld (Day).

2. Silloth (Britten).

3. Cumrew fell (Day) ; Wan fell (Britten).

**lepidus**, Grav. In flood refuse, &c., not uncommon.

1. Tarn Lodge, Hayton Moss (Routledge) ; High Hesket, Great Salkeld, Barron wood (Britten) ; Carlisle, Orton, Floriston (Day) ; Thurstonfield (Murray).

3. Wan fell, Helvellyn (Britten).

**longulus**, Mann. By sweeping, &c., fairly frequent.

1. Tarn Lodge (Routledge) ; Great Salkeld, High Hesket, Barron wood (Britten) ; Hallbankgate, Carleton, Wetheral (Day).

3. Dockray-in-Matterdale (Day).

**clavicornis**, Steph. In moss, flood refuse, &c., not scarce.

1. Great Salkeld, Langwathby (Britten) ; Durdar, Orton (Day) ; Carleton (Murray).

3. Wan fell (Britten).

**splendidus**, Grav. In moss, at grass roots, &c., not uncommon.

1. Great Salkeld, Newton Reigny Moss (Britten) ; Orton, Carleton (Day).

2. Silloth (Day).

### HABROCERUS.

**capillaricornis**, Grav. In flood refuse and dead leaves, scarce.

1. Wetheral (Murray, Day).

### EURYPORUS.

**picipes**, Payk. In moss, rare.

1. Durdar (Murray, Day) ; Great Salkeld (Britten).

3. Ullswater (Britten).

**HETEROTHOPS.**

**binotata**, Er. A common seashore insect, found in seaweed and rejectamenta.

**prævia**, Er. In old straw in cowsheds, local.

1. Great Salkeld (Britten, Day).

**QUEDIUS.**

**longicornis**, Kr. In and near rabbit burrows, local.

1. Great Salkeld (Britten).

**lateralis**, Grav. In rotten fungi, common.

1. Gelt (Routledge) ; Great Salkeld (Britten) ; Orton, Durdar, Newby Cross (Day).

**mesomelinus**, Marsh. In vegetable refuse, moss, flood refuse, &c., common.

**fulgidus**, F. In old straw, rare.

2. Silloth (Day).

**puncticollis**, Thoms. In wasps' nests, also by sweeping ; sometimes taken on the wing, and on " sugared " trees, not uncommon.

1. Tarn Lodge, Hayton Moss (Routledge) ; Great Salkeld (Britten).
3. Near Aira Force (Day).

**vexans**, Epp. In the nests of moles, local but not scarce.

1. Great Salkeld (Britten) ; Easby (Day).

**cruentus**, Ol. Among garden refuse, in decaying wood, &c., locally common.

1. Carlisle (Day) ; Great Salkeld (Britten).

var. **virens**, Great Salkeld (Britten).

**xanthopus**, Er. In rotten tree stumps, old wood, &c., scarce.

1. Barron wood (Britten) ; Wetheral (Day).

**scitus**, Grav. In rotten wood, rare.

1. Edenhall (Britten).

**cinctus**, Payk. In carrion, moss, haystack refuse, &c., common in the county.

**brevis**, Er. In the nests of **Formica rufa**, rare.

3. Ashness wood near Keswick (Day).

**fuliginosus**, Grav. Common in moss, flood refuse, &c., throughout the county.

**tristis**, Grav. Equally common with the last.

**molochinus**, Grav. In moss, &c., a fairly common species, but less so than the two preceding.

**picipes**, Mann. In moss and under stones, among dead leaves, moderately common.

1. Wetheral, Gelt (Day) ; Barron wood (Britten).
2. Allonby (Day).
3. Hynam (Routledge) ; Aira Force, Ashness wood (Day).

**nigriceps**, Kr. In moss, &c., moderately common.

1. Tarn Lodge, Hayton Moss (Routledge) ; Great Salkeld, Barron wood (Britten) ; Orton (Murray) ; Durdar (Day).
3. Talkin Tarn, Cumrew fell (Day) ; Wan fell (Britten).

**fumatus**, Steph. Among dead leaves in and near woods, local.

1. Great Salkeld (Britten) ; Grinsdale (Murray) ; Gelt, Barron wood (Day).
3. Ashness wood (Britten).

**maurorufus**, Grav. In moss, &c., in marshy places, fairly common.

1. Hayton Moss (Routledge) ; Great Salkeld (Britten) ; Cumwhinton, Newton Reigny Moss (Day).
2. St. Bees Head (Day).
3. Cross fell, Wan fell (Britten).

**umbrinus**, Er. In flood refuse, waterfall moss, &c., common.

1. Carleton, Grinsdale (Murray) ; Tarn Lodge, Gelt (Routledge) ; Great Salkeld (Britten) ; Wetheral, Easby (Day).
3. Aira Force, Helvellyn, Cross fell (Day).

**obliteratus**, In carrion, &c., scarce.

2. Silloth (Britten) ; Seascale (Day).

**scintillans**, Grav. In flood refuse, grass tufts, &c., not very common.

1. Gelt (Routledge) ; Great Salkeld (Britten) ;
2. Anthorn at the mouth of the Wampool (Day).

**auricomus**, Kies. In waterfall moss in high districts, locally abundant.

1. On the Irthing (Bold) ; Gelt (Routledge).
3. Eskdale (Thornley, E.M.M., Vol. v., p. 280) ; Cross fell, Aira Force (Britten, Day).

**rufipes**, Grav. In moss, flood refuse, &c., generally common in the county.

**attenuatus**, Gyll. In flood refuse, &c., not scarce, but somewhat local.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Carleton (Day).

3. Cumrew fell (Routledge) ; Dollywaggon pike (Britten).

**picipennis**, Heer. Rare.

3. Wan fell (Britten).

**semisæneus**, Steph. Under stones, by sweeping, &c., common.

**fulvicollis**, Steph. In flood refuse, moss, &c., scarce.

1. Tarn Lodge (Routledge) ; Gelt, Carleton (Day) ; Great Salkeld (Britten).

3. Hynam fell (Routledge).

**boops**, Grav. Under haystacks, in moss, &c., very common.

### CREOPHILUS.

**maxillosus**, L. In carrion, common.

### LEISTOTROPHUS.

**nebulosus**, F. In carrion, rotten fungi, &c., somewhat scarce.

1. Great Salkeld (Britten) ; Wreay, Orton, Gelt (Day) ; Edmond Castle (Miss D. Graham).

**murinus**, L. Occurs similarly to the last, uncommon.

1. Edmond Castle (Routledge) ; Great Salkeld (Britten) ; Durdar (Day).

### STAPHYLINUS.

**pubescens**, De G. In dung, &c., fairly abundant.

1. Tarn Lodge, Hayton (Routledge) ; Great Salkeld (Britten) ; Orton (Murray) ; Durdar, Kirkbampton (Day).

2. Burgh Marsh (Routledge).

3. Lodore (Day).

**fulvipes**, Scop. Under stones, very rare.

3. Ashness wood near Keswick (Day).

**stercorarius**, Ol. Under stones, in rabbit burrows, &c., local.

1. Tarn Lodge (Routledge).

2. Silloth, Maryport (Day).

3. Wan fell (Britten).

**erythropterus**, L. In flood refuse, at tree roots, &c., as a rule fairly common.

1. Lees Hill (Routledge) ; Durdar, Orton (Day) ; Carleton (Murray).
3. Wan fell, Rotherhope (Britten).

### OCYPUS.

**olens**, Müll. In vegetable refuse, often seen running on roads and paths, common, but somewhat local.

1. Heads Nook (Routledge) ; Penrith (Britten) ; Carlisle (Day).
3. Wan fell (Britten).

**similis**, F. Under stones, not scarce.

1. Lanercost (Bold) ; Great Salkeld (Britten) ; Durdar, Armathwaite, Orton (Day).

**brunnipes**, F. In moss, dead leaves, &c., locally common.

1. Barron wood, Great Salkeld (Britten) ; Durdar, Orton (Day).
3. Wan fell (Britten) ; Ashness wood (Day).

**fuscatus**, Grav. Under stones, scarce.

1. Great Salkeld (Britten) ; Blackwell (Day) ; Orton (Murray).
2. Silloth (Day).
3. Wan fell (Britten).

**cupreus**, Rossi. Under stones, &c., common.

**morio**, Grav. Under stones and in moss, common.

### PHILONTHUS.

**splendens**, F. In dung and carrion, common.

1. Tarn Lodge, Cairn Bridge (Routledge) ; Great Salkeld (Britten) ; Carlisle and district (Day).

**intermedius**, Boisd. In manure heaps, not so frequently met with as the last.

1. Great Salkeld (Britten) ; Orton (Day).

**laminatus**, Creutz. In moss, dung, &c., common.

**æneus**, Rossi. In carrion, moss, fungi, &c., common.

**proximus**, Kr. In rotten fungi, &c., not very common.

1. Hayton Moss, Gelt (Routledge) ; Great Salkeld (Britten) ; Thurstonfield, Durdar (Day).
2. Silloth (Day).
3. Wan fell (Britten).

**carbonarius**, Gyll. In moss, scarce.

1. Great Salkeld (Britten) ; Wreay, Durdar (Day).

**scutatus**, Er. In moss, not uncommon, but local.

1. Gelt (Routledge) ; Cumberland (Bold) ; Durdar (Day) ; Grinsdale (Murray).
3. Near Keswick (Britten).

**decorus**, Grav. In dead leaves, moss, &c., generally in and near woods, locally common.

1. Tarn Lodge, Gelt (Routledge) ; Great Salkeld (Britten) ; Orton, Wetheral (Day).
2. Whitehaven (Murray).
3. Rotherhope (Britten) ; Castle Carrock (Routledge) ; Ashness wood (Day).

**politus**, F. In moss, very common in the county.

**lucens**, Er. Not taken for many years, but Bold records it from the banks of the Irthing.

**varius**, Gyll. In refuse of various kinds, very common.

**marginatus**, F. In dung, carrion and fungi, common.

**albipes**, Grav. In manure heaps, garden refuse, &c., local.

1. Great Salkeld (Britten) ; Carlisle district (Day).
2. Skinburness, Seascale (Day).

**umbratilis**, Grav. In carrion, vegetable refuse, &c., local.

1. Lanercost (Bold) ; Great Salkeld (Britten) ; Orton, Wreay, Edenhall (Day).

**cephalotes**, Grav. In vegetable refuse, common.

1. Tarn Lodge, Hayton Moss (Routledge) ; Great Salkeld (Britten) ; Orton (Day).
2. Anthorn (Day).

**nigriventris**, Thoms. In carrion, widely distributed, but never common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Orton (Day).
2. Skinburness, Seascale (Day).

**flmetarius**, Grav. In various kinds of refuse, very common.

**sordidus**, Grav. In carrion, flood refuse, &c., common.

**concinus**, Grav. In moss, &c., moderately common.

1. Newton Reigny Moss (Britten) ; Kingmoor, Orton, Carleton (Day) ; on the River Irthing (Routledge).

2. Silloth, Newton Marsh (Day).

**corvinus**, Er. In wet moss, flood refuse, &c., local.

1. Newton Reigny Moss (Britten) ; Carleton (Day).

**fumigatus**, Er. In moss, &c., often taken on the wing.

1. Tarn Lodge, Hayton Moss, Gelt (Routledge) ; Great Salkeld (Britten) ; Carlisle (Day).

2. Silloth, Seascale, Bowness-on-Solway (Day).

3. Wan fell (Britten) ; Keswick, Cumrew fell (Day).

**debilis**, Grav. In old straw, &c., local.

1. Great Salkeld (Britten).

2. Silloth, abundant (Day).

**sanguinolentus**, Grav. In dung, &c., not uncommon.

1. Hayton Moss (Routledge) ; Great Salkeld (Britten) ; Durdar, Orton, Carleton (Day).

2. Silloth (Day).

**cruentatus**, Gmel. In flood refuse, rare.

1. Great Salkeld (Britten).

**longicornis**, Steph. In manure heaps, rather scarce.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Carlisle (Day).

**varians**, Payk. In dung, carrion, &c., very common.

**vernalis**, Grav. In flood refuse, scarce.

1. Great Salkeld (Britten).

2. Newton Marsh (Day).

**ventralis**, Grav. In garden refuse, locally common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Day) ; Skirwith (Britten).

3. Wan fell (Britten).

**discoideus**, Grav. Abundant in a hothouse at Great Salkeld, in the spring of 1902, having probably bred from the litter mixed with the potting soil (Britten, Day).

**nigrita**, Nord. In wet sphagnum, &c., locally common.

1. Great Salkeld, Newton Reigny Moss (Britten); Orton, Kirkbampton (Day).
3. Wan fell (Britten); Helvellyn (Day).

**micans**, Grav. In moss on marshy ground, moderately common.

1. Tarn Lodge (Routledge); Newton Reigny Moss (Day).
2. Silloth (Day).
3. Wan fell (Britten).

**fulvipes**, F. On the sandy margins of streams, uncommon.

1. Great Salkeld (Britten); Carleton (Day, Murray).

**puella**, Nord. In putrid fungi, local, but not uncommon.

1. Hayton Moss, Edmond Castle (Routledge); Great Salkeld (Britten); Durdar, Orton (Day).

### GABRIUS.

**trossulus**, Nordm. In vegetable refuse, not uncommon.

1. Great Salkeld, Langwathby, Barron wood (Britten).
2. Silloth (Day).

**stipes**, Sharp. In horse dung.

1. Great Salkeld, Barron wood (Britten).

**nigritulus**, Grav. In moss, flood refuse, &c., common.

1. Great Salkeld, Langwathby (Britten); Newton Reigny Moss, Orton, Carleton (Day).
2. Silloth (Day).

**pennatus**, Sharp. In flood refuse, scarce.

1. Langwathby (Britten).

**Bishopi**, Sharp. In flood refuse, fairly abundant.

1. Great Salkeld, Langwathby (Britten).
2. Silloth (Day).

**appendiculatus**, Sharp. In flood refuse, common.

1. Great Salkeld, Langwathby (Britten); Orton, Wetheral (Day).
2. Burgh and Newton Marshes (Day).

### CAFIUS.

**fucicola**, Curt. In seaweed, rare.

2. Silloth (Britten).

**xantholoma**, Grav. In seaweed, common on the coast.

**ACTOBIUS.**

**cinerascens**, Grav. On the mossy edges of ponds, locally common.

1. Great Salkeld, Edenhall (Britten) ; Orton, Newton Reigny Moss, Kirkbampton (Day).

3. Wan fell (Britten).

**signaticornis**, Rey. On the sandy margins of streams, rare.

1. Cummersdale (Day).

**procerulus**, Grav. On mudbanks by streams, rare.

1. Great Salkeld (Britten).

**XANTHOLINUS.**

**glabratus**, Grav. In dung, &c., common.

1. Great Salkeld (Britten) ; Orton, Cummersdale, Carleton (Day) ; Newtown (Murray).

2. Burgh Marsh (Day).

**punctulatus**, Payk. In flood refuse, &c., common.

**ochraceus**, Gyll. Under haystacks, in moss, &c., not scarce.

1. Great Salkeld (Britten) ; Orton, Carleton (Day).

2. Silloth, Seascale (Day).

**linearis**, Ol. In vegetable refuse, &c., very common.

**longiventris**, Heer. In vegetable refuse, &c., not so common as the preceding, but widely distributed.

**LEPTACINUS.**

**parumpunctatus**, Gyll. In old straw, rare.

2. Silloth (Day).

**batychnus**, Gyll. In old straw, &c., scarce.

1. Great Salkeld (Britten).

2. Silloth (Day).

**linearis**, Grav. In vegetable refuse, &c., locally common.

1. Great Salkeld, Skirwith (Britten) ; Carlisle (Day).

2. Silloth (Day).

**formicetorum**, Maerk. In the nests of *Formica rufa*, local.

3. Ashness wood near Keswick (Britten, Day).

**BAPTOLINUS.**

**alternans**, Grav. Under bark of trees, usually Scotch fir, common.

1. Great Salkeld (Britten) ; Orton, Durdar, Gelt, &c. (Day).

3. Ashness wood near Keswick (Day).

**OTHIUS.**

**fulvipennis**, F. In moss, under stones, &c., common.

**læviusculus**, Steph. In dead leaves, &c., sometimes taken on the wing, rather uncommon.

1. Great Salkeld (Britten) ; Orton (Murray) ; Thurstonfield (Day).
2. Silloth (Britten) ; Anthorn (Day).
3. Wan fell (Britten).

**melanocephalus**, Grav. In moss, common.

**myrmecophilus**, Kies. In moss, common.

**LATHROBIUM.**

**ripicola**, Czwal. Scarce, one at Kirkbampton (Day).

**geminum**, Kr. Probably common but confused with the next.

**elongatum**, L. In flood refuse and moss, uncommon.

**fulvipenne**, Grav. Common.

**brunnipes**, F. Another generally common species.

**longulum**, Grav. In flood refuse rare.

1. On the Petteril, near Carleton (Murray, Day).

\***punctatum**, Zett. (**atripalpe**, Brit. Cat.). In moss, scarce.

1. Tarn Lodge (Routledge).
3. Cumrew fell (Britten, Routledge, Day).

**quadratum**, Payk. Margins of ponds and in wet moss, local, but not uncommon.

1. Great Salkeld, Edenhall, Newton Reigny Moss (Britten) ; Monkhill (Day) ; Thurstonfield (Murray).
2. Silloth (Day).

**terminatum**, Grav. The type form has only occurred in Cumberland on Wan fell (Britten).

var. **immaculatum**, Fowler. In sphagnum, local.

1. Orton, Newton Reigny Moss, Edenhall (Day).
3. Wan fell (Britten).

**multipunctatum**, Grav. Banks of streams and in wet moss, scarce.

1. Great Salkeld (Britten) ; on the Irthing (Day).

\* Possibly there is an error in determination in this species. Mr. W E Sharp is at present working at this and allied species, and I understand that changes in nomenclature are probable. F.H.D.

**angusticolle**, Lac. Banks of streams, rare.

1. On the Irthing (Bold, Routledge).

### CRYPTOBIUM.

**glaberrimum**, Herbst. In wet moss and sphagnum, fairly common.

1. Hayton Moss (Routledge) ; Newton Reigny Moss (Britten) ; Orton (Murray) ; Kirkbampton (Day).
2. Anthorn (Day).

### STILICUS.

**rufipes**, Germ. In flood refuse and under haystacks, local.

1. Great Salkeld (Britten) ; Carleton, Wetheral (Day) ; Cummersdale, Grinsdale (Murray).

**orbiculatus**, Er. In moss, at roots of grass, &c., fairly common.

1. Hayton Moss (Routledge) ; Great Salkeld, Barron wood (Britten) ; Carleton, Wreay, Orton (Day).
2. Silloth (Britten).

**affinis**, Er. Under haystacks, in hedge cuttings, &c., common.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Cummersdale, Blackwell, Kirkbampton, &c. (Day) ; Carleton (Murray).

### SCOPÆUS.

**sulcicollis**, Steph. On the banks of streams, rare.

1. Gelt (Day).

### MEDON.

**obsoletus**, Nord. In hotbeds, rare.

1. Great Salkeld (Britten).

### LITHOCHARIS.

**ochracea**, Grav. In old straw and vegetable refuse, scarce.

1. Great Salkeld (Britten).
2. Silloth (Day).

### SUNIUS.

**angustatus**, Payk. In cut grass, rare.

1. Carleton on the River Petteril (Day).

### PÆDERUS.

**littoralis**, Grav. Has not occurred in Cumberland for many years.

It is recorded from Carlisle by T. C. Heysham (Ste. Illus., v., p. 280).

**riparius**, L. Also recorded from Carlisle by Heysham (Ste. Man., p. 408). These two species of **Pæderus** are southern insects, and I feel a little doubtful of their occurrence in Cumberland.

#### EVÆSTHETUS.

**scaber**, Thoms. In moss and under stones, rather scarce.

1. Langwathby (Britten); Great Salkeld (Day); Carleton (Murray).

**ruficapillus**, Lac. In wet moss, local.

1. Newton Reigny Moss (Britten, Day).

**læviusculus**, Mann. In sphagnum and wet moss, common.

1. Newton Reigny Moss, Orton (Day).
3. Wan fell (Britten).

#### DIANOUS.

**cœrulescens**, Gyll. In waterfall moss and flood refuse, common.

1. Gelt (Routledge); on the Petteril at Carleton (Murray); Great Salkeld, Barron wood (Britten); Wetheral (Day).
3. Eskdale (Thornley); Cross fell, Aira Force, High Pike (Day).

#### STENUS.

**biguttatus**, L. I know of no recent capture. Recorded from Cumberland by Fowler (vol. ii., p. 328).

**bipunctata**, Er. Carlisle (Ste. Man., p. 409).

Has not occurred of late years.

**guttula**, Müll. On the sandy margins of streams, common.

1. Gelt (Routledge); on the Rivers Irthing and Petteril (Murray); Cumwhinton, Wetheral (Day); Great Salkeld Barron wood (Britten).
2. Seascale (Day).
3. Aira Force (Day).

**bimaculatus**, Gyll. In grass tufts and flood refuse, not uncommon.

1. Gelt (Routledge); Carleton, Cleator Moor (Murray); Great Salkeld, Barron wood (Britten); Orton (Day).

**juno**, F. In flood refuse, &c., common.

**guynemeri**, Duv. In waterfall moss, locally common.

1. Gelt (Routledge).
3. Eskdale (Thornley); Cross fell, Aira Force (Britten, Day).

**speculator**, Er. In grass tufts, &c., very common.

**providus**, v. **Rogeri**, Kr. In grass tufts, flood refuse, &c., less common than the preceding.

1. Wreay (Routledge); Carleton (Day); Great Salkeld (Britten).

3. Watendlath (Day).

**lustrator**, Er. In moss, scarce.

1. Hayton Moss (Routledge); Monkhill (Day).

**bupthalmus**, Grav. Edges of ponds, &c., very common.

**melanarius**, Steph. In sphagnum, local.

1. Orton, Newton Reigny Moss (Day).

**incanus**, Er. Banks of streams, rare.

1. On the River King near Walton (Routledge).

**atratus**, Er. In moss, scarce.

1. Great Salkeld (Britten); Orton (Routledge).

**canaliculatus**, Gyll. Banks of streams, scarce.

1. On the Irthing (Routledge); Cumberland (Fowler).

**pusillus**, Er. In marshy places, local.

1. On the Irthing (Routledge); Carleton, Edenhall (Day); Great Salkeld, Newton Reigny Moss (Britten).

**fuscipes**, Grav. In wet moss, very local, but not uncommon.

1. Newton Reigny Moss (Britten, Day).

**declaratus**, Er. In grass tufts, haystack refuse, &c., common.

**carbonarius**, Gyll. In moss, scarce.

3. Cross fell, Keswick (Britten).

**argus**, Grav. In sphagnum, &c., locally common.

1. Newton Reigny Moss (Britten, Day); Orton (Murray, Day).

**nigritulus**, Gyll. Cumberland (Fowler); I know of no recent capture.

**brunnipes**, Steph. In moss, flood refuse, &c., very common.

**ossium**, Steph. In vegetable refuse, common.

1. Tarn Lodge (Routledge); Carleton (Murray); Orton, Blackwell, Monkhill, Thurstonfield (Day); Great Salkeld (Britten).

**impressus**, Germ. In moss, &c., very common.

**aerosus**, Er. In moss, scarce.

3. Wan fell (Britten); Skiddaw (Day).

**Erichsoni**, Rye. In moss, rare.

1. Tarn Lodge (Routledge) ; Cumberland (Fowler).

**flavipes**, Steph. Taken by sweeping rushes, &c., common.

1. Gelt (Routledge) ; Great Salkeld, Barron wood (Britten) ; Orton (Murray) ; Wreay, Durdar (Day).
2. Seascale (Day).

**pubescens**, Steph. Among waterside plants, locally common.

1. Great Salkeld (Britten) ; Monkhill, Carleton, Newton Reigny Moss (Day).
2. Burgh Marsh (Routledge).

**binotatus**, Ljungh. In marshy places, edges of ponds, &c., local.

1. Great Salkeld, Edenhall (Britten) ; Thurstonfield, Monkhill (Day).

**pallitarsis**, Steph. Occurs similarly to the preceding, common.

1. On the Irthing (Routledge) ; Newton Reigny Moss, Barron wood, Great Salkeld (Britten) ; Cumwhinton, Carleton (Day) ; Thurstonfield (Murray).

**niveus**, Fauv. In wet moss, locally abundant.

1. Great Salkeld (Britten) ; Newton Reigny Moss (Britten, Day).

**bifoveolatus**, Gyll. In sphagnum, &c., common.

1. Tarn Lodge (Routledge) ; Great Salkeld, Langwathby (Britten) ; Orton (Murray) ; Newton Reigny Moss, Carleton and elsewhere (Day).

**nitidiusculus**, Steph. In marshy places, &c., common throughout the county.

**picipennis**, Er. In flood refuse, &c., rare.

1. Great Salkeld (Britten) ; Wetheral (Day).

**picipes**, Steph. In moss, flood refuse, &c., generally common.

**foveicollis**, Kr. In wet moss, rare, but widely distributed.

1. Orton (Day).
2. Bowness Moss (Day).
3. Wan fell, Cross fell, Helvellyn (Britten).

**cicindeloides**, Grav. Taken by sweeping in marshy places, not uncommon.

1. Great Salkeld (Britten) ; Orton, Monkhill (Day).
2. Anthorn (Day).
3. Cross fell (Britten).

**similis**, Herbst. By sweeping low herbage, &c., generally common.

**tarsalis**, Ljungh. Almost equally common with the last.

**paganus**, Er. At roots of grass, fairly common in the county.

**latifrons**, Er. In marshy places, local.

1. On the Irthing (Bold) ; Langwathby (Britten) ; Newton Reigny Moss (Day).

### BLEDIUS.

**spectabilis**, Kr. On mud-banks on the coast, locally common.

2. Burgh Marsh, Anthorn, Skinburness (Day).

**tricornis**, Herbst. This species is recorded from " near Carlisle " by Heysham (Ste. Illus., v., p. 108).

**arenarius**, Payk. Sandy coasts, apparently rare.

2. Silloth (Day).

**pallipes**, Grav. Banks of rivers, scarce.

1. River Irthing (Routledge).
3. Castle Carrock (Routledge).

**subterraneus**, Er. Banks of rivers, as a rule very common.

**longulus**, Er. Banks of rivers, scarce.

1. River Irthing (Bold) ; Gelt (Britten) ; Barron wood (Routledge).

**fratricornis**, Payk. Banks of rivers, rather uncommon.

1. Great Salkeld (Britten) ; on the Petteril near Carlisle (Murray).

**opacus**, Block. Sandy banks of streams, local.

1. Great Salkeld (Britten) ; Wetheral (Day).

**atricapillus**, Germ. Mudbanks on the coast, locally abundant.

2. Burgh Marsh (Britten) ; Anthorn (Day).

**erraticus**, Er. This rare species has not occurred in Cumberland since Bold took it " beneath stones in the bed of the Irthing when the water is low, at St. Mary's Holme, near Lanercost " (Fowler, vol. 2, p. 373).

### PLATYSTETHUS.

**arenarius**, Fourc. Very common in dung and on the wing.

**cornutus**, Gyll. Apparently rare.

1. Tarn Lodge, one specimen (Routledge).

**OYXTELUS.**

**rugosus**, Grav. In vegetable refuse, &c., very common.

var **terrestris**, Lac. Near Carlisle (Day).

**sculptus**, Grav. In dung heaps, moderately common.

1. Hayton Moss, Tarn Lodge (Routledge); Great Salkeld (Britten); Orton, Durdar (Day).

**laqueatus**, Marsh. A common dung species.

**inustus**, Grav. Rare.

1. Tarn Lodge, Gelt (Routledge).

**sculpturatus**, Grav. A common dung species, also occurs in moles' nests.

**maritimus**, Thoms. Under seaweed, locally abundant.

2. Silloth (Day).

**nitidulus**, Grav. In dung, &c., common.

**complanatus**, Er. Among bones, local.

1. Carlisle (Day).

**tetracarínatus**, Block. Very common.

**ANCYROPHORUS.**

**omalinus**, Er. In flood refuse, locally common.

1. Great Salkeld (Britten); Wetheral (Day); Grinsdale (Murray).

**aureus**, Fauv. In flood refuse, local.

1. Gelt (Routledge); Wetheral, Easby (Day); Grinsdale (Murray).
3. Borrowdale (Britten).

**TROGOPHLOEUS.**

**arcuatus**, Steph. In flood refuse, not very common.

1. On the Petteril near Carleton (Day); Great Salkeld, Barron wood (Britten).

**bilineatus**, Steph. Margins of streams and ponds, common.

1. Great Salkeld, Barron wood (Britten); Carleton (Murray); River Irthing (Day).
2. Burgh Marsh (Day).

**rivularis**, Mots. Margins of streams and ponds, common.

1. Great Salkeld (Britten); Orton, Wreay (Day).

**elongatulus**, Er. Roots of grass, &c., not uncommon.

1. Hayton Moss (Routledge); Great Salkeld (Britten);  
Orton, Durdar, Newton Reigny Moss (Day).

**fuliginosus**, Grav. In flood refuse, uncommon.

1. Great Salkeld (Britten); Edenhall (Day), Carleton  
(Murray).

**corticinus**, Grav. In wet moss, &c., uncommon.

1. Great Salkeld, Newton Reigny Moss (Britten); Edenhall  
(Day).

**halophilus**, Kies. Mudbanks on the coast, very local.

2. Anthorn (Day).

**pusillus**, Grav. In hotbeds, on the banks of ponds, &c., locally  
common.

1. Great Salkeld (Britten).

### THINOBIUS.

**linearis**, Kr. Under stones in river beds, local.

1. Great Salkeld (Britten).

**longipennis**, Heer. Under stones in river beds, local and rare.

1. Great Salkeld (Britten).

**pallidus**, Newbery. This distinct species was discovered by Mr. Britten under stones by the River Eden, in the parish of Great Salkeld, in August, 1907. A fair number of specimens have now been captured, but the species, from its small size and sluggish habits, is difficult to find. The locality remains unique.

### SYNTOMIUM.

**seneum**, Müll. In moss, &c., uncommon.

1. Great Salkeld (Britten); Orton, Durdar (Day).
3. Wan fell (Britten).

### COPROPHILUS.

**striatulus**, F. In haystacks, &c., sometimes taken on the wing,  
scarce.

1. Great Salkeld (Britten); Carlisle (Day).
3. Wan fell (Britten).

**DELEASTER.**

**dichrous**, Grav.

var. **Leachii**, Curt. Holmgate on the River Eden, October 18th, 1829 (T. C. Heysham).

**ANTHOPHAGUS.**

**testaceus**, Grav. By beating birch, &c., locally common.

1. Orton (Day) ; Great Salkeld (Britten) ; Cumberland (Ste. Illus.).

**alpinus**, Payk. In moss and under stones, local.

3. Helvellyn (Britten) ; Saddleback (Day).

**GEODROMICUS.**

1. On the Irthing (Bold) ; Gelt (Murray) ; on the Black Lyne near Mallsburn (Day).

**nigrita**, Müll. Sides of streams and in wet moss, locally common.

3. Aira force (Britten) ; Helvellyn (Day)

**globulicollis**, Mann. In moss and under stones, local. Cumberland (Ste. Illus.).

3. Cross fell (Britten) ; Saddleback (Day).

**LESTEVA.**

**longelytrata**, Goeze. Margins of ponds and streams, common in the county.

**Sharpi**, Rye. In wet places, not very common, usually in high districts.

1. Gelt (Routledge).

3. Borrowdale, Cumrew fell (Britten) ; Tindale tarn, Skiddaw Aira Force, Helvellyn (Day).

**pubescens**, Mann. In waterfall moss, flood refuse, &c., local.

1. Gelt (Routledge) ; Great Salkeld (Britten) ; on the rivers Irthing and Petteril (Day).

3. Borrowdale (Britten) ; Cross fell, Helvellyn, Aira Force (Day).

**sicula**, Er. In both dry and wet situations, common in the county.

**punctata**, Er. (*muscorum*, Duv.). In waterfall moss, locally common.

1. Gelt (Routledge).

3. Aira Force, Helvellyn (Day).

**ACIDOTA.**

**crenata**, F. In moss, sometimes on the wing, uncommon.

1. Tarn Lodge (Routledge) ; Orton (Day) ; Great Salkeld, Newton Reigny Moss (Britten).
3. Wan fell (Britten) ; Cumrew fell (Day).

**cruentata**, Mann. Rare.

1. Great Salkeld (Britten).

**OLOPHRUM.**

**piceum**, Gyll. In moss, &c., common in the county.

**fuscum**, Grav. As the roots of rushes in damp places, local.

1. Langwathby (Britten) ; Easby (Day) ; Belle Vue (Murray)
3. Cross fell, Wan fell (Britten).

**LATHRIMÆUM.**

**atrocephalum**, Gyll. In dead leaves, rotten wood, &c., common in the county.

**unicolor**, Steph. Occurs similarly to the last, and also common.

**DELIPHRUM.**

**tectum**, Payk. In dung, carrion, rotten turnips, &c., locally abundant.

1. Great Salkeld (Britten) ; Carlisle district (Day).
3. Cumrew fell, Hynam fell (Routledge) ; Keswick (Britten) ; Cross fell, Talkin Tarn (Day).

**ARPEDIUM.**

**brachypterum**, Grav. In moss on mountains, common.

3. Cumrew fell (Routledge) ; Cross fell (Britten) ; Skiddaw, Saddleback (Day).

**MICRALYMMA.**

**brevipenne**, Gyll. At the roots of the sea lavender below high-water mark, locally abundant.

2. Anthorn at the mouth of the Wampool. The specimens are much larger than southern ones (Day).

**PHILORHINUM.**

**sordidum**, Steph. On broom and furze, common.

1. Tarn Lodge (Routledge) ; Great Salkeld, Barron wood (Britten) ; Orton, Carleton (Day).

**CORYPHIUM.**

**angusticolle**, Steph. Under bark on fallen trees, also on fences, not uncommon.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Durdar, Barron wood (Day).

**OMALIUM.**

**rivulare**, Payk. In carrion, flood refuse, &c., common throughout the county.

**rugulipenne**, Rye. A coast species, common under seaweed and carrion.

2. Silloth, Seascale (Day).

**læviusculum**, Gyll. Also a coast species, but apparently rare. I have seen two specimens only.

2. Silloth, Seascale (Day).

**septentrionis**, Thoms. In carrion, local, sometimes abundant.

1. Grinsdale (Murray) ; Great Salkeld, Barron wood (Britten); Orton (Day).
3. Wan fell (Britten).

**riparium**, Thoms. Another maritime species, fairly common under carrion washed up by the tide.

2. Silloth (Routledge, Day) ; Seascale (Day).

**Allardi**, Fairm. In carrion, scarce, but widely distributed.

1. Great Salkeld (Britten).
2. Silloth (Day).
3. Wan fell (Britten).

**exiguum**, Gyll. In grass tufts, carrion, &c., scarce.

1. Great Salkeld (Britten) ; Durdar (Day).
2. Burgh Marsh (Day).

**brevicolle**, Thoms. In carrion, scarce. The species was brought forward as British in 1909 (vide E.M.M., 1909, p. 102 ; and 1910, p.35).

1. Great Salkeld (Britten, Day) ; Orton, Edenhall (Day).

**oxyacanthæ**, Grav. In carrion, &c., fairly common.

1. Grinsdale (Murray) ; Great Salkeld, Barron wood (Britten); Orton, Birdoswald (Day).

**excavatum**, Steph. Under haystacks, in hedge trimmings, &c., common in the county.

**cæsum**, Grav. In dead leaves, &c., not very common.

1. Woodbank (Murray) ; Great Salkeld (Britten) ; Durdar (Day).

var. **tricolor**, Rey. (**nigriceps**, Brit. Cat.). In flood refuse, &c.

1. Tarn Lodge (Routledge) ; Great Salkeld (Britten) ; Carleton (Day).

**pusillum**, Grav. Under bark of Scotch fir, common in the county.

**punctipenne**, Thoms. Equally as common.

**rufipes**, Fourc. By beating hawthorn blossoms, &c., common in the county.

var. **nigrum**, Grav. Great Salkeld, Skirwith (Britten).

**vile**, Er. Under bark of fir and other trees, fairly common.

1. Tarn Lodge, Gelt (Routledge) ; Great Salkeld (Britten) ; Durdar, Mallsburn (Day).

**gracilicorne**, Fairm. Under bark of Scotch pine, local, but not scarce.

1. Great Salkeld, Edenhall (Britten).

**iopterum**, Steph. On hawthorn blossom and other flowers, uncommon.

1. Great Salkeld (Britten) ; Barron wood (Day).
3. Cross fell (Day).

**planum**, Payk. At sap of cut birch, rare.

1. Tarn Lodge (Routledge) ; Orton (Day).

**concinnum**, Marsh. Under haystacks, &c., common in the county.

**deplanatum**, Gyll. In fungi on tree stumps, not uncommon.

1. Tarn Lodge (Routledge) ; Great Salkeld (Day) ; Barron wood (Britten).

**striatum**, Grav. In flood refuse, scarce.

1. Great Salkeld (Britten) ; Carleton (Day).

### HAPALARÆA.

**pygmæa**, Gyll. In fungi on ash, rare.

1. Langwathby (Britten).

### EUSPHALERUM.

**primulæ**, Steph. In the flowers of primrose, local.

1. Gelt (Routledge, Day) ; Wreay woods (Murray, Day).

**ANTHOBIUM.**

**minutum**, F. In damp places among *Caltha palustris*, common in the county.

**ophthalmicum**, Payk. On *Umbelliferae*, scarce, but probably overlooked.

3. Dockray-in-Matterdale (Day).

**torquatum**, Marsh. On various flowers, common in the county.

**sorbi**, Gyll. On various flowers, common in the county.

**PROTEINUS.**

**ovalis**, Steph. In fungi, &c., common in the county.

**brachypterus**, F. Equally common with the last species.

**MEGARTHURUS.**

**denticollis**, Beck. In fungi, not very common.

1. Great Salkeld (Britten); Wreay woods, High Hesket (Day).

**depressus**, Lac. In dung, &c., fairly common in the county.

**sinuatocollis**, Lac. In vegetable refuse, under haystacks, &c., of rather infrequent occurrence.

1. Great Salkeld (Britten); Durdar, Orton, Gelt (Day).

2. Seascale (Day).

**PHLÆOBIUM.**

**clypeatum**, Müll. In hedge trimmings, dead leaves, &c., not uncommon, but local.

1. Great Salkeld (Britten); Durdar, Orton (Day).

2. Burgh (Murray).

**PHLÆOCHARIS.**

**subtilissima**, Mann. Under bark on fallen boughs, locally common.

1. Great Salkeld (Britten); Durdar (Day).

**PSEUDOPSIS.**

**sulcata**, Newm. Under haystacks, rare.

1. Great Salkeld (Britten).

