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A CATALOGUE
OF
THE LEPIDOPTERA

OF
NORTHUMBERLAND, DURHAM,
AND
NEWCASTLE-UPON-TYNE.

BY
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VOL. I.—MACRO-LEPIDOPTERA.

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ERRATA

Page 6, line 6 and 7 from bottom, for 'Gonoptera' read
"Goneptera."

„ 123, line 2, 3, 6, and 23, for 'Eurios' read "Eurois."

„ 171, line 12 from bottom, for 'Grammesina' read
"Grammesia."

„ 196, line 5 from bottom, for 'Ormsby's' read "Ornsby's."

„ 198, line 2 from bottom, for 'beautiful' read "plentiful."

„ 248, line 6, for 'Zanthorhoe' read "Xanthorhoe."

INTRODUCTION.

It was announced in the first part of this Catalogue that the introduction proper would not be given until the completion of the work. It was not then thought that it would extend to more than one volume. As it has been decided to issue it in two volumes, it appears desirable that certain preliminary observations be made now.

It is quite unnecessary to enlarge upon the value of Local Catalogues to the members of this Society, whose transactions already include many important lists of the fauna of Northumberland and Durham, and which contain the first instalment of a Catalogue of Local Lepidoptera. This was published as far back as 1857, and was from the pen of the late George Wailes. The portion then issued contains only the Butterflies and Sphinges, but it is well done, and is so superior in style to any similar catalogue I have seen, that I have taken it as my model, and have endeavoured, with, I fear, very defective information, to imitate it in the few notes I have added on the habits, &c., of the various species. Why the work, so ably begun, was carried no further, I have no knowledge, but it is certainly a matter for regret that no more was published. Mr. Wailes had exceptional advantages for the preparation of such a catalogue. He was one of that band of hard-working entomologists, who made the North of England famous among lepidopterists, in the first half of last century. Prior to their investigations it was almost an unknown land. Wailes collected and corresponded with Curtis, Dale, Hewitson, Selby, Stephens, and many others—pioneers in entomological work. Later he corresponded with Stainton, and supplied the Newcastle ("Ne") references to the second volume of the "Manual." It is a striking proof of the fulness of his knowledge of the

lepidopterous fauna of the district, that I have not been able to add any additional residential species in those groups he enumerated, notwithstanding the large amount of collecting that has been accomplished during the last fifty years, during which period facilities for getting from place to place have been made very much easier by the spread of railways, the improvement of roads, and by generally increased means of locomotion. It is true that I have introduced *Sphinx ligustri* and *Chærocampa Nerii* to the list, but these are merely records of accidental occurrences. *Procris geryon* is also an additional species, but it had not been separated from *Statice* when Wailes wrote, and he gave correctly the locality for it, and pointed out differences in the specimens taken there from the true *Statice* occurring elsewhere. Some of the species he recorded have long ago disappeared from the district, though they were common enough in his day. It is more than probable that others will have disappeared from the groups he did not deal with, and by the non-completion of his catalogue, we have lost the opportunity of knowing what they were—an important matter in studying the fauna of a district. I have made every possible enquiry to trace any papers or memoranda he might have left, but quite without success. Some insects purporting to be his collection were sold in London in May, 1884, but they were few in number, and not at all representative of the district.

The earlier attempts to arrange Lepidoptera in some sort of natural sequence placed the Butterflies first, and the other groups in such order that the larger species immediately followed the butterflies, and the smaller ones were placed at the end. It thus happened that the order was divided into two portions called *Macro-* and *Micro-Lepidoptera*. That there was no scientific reason for the division did not hinder its very general adoption. It also happened that the collection of Lepidoptera was taken up by many persons as an intelligent recreation, and a pleasant change from the cares of business, rather than as a purely scientific study. These collectors very generally confined themselves to the larger species; they were easier to manipulate, and their appearance in the cabinet was

much more attractive than those smaller species, whose markings and differences were often not distinguishable to the naked eye. In consequence of this, much more is known of these larger species or Macro-Lepidoptera than of the Micros. The investigations of recent years have altered the views of lepidopterists on many points, and especially has the division into Macro- and Micro-Lepidoptera been considered untenable, but it is still a convenient division and not likely to be abandoned in practice by the bulk of collectors, and the present volume contains those groups known as Macro-Lepidoptera. Following Stainton's "Manual" it contains the local species included in the first volume of that work, and in the Geometrina, with the addition of a few species transferred by more modern writers from other groups.

It is very far from creditable that naturalists generally, and especially British lepidopterists, cannot agree upon the order in which the objects of their study should be arranged, nor yet as to the names by which they should be known. This is not the place to discuss the question, nor for the writer to air any vagaries of his own. To do so here would only tend to increase the confusion that unfortunately already obtains. This want of agreement made it necessary that some standard work should be followed in both these respects in the catalogue. The late Mr. Howse was very anxious that we should follow Stainton's "Manual," which is very much the best work for a beginner that has yet appeared. I was of opinion that Stainton's "Manual," which has been published nearly fifty years, was rather behind the times, and much as I deplore purposeless change, I preferred to follow the more modern work of our greatest British lepidopterist, Mr. C. G. Barrett, in his "Lepidoptera of the British Isles," then (and yet) appearing in monthly parts and annual volumes. Very reluctantly Mr. Howse yielded to my wishes, but, slowly as my copy was prepared for the printer, we overtook and passed Mr. Barrett's work before we reached the end of the Noctuæ. Mr. Barrett was good enough to supply me with the order in which the remainder of the species followed in his

work, and the names he used, also the reference to his book as far as it was set up in pages. I would fain have waited for the remainder, but Mr. Howse was so anxious to have the part issued to the members that the last pages were printed off without the number of the page in Mr. Barrett's work. These are given at the end of the introduction. Having thus overtaken the issue of Mr. Barrett's book, there was nothing for it but to follow Stainton for the remainder of the catalogue. Thus while I deplore the confusion into which the arrangement of the Lepidoptera has drifted, I have blundered into confusion myself, as several species included by Stainton in the groups yet to follow have already been given in this catalogue. I will remedy this as far as possible in the next volume by naming the species in the places they appear in the "Manual," and referring to the account given of them in the present volume. They are the Deltoides, the genus Nola, the Chloephoridæ, and *Sarrothripa revayana*.

Besides Stainton's and Barrett's works, references are given to Newman's "British Butterflies and Moths"—not a very scientific book, but useful to beginners on account of the illustrations by which a large number of the species can be recognised. After the first sheet of the catalogue was printed off, a "Handbook of British Lepidoptera" by Edward Meyrick was published. References are given to that work except in the aforesaid 16 pages.

For figures of the larvæ I have referred to the valuable work of the late Wm. Buckler of Emsworth, published by the Ray Society, and also to the "Food-plants of the Larvæ," by the late Owen Wilson. These are expensive books, not in every private library, but they should be found in the reference department of the Public Libraries of most large towns. There are no other reliable works with coloured figures of the larvæ of British Lepidoptera.

Besides the instalment of Wailes' catalogue already fully referred to, the Transactions of the Society contain other partial lists from the pens of the late J. Wassermann and the late W. Maling. These I have incorporated in the catalogue.

Several other printed lists have also been issued relating to the local fauna, and have been drawn upon wherever desirable. These are fully referred to already in the introduction to Mr. Wailes' paper, and need only be mentioned here very briefly.

The earliest is in the "Natural History and Antiquities of Northumberland and North Durham," by the Rev. John Wallis, published in 1769. This list is remarkable for the inclusion of the Large Tortoise-shell Butterfly as a common resident species. I have spoken of this in its place in the catalogue, and I must confess, that but for the inclusion also of the only two other species that could be confounded with this, I would have concluded the reverend author was mistaken. It may now be remarked that *Vanessa polychloros*, after disappearing from many of its more southern haunts, and becoming so rare generally as to raise doubts whether it was not going to leave the country altogether, has again become common, and re-inhabited many of its old stations. It would be very interesting indeed should it again extend its range to the vale of the Tyne, and the "Alpine woods and shady pastures in Northumberland," it appears to have frequented a century and a half ago.

Next in date, and first in importance, is a list of the Lepidoptera occurring at Twizell in North Northumberland. This was written by the late P. J. Selby, and was published in the "Annals and Magazine of Natural History" in the year 1839. It is a mere list of names, and gives no information as to the abundance or rarity of the species enumerated, nor any notes of habits. It is nevertheless a valuable list, and though there are certainly a few errors, it is the most useful of the early lists, and has been of great assistance to me, as my information respecting Northumberland generally, except about Newcastle-on-Tyne and Morpeth, is much too scanty. The Twizell collection, illustrating this list, most unfortunately went to Cambridge University instead of to the Museum at Newcastle, where it would have been preserved intact. At Cambridge it had no local value, many insects were taken out to place elsewhere, and others, not taken at Twizell, were inserted. Mr.

Evans most kindly examined the collection for me, and compared it with the Twizell list, but owing to the abstractions and additions no satisfactory result could be arrived at. Had it been secured for our own local museum, it would have been of great value to students of our northern fauna, and solved all doubts as to the list itself.

In an appendix to Ornsby's "Sketches of Durham" is a list of Lepidoptera, in many cases with the locality where they have been taken and the name of the captor. This appears to be a perfectly reliable list. It contains one or two species of which there is no other record, and which no longer occur. It also contains one or two species I would have considered very unlikely to be met with in Durham. I have found on investigation that these actually are yet to be taken in the localities stated, and this has given me confidence in those no longer to be found, especially as there are local causes for their disappearance.

Stainton's "Manual of British Butterflies and Moths" was issued in monthly parts during the fifties of the past century. It contains a list of localities where the various species occur. Two of these localities are within our area—Darlington contracted "Da.," and Newcastle-on-Tyne contracted "Ne.,"; the latter being only used in the second volume. These must be understood as referring to the residence of the collector who supplied the information, rather than the actual place where the species occurred. Darlington is so close to the Yorkshire boundary that the entomologists there probably collect as much in Yorkshire as in Durham. The late John Sang, who supplied many of the references, collected regularly at Richmond and at Redcar, both in Yorkshire. He assisted me with the Darlington references, and I do not think I have made any mistake. The Newcastle list, as stated, was supplied by Mr. Wailes, who occasionally came to Castle Eden Dene. My own knowledge of this district has enabled me to correct any reference to Newcastle, for insects taken only in Durham.

A list of Lepidoptera taken near Stockton-on-Tees is given in Brewster's "Parochial History and Antiquities of Stockton-on-

Tees." This I have not quoted. There are no species in it of special interest, and I have more recent lists from the locality that include all in this work.

A list was published anonymously in the "Newcastle Weekly Chronicle" which contained species new to me. The Editor most kindly put me in communication with the author, Mr. Greenwell, of Bishop Auckland. Investigation did not confirm the occurrence of the supposed new species, but Mr. Greenwell has supplied me with much information as to the Lepidoptera of the district in which he resides.

Another list by Mr. Fawcett, of Satley, was published in the same paper. It contained several species not at all likely to occur in Durham, and as Mr. Fawcett failed to give me any satisfactory evidence of their occurrence, I have ignored the list altogether, as much of it was quoted verbatim, but without acknowledgment, from Ornsby's "Durham."

Mr. Bolam, of Berwick-upon-Tweed, published in the Transactions of the Berwickshire Field Club a list of the rarer Lepidoptera taken by him in that district. He kindly supplied me with a copy which I have quoted largely. I regret I could not prevail upon him to write me a full list of all his captures, but he was always ready to assist me in the investigation of any doubtful record, and to give me the benefit of his local knowledge in connection with errors in the Twizell list.

I must now say something of the MS. lists I have had to assist me. When it was arranged that I should prepare this work, the Society sent out a circular signed by the Secretaries, and asking for aid. Scarcely any response was made to this, and I found it would be necessary to rely on personal applications to the collectors I knew in the district. Mr. Howse, too, endeavoured to interest all those who came to the Museum to name their captures, in the success of the Catalogue, and we secured several useful lists from our joint efforts; but they were mostly from beginners, and required considerable investigation, many being led astray by the figures in Newman. After a while I found I could almost correct these lists without referring to the writer. It is needless to say I never did so,

and generally examined the specimens when there was doubt. Many errors were very excusable, when we remember the insects had been named from Newman's figures only. The commonest errors were the inclusion of *Neuria saponariae*, *Acidalia trigeminata*, and *Lozogramma petraria*, when the insects were *Nania typica*, *Acidalia bisetata*, and *Eubolia plumbaria*. I mention these here as a hint to others. I found almost every one ready and willing to assist to the utmost of their power. I am indebted to the following for lists and other aid:—Miss Rosie, Messrs. Brady and Corder, Sunderland; Greenwell and Ross, Bishop Auckland; Henderson, Patterson, Rhagg, Rosie, and Sticks, Newcastle-on-Tyne; Pickard, Wolsingham; Dr. Lees, Leeds, formerly of Middleton-in-Teesdale; Messrs. Stephenson, South Shields; Sibson, Stockton-on-Tees; Maddison, Durham; Lofthouse, Middlesbrough (for insects collected on the Durham side of the Tees), &c., &c.

I have also had special aid from the late T. H. Hedworth, of Dunston, who not only supplied a list of his own captures, but also those of Mr. Maling, Newcastle, Mr. Eales, South Shields, and many others, always taking a warm interest in the success of the undertaking.

The late John Finlay, of Meldon, gave me great assistance, supplying the largest list of captures, and adding most valuable notes on the scarcity or abundance of the species, time of occurrence, nature of habitat, &c., &c., all of which were of great service, and have added much to my personal knowledge, especially of moor-frequenting species, which I have had but few opportunities of seeing in their native haunts.

I was entrusted with the whole of the entomological lists and notes of the late Wm. Backhouse, of Shotley, which I have largely drawn upon. As they refer to other orders as well as to Lepidoptera, I propose, when this Catalogue is completed, to place them with the Museum authorities at Newcastle, as some of them may be useful at a future time if lists of other orders should be prepared.

"Sang's Diary" is frequently referred to in the following pages, and will be more often quoted in the next volume.

This is a most disappointing document. It appears to be a list of the species he had taken, jotted down—specific names only—to refresh his memory for the next year's collecting. The generic names, or initials of genera, are never given, and there are no notes of any kind. Even an insect new to science like "*Sangiella*," or new to Britain like "*Insignitella*," is put down by the specific name only without a word of comment. Common species are never entered, and even the rarer ones are only entered once or twice, and then discontinued. The late John Sang was very much the best lepidopterist the district has yet produced, and his knowledge of the order was so complete that it is terribly disappointing to find that he has left no worthier record of his life's work behind him than this bald list of species. No one was readier to give information than he was, and few had more to give when he was seen personally; but he seemed averse from writing, and his letters were always of the briefest. The only consolation is that the list is a reliable record, especially full in the smaller species, of what he has taken at the various places where he collected.

I would also refer to the aid I have had from my friend and co-worker Mr. John Gardner, and I am glad to think he is still to the front, the only one left of those that I knew in my earlier days of collecting. We have collected more or less together for nearly fifty years, and trust we may still have many more excursions in the years yet to come. Mr. Gardner, like our mutual friend Sang, is not troubled with *cacæthes scribendi*, and it is only with difficulty I can get him to write out notes of his captures, but he has spared neither time nor trouble to investigate any critical or doubtful point, to name dubious species, or to render any aid where his great knowledge and experience might be of service.

Nor must I conclude this portion of the introduction without referring to the late Curator and Secretary, Richard Howse. Not only in his official capacity did he take interest in making the Catalogue as complete as possible, but he spared no trouble to effect that end. He knew a little about British Lepidoptera as the Curator of a Museum was bound to do, and whenever he

went an excursion with the Society, or for his own holidays, he took pleasure in collecting all the species he could find, and sending them to me as a small help. But for his constantly pressing me for copy, I am afraid that my sense of the incompleteness of the work would have made its progress slower than it has been. I saw him a few days before his death, and his last words were of regret that he was not going to live to see its completion.

I have been indebted too to the pages of the "Weekly Intelligencer," the "Entomologist's Monthly Magazine," and the "Entomologist" for many records, which are all acknowledged as quoted.

One or two, who shall not be named here, have refused to give information, and I have ignored the reported captures. A few others have made no reply to my request for information, but I have no reason to believe that any great omission has resulted therefrom. Several new lists have come to hand since the volume was in type, and I shall be glad to receive others, and hope to give all additional localities in an appendix to the next volume.

It must not be supposed that it is an easy matter to compile a list of species that occur even in a very limited area. Mr. Gardner and I have collected assiduously in the Hartlepool district for very nearly fifty years, and even yet we find species we had not met with before, and hear of others taking insects that never came our way, so that it appears impossible to exhaust even a small district. How much more difficult then to complete a catalogue of an extensive area like the counties of Northumberland and Durham. I have been collecting material for this catalogue for quite forty years, and the earliest sheets of this volume were printed off in 1895. I have been adding to my own knowledge all this time, and lists of captures have been coming in from others, yet no one knows better than I do how very imperfect is our knowledge of the lepidopterous fauna of the district. If two collectors like Mr. Gardner and myself, who have both worked hard and regularly, have not exhausted our small area in half a century, what can

be expected of those large tracts of country where there has never been a resident collector, or of the many square miles of mountain and moor in which an entomologist has never set foot. Many *Lepidoptera* are almost ubiquitous, and others appear to occur wherever there is a suitable habitat. Some species are restricted in their range by reason of their food plant being confined to a narrow area. Others are equally restricted without any apparent reason. They will occur in one corner only of a moor or wood, or even of an open field, or by a single hedge side, and such species may be sought elsewhere altogether in vain. Then the period of their appearance in the various stages is but of short duration, and it is often exceedingly difficult to find them when we know they exist there. Except the butterflies, which appear on the wing during the chief part of a sunny day, the flight of *Lepidoptera* is generally of very short duration, and much influenced by causes of which we have little knowledge. The delay of a single hour, a change of wind, or many other trivial things may prevent the capture of an expected species for a whole season, even when we know it is there. What can be said then of the species we do not know to be there, or of whose habits we are ignorant? This Catalogue should be but the starting point for future entomologists, and I trust all will strive to find species not enumerated here, and additional localities for those given.

I do not propose to enter into any account of the Geology or Botany of the two counties. This has been exhaustively done in the second volume of these Transactions by writers who had special knowledge of the subjects. It will be sufficient for me to speak in very general terms on the character of the ground surface. It must always be remembered that the *Lepidoptera* of a district depend on the plants growing there, and that the plants depend to some considerable extent on the geology. Chalk appears to be most productive, and limestone next; but we do not look for limestone plants on sandstone, nor sandhill plants on trap rock.

Northumberland and Durham form the north-east boundary of England. They have a coast line more than a hundred miles in length, from the River Tees at the south of Durham, to the Tweed at the north of Northumberland. On the Durham side of the Tees is an extensive salt-marsh, with numerous narrow "stells" up which the tide flows. Much of the surface is covered at high water of spring tides. Here grow the usual salt-marsh plants, and here occur the few Lepidoptera peculiar to such situations. From this point the coast is alternately sand banks and cliffs, with a few large towns chiefly at the mouths of the larger rivers. In some of the limestone cliffs deep ravines have been formed by the action of water, which have well-wooded sides, and afford a sheltered retreat for a large number of insects. Castle Eden Deno is perhaps the longest and widest of these ravines. It extends inland for several miles, and has long been famous for the wealth of its lepidopterous fauna. Westward from the sea the land gradually rises, and after a wide area of cultivated land, well wooded in some places, we reach moor and moss, still trending upwards till we ascend the mountains on our extreme west, which extend from the Cheviots in Northumberland to the high land of Upper Weardale and Upper Teesdale in Durham. We have thus a littoral fauna—the fauna more particularly pertaining to cultivated land and woods—and the fauna of elevated moors and of mountains. Very few areas of like extent have so varied a surface, nor greater ranges of uncultivated land, where nature is little interfered with. Northumberland runs, so to speak, far into Scotland. The south of the county is as far north as Dumfries in Scotland, while Tweedmouth, on the English side of the Tweed, is further north than the Isle of Arran, which produces so many curious forms of Lepidoptera; yet none of the species generally considered Scotch have as yet been taken with us, nor is there any species among the larger Lepidoptera that is peculiar to these counties. *Polyommatus salmacis* was supposed to be confined to Durham. It was then thought to be a distinct species, and was called the Durham Argus. It is now known to be but a local form of a widely distributed butterfly,

Polyommatus agestis. When we come to the smaller species we will find a few that as yet have not been taken beyond our boundaries.

It only remains to thank those who have so kindly assisted me, and, in addition to the local friends already named, I would especially mention Mr. C. G. Barrett for much information and timely aid, and Mr. E. R. Bankes for his advice on several occasions, and other help in the investigation of doubtful questions. I would also thank Dr. Ellis, of Liverpool, and Mr. Porritt, of Huddersfield, for additional information respecting the occurrence of species in their catalogues of the Lepidoptera of Lancashire and Cheshire, and of Yorkshire. I would especially thank Mr. Thwaytes, of Carlisle, for the use of a carefully prepared MS. list of the Lepidoptera that have occurred in Cumberland—a list that I hope will be published by some Cumberland society. Gratitude is said to be “a lively sense of favours to come.” I hope to have much more aid in the next volume! I would urgently request collectors to favour me with lists of the Pyrales, Crambites, Tortrices, Tineina, and Pterophori they take, which will be included in it. Anyone who does not care to collect these groups will equally oblige by pinning all such species and sending them to me, set or unset, with the localities where they were taken.

May I say in conclusion, that if I have excluded species which, in the opinion of those who have recorded them, have really occurred within our limits, I have done so without any idea of setting up my own judgment as superior to theirs. What I have excluded has been done because the evidence supplied failed to satisfy me, and should more satisfactory evidence be forthcoming hereafter, I will be only too glad to confess my error. I have striven to make the list a reliable one. I may point to my remarks on such species as *Epichnopteryx calvella* (p. 76) and *Gastropacha ilicifolia* (p. 304) as evidence of the trouble I have taken to thoroughly work out the facts relating to supposed occurrences, and I have never striven to increase the number of recorded species by the inclusion of doubtful insects.

REFERENCES TO "LEPIDOPTERA OF THE BRITISH ISLES," BY
C. G. BARRETT, OMITTED AS EXPLAINED.

Page 185—	<i>Plusia pulchrina</i>	...	Vol. VI.,	p. 116.
,, 186—	,, <i>Iota</i>	...	,,	p. 119.
	,, <i>Gamma</i>	...	,,	p. 123.
	,, <i>interrogationis</i>		,,	p. 131.
,, 187—	<i>Habrostola urticae</i>	...	,,	p. 135.
	,, <i>triplasia</i>	...	,,	p. 139.
,, 188—	<i>Chariclea marginata</i>	...	,,	p. 146.
,, 189—	<i>Heliothis armigera</i>	...	,,	p. 150.
	,, <i>peltigera</i>	...	,,	p. 157.
,, 190—	<i>Heliodes arbuti</i>	...	,,	p. 168.
	<i>Bryophila perla</i>	...	,,	p. 190.
,, 191—	<i>Phytometra aenea</i>	...	,,	p. 214.
	<i>Anarta myrtilli</i>	...	,,	p. 224.
,, 192—	<i>Sarrothripa revayana</i>		,,	p. 233.
	<i>Gonoptera libatrix</i>	...	,,	p. 239.
,, 193—	<i>Euclidia glyphica</i>	...	,,	p. 268.
,, 194—	,, <i>mi</i>	...	,,	p. 272.
	<i>Hypena proboscidalis</i>		,,	p. 319.
,, 195—	<i>Brephos parthenias</i>	...	,,	p. 327.

CATALOGUE.

CLASS. INSECTA.

Order. LEPIDOPTERA.

SEC. I. RHOPALOCERA.

DIURNI.

FAMILY. PIERIDÆ.

GENUS. PIERIS, Shrank.

1. *Pieris Brassicæ* (Linn.). LARGE WHITE.

Pieris Brassicæ. Stainton's Manual, vol. 1, p. 18.

„ „ Newman's Brit. Butt., p. 165.

„ „ Barrett's Lepidoptera of the British Isles,
vol. 1, p. 21.

LARVA. Buckler, vol. 1, pl. ii., fig. 2; O. Wilson, pl. i.,
fig. 3.

Very common in spring and autumn all over the district, except on the moors and higher uncultivated ground. The larva feeds on *Tropæolum* (Nasturtium), and cultivated plants of the cabbage kind. Being gregarious, the species is abundant wherever these are grown. It is always to be found in market gardens and the small enclosures about the suburbs of towns and villages. As the larva is very rarely found on wild plants, it is considered by many Entomologists not to be a true native, but to have been imported by the Romans among garden produce. It is, moreover, a species with very strong migratory proclivities, and may easily have established itself here.

Large swarms of the species have occasionally been observed, and it was once the writer's privilege at Hartlepool to witness

the passage of one of these migratory hordes. An account of it has already appeared in print,* but as it has not often fallen to the lot of an Entomologist to see such an occurrence, it may be worth while briefly to refer to the matter here. It was a very hot day in July, 1867, and at 9 a.m., when I went to business, I noticed an unusual number of white Butterflies in the street. Lads on their way to school were chasing them, and one or two were always within view. As the day wore on the numbers steadily increased, and by 11 a.m. a dozen or twenty might have been seen flying down the street, their places being taken by others as they passed on. These, however, were but the advanced guard, the great army was yet to come. By noon they were flying in hundreds, and by two in the afternoon there were thousands of them to be seen at once, all flying in one direction, from east to west. The appearance of such an enormous number of Butterflies all flying at the same time was most extraordinary, and attracted the attention of the least observant. When Darwin witnessed a similar flight off the coast of South America, the sailors said it was "snowing butterflies," and no phrase seemed so appropriate for what I saw. Their white colour, and somewhat irregular flight, made them exactly resemble a heavy fall of large flakes of snow. They continued to pass in undiminished numbers till towards five o'clock, when a sudden thunderstorm and very heavy rain came on. Such of the Butterflies as did not obtain shelter in doorways, window reveals, or under shop cornices, were quickly driven to the ground, where they were pelted to death by the rain, or floated in hundreds along the flooded channels. When the rain ceased, the day was too far advanced for flight to be resumed. Next day there was a very large number about the streets, but they flew in a desultory manner, and entirely without the steady, purpose-like flight of the day before. I made every possible enquiry as to the origin of this enormous swarm of white Butterflies, but beyond the fact that they appeared to come from the open sea I could not learn anything about them. Fishermen who had been in the bay had noticed them. The sea was perfectly smooth and

* Young Naturalist, Vol. II., p. 29.

there was no wind to ruffle the surface. One or two of the more observant had noticed that the Butterflies lit on the surface of the water, rested there for a little while, and then rose again and pursued their flight. From what I could make out of the extent of the column, I estimated that the denser portion was about one hundred yards wide, but that the stragglers on either side extended very much further. The length of it must have been very great, for though they did not seem to advance beyond from about two to three miles an hour, yet even the denser portion of the swarm was quite four hours in passing, and had not commenced to decrease in numbers when the storm dispersed them. It seems impossible to form any estimate of their immense numbers, but, however incredible it may appear, there must have been millions of them. Where they came from is a very puzzling question, and unless they travelled across the sea at a much quicker rate, they would require several days to cross from the nearest part of the continent. It seems difficult to believe they could accomplish this, yet there can be no doubt that an American Butterfly, *Anosia plexippus*, has more than once crossed the Atlantic and reached our shores in considerable numbers. The specimens of *Brassicæ* which I secured from this swarm were all in very fine condition and of unusual size.

I am of opinion that a very large immigration of this and the following species took place in the autumn of 1887, for both of them appeared suddenly in this neighbourhood in enormous numbers, but no one, that I am aware of, observed them in passage.

2. *P. Rapæ* (Linn.). SMALL WHITE.

P. Rapæ. Staint. Man., vol. 1, p. 18.

„ Newm. B. B., p. 161.

„ Barrett's Lep. Brit. Is., vol. 1, p. 23.

LARVA. Buck., vol. 1, pl. ii., fig. 3; Wilson, pl. 1, fig. 4.

Equally, or even more common than the last species. The larva is rather more general in its food, feeding on various

species of *Reseda* (Mignonette), *Cruciferae*, etc., and is more frequently found on wild plants. But there is reason to believe that this also is not a true native, but either was introduced by the Romans or has established itself by immigration. There is considerably more difference between the spring and autumn broods than with *Brassicæ*, the earlier brood being much yellower.

3. *P. Napi* (Linn.). GREEN-VEINED WHITE.

P. Napi. Staint. Man., vol. 1, p. 19.

„ Newm. B. B., p. 160.

„ Barrett's Lep. Brit. Is., vol. 1, p. 24.

LARVA. Buck., vol. 1, pl. 2, fig. 4.

This species is also very common all over the district, and as the larva feeds on Watercress (*Nasturtium officinale*) and a variety of wild plants, the Butterfly does not frequent gardens and the suburbs of towns so much as the two preceding species, and may be found in open, damp woods and on uncultivated ground, more than either of the others. This is an undoubted native, and specimens much suffused with black scales on the upper surface sometimes occur. One which approaches the Alpine variety, *Bryonia*, was taken at Hartlepool.

ANTHOCARIS, Bdv.

4. *Anthocaris Cardamines* (Linn.). ORANGE TIP.

Anthocaris Cardamines. Staint. Man., vol. 1, p. 20.

„ „ Newm. B. B., p. 156.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 28.

Euchloë „ South, Syn. List Brit. Lepid., p. 1.

LARVA. Buck., vol. 1, pl. iii., fig. 2; Wils., pl. i., fig. 5.

Wailes says "This beautiful Butterfly is generally distributed over the two counties, frequenting damp places in fields, lanes, and woods during May and June, where the principal food-plant of the larva, *Cardamine pratensis*, of which it devours the seed vessels, occurs. Noticed by Wallis, I., p. 353, as "the Orange-

yellow and White Butterfly," who adds, "it is one of our first Butterfly visitants in the spring, making its appearance in May." This year (1857) on the 4th June, in the vicinity of Callaly, I observed its simultaneous occurrence in great numbers throughout that district where not a single one was to be seen the previous day—a striking, but not infrequent incident amongst the Diurnal Lepidoptera."

"The usual expansion of the wings is 1·8" to 1·11", but in the year 1832 none exceeded 1·3", and so marked was the difference all over the country that many were inclined to consider the specimens as those of a distinct species. The following season there was no departure from the normal size." (Wailes' Cat. Lep. Northd. and Durham, p. 8. Trans. Tyneside Nat. Field Club, vol. 3, 1858).

For some years this pretty species all but disappeared from our district, but it has resumed its usual numbers again. The disappearance was simultaneous with that of the other species, which will be noticed in their places. It is not very unusual for exceedingly small specimens to occur. I have examples of both sexes in my cabinet which do not exceed one inch in expanse.

Cardamines is remarkable for what is now called "mimicry," which obtains in every state. Mr. Barrett describes the pupa as "forming an obtuse projecting angle, which fits well to the underside of the insertion of a side shoot of the food-plant, so that it is hardly distinguishable from a thickening of the stem. Indeed this species exhibits a series of curious adaptations to its surroundings, the larva being so like a seed-vessel as almost to defy detection, the white line down its side actually simulating the line of light down the side of the glossy seed-vessel, and the Butterfly, when in repose, with closed wings, on the tip of a flower spike of *Cardamine pratensis*—a favourite resort—seems at first sight a mere continuation to the bunch of buds; whilst its accurate adaptation to the leaf of one of the smaller *Umbelliferae*, upon which also it commonly rests, is notorious. Such accurate mimicry in three stages of the life of the same insect is truly marvellous." Barrett, Lep. of the British Isles, vol. 1, p. 30.

COLIAS, Bdv.

5. *Colias Edusa* (Fab.). CLOUDED YELLOW.*Colias Edusa*. Staint. Man., vol. 1, p. 16.

,, ,, Newm. Brit. Butt., p. 143.

,, ,, Barrett's Lep. Brit. Is., vol. 1, p. 35.

LARVA. Buck., vol. 1, pl. i., fig. 3; Wils., pl. i., fig. 7.

This beautiful Butterfly is generally recognised now as a species which is an immigrant only; which in favourable seasons is able to survive the winter in small numbers, in suitable localities in the south of England, but quickly dies out until fresh immigration re-establishes the species for another season or two. In our counties it is but an occasional straggler, though much more frequent than the next, which does not appear to have the migratory instinct of the genera *Pieris* and *Colias*. In those years, when large hordes of *Edusa* have appeared in Britain, a few specimens generally find their way into our district. In 1887, when the species appeared in larger numbers than were ever seen before in this country, it occurred in every part of our district, even in the wilder parts, and in autumn the second brood was comparatively common and had undoubtedly fed up within our boundaries. It was not able, however, to stand our winter and did not appear the following year, except that a solitary specimen was taken at the foot of Hesleden Dene by the late John Cambridge. The immigration of 1892 was not nearly on so large a scale, and only a few specimens were taken in these counties. It does not appear necessary to give localities in the case of a Butterfly like this, which has no regular habitat, and which is as likely to occur at one place as another.

GONOPTERYX, Leach.

6. *Gonopteryx Rhamni* (Linn.). BRIMSTONE.*Gonepteryx Rhamni*. Staint. Man., vol. 1, p. 16.

,, ,, Barrett's Lep. Brit. Is., vol. 1, p. 39.

Rhodocera ,, Newm. Brit. Butt., p. 147.

LARVA. Buck., vol. 1, pl. i., fig. 2; Wils., pl. i., fig. 6.

This Butterfly, which is very common in the south of England,

straggles into these counties on very rare occasions only. Mr. Wailes was only able to record one solitary specimen "once near Darlington, J. C. Backhouse, Esq.," and added, "probably its extreme northern locality, as the food plants of the larva, *Rhamnus catharticus* and *R. Frangula*, although not rare in Yorkshire barely reach the southern part of Durham. The insect is far from scarce in the former county". (Wailes, Cat., p 4). I am not aware that *Rhamnus Frangula* occurs either in Durham or Northumberland, and *R. catharticus* is recorded as "very rare, and not seen recently." (Baker and Tate's Flora of Northumberland and Durham; Trans., Vol. II., p. 146). Respecting the occurrence of *G. Rhamni* in Yorkshire, Mr. Porritt says, "Of general occurrence (except in the coal districts of the West Riding, where it is rare), but scarcely so common as the last." (List of Yorkshire Lepidoptera, p. 7, Trans. Yorkshire Naturalists' Union, Vol. II.). So far as I know *G. Rhamni* does not occur at all, in any portion of Yorkshire which adjoins or approaches the southern portion of the county of Durham. It certainly does not occur in Cleveland, and I have been unable to obtain any evidence of its occurrence in the North Riding at all, nor do I think the Butterfly ranges much to the north of central Yorkshire.

I am able to record two additional specimens in our district since Mr. Wailes' list appeared. One was seen in Newcastle-on-Tyne in 1889 by Mr. L. S. Brady of Sunderland. Though it was not captured there was no doubt of the species, with which Mr. Brady had been familiar in Lincolnshire. The third example was seen by myself at Black-Hall Rocks, near Hartlepool, the same year. It was an exceedingly hot day, and I was lying on the banks when a large, pale-yellow Butterfly flew past me. I had not seen *Rhamni* on the wing before, but there could be no mistake, as it was larger, paler, and flew in quite a different manner to *Colias Edusa*. It flew over the bank and along the grassy hollows, but as I had three times as far to run round as it had to fly across from point to point, I soon lost sight of it, and spent an hour in vain hope of capturing it, much regretting I was not on the alert when it appeared in sight.

LYCENIDÆ.

THECLA, Fab.

7. *Thecla Quercus* (Linn.). PURPLE HAIR STREAK.*Thecla Quercus*. Staint. Man., vol. 1, p. 53.

" " Newm. Brit. Butt., p. 106-7.

" " Barrett's Lep. Brit. Is., vol. 1, p. 51.

LARVA. Buck., vol. i., pl. xiii., fig. 2; Wils., pl. iv., fig. 7.

Mr. Wailes writes "Pretty abundant towards the middle of August near Gibside, flying about the summits of the oaks, and consequently not easily captured. I know of no other locality for it, though, doubtless, if looked for at the right season and in its lofty abode, it would be found generally diffused over our oak woods. The larva descends to the ground to undergo its change." Wailes, Cat., p. 21.

Mr. Wailes' idea as to its more general occurrence has not yet been substantiated, and I have no other locality to record but Dunston, where, Mr. Hedworth informs me, he "saw several flying around and settling on a large oak in 1872." He also tells me that the late "John Hancock captured this species at the end of Derwent Bridge, Gibside."

CHRY SOPHANUS, Hub.

8. *Chrysophanus Phlæas* (Linn.). SMALL COPPER.*Chrysophanus Phlæas*. Staint. Man., vol. 1, p. 54.

" " Barrett's Lep. Brit. Is., vol. 1, p. 62

Polyommatus " Newm. Brit. Butt., p. 115.

LARVA. Buck., vol. 1, pl. xiii., fig. 4; Wils., pl. 4, fig. 10.

This beautiful little Butterfly is generally distributed and occurs in all suitable localities. It is given in all the lists I have received. Wallis says "The small yellowish-red Butterfly with black spots appears in shady vales and pastures in the latter end of May or the beginning of June." It is also in the Twizell and Durham lists. Other records are "Gardens, Darlington and Newcastle," W. Backhouse. "Redewater, Northumberland. not common," R. Howse. "Generally abundant, especially the

second brood," W. Maling. "Common, especially the August and September broods; very plentiful in 1876," T. H. Hedworth. "On the sea coast and in lanes," Chris. Eales. "Finchale," L. S. Brady. "Common, Railway Banks, Hartlepool," J. E. R. "Upper Teesdale," F. A. Lees.

POLYOMMATUS, Bdv.

9. *Polyommatus Agestis* (Hub. W. V.). BROWN ARGUS.

Polyommatus Agestis and *Artaxerxes*. Staint. Man., v. 1, p. 61.

" " Barrett's Lep. Brit. Is., vol. 1, p. 73.

Lycæna Medon. Newm. Brit. Butt., p. 123.

" " var. *Salmacis*, Steph., Newm. Brit. Butt., p. 123, 126. DURHAM ARGUS.

" " var. *Artaxerxes*, Fab., Newm. Brit. Butt., p. 123, 127. SCOTCH ARGUS.

" *Astrarche*, Bgstr., South, Syn. List, Brit. Lep., p. 2.

LARVA. Buck., vol. 1, pl. xvi., fig. 1.

Mr. Wailes, in his Catalogue of the Lepidoptera of these counties (p. 23-35), entered most fully into the history of this pretty little species. His account of it is much too long to quote at length, and in the present state of our knowledge it is unnecessary to enter into a long discussion to prove what are now established facts. The questions then were whether the type and varieties were one, two, or three species, and what was the plant on which the larva fed.

The larvæ of the Scotch form, *Artaxerxes*, was known to feed on *Helianthemum vulgare*. That of the southern type had been found on *Erodium cicutarium*, which was also the recognized food-plant on the continent, and this fact, along with the difference in their appearance, had caused writers to believe them to be distinct. In 1831 Mr. Wailes gave Mr. Stephens specimens from this district, which he described and figured ("Illust. Haust." iii., p. 235) as a third species, *Salmacis*, and they were from that time considered to be three species until Mr. Wailes united them in 1877. I was fortunate enough to find larvæ on *Helianthemum* at Black Hall Rocks, from which the late Mr.

Buckler reared all three forms of the insect, thus establishing their identity beyond all doubt and satisfactorily confirming Mr. Wailes' views. Special interest therefore attaches to the species in these counties.

Salmacis is commonly known as the "Durham Argus," and no doubt many believe all our specimens are of this form. This, however, is not so. While the Scotch White-Spot (*Artaxerxes*) is the only form found in Scotland, and the type, with a distinct border of orange spots round the margin of both wings, is the only form found in the south of England, both these forms may be found here along with that which Stephens called *Salmacis*, and other curious and interesting departures from the type. Though description does not properly belong to a Catalogue, it may be worth while to differentiate these forms here.

Agestis has a row of orange spots round the hind margin of the wings and a black spot in the centre of the fore-wing; the underside has white spots with black centres.

Artaxerxes differs in having a white spot on the centre of the fore-wing, instead of a black one, and in the white spots of the underside being without the black centres.

Salmacis is without the orange spots in the male, and in the female they are smaller and often not extending along the whole of the margin. The white spots on the underside are sometimes without the black centres.

Among the other interesting varieties that have been found in these counties is one in which the hind wings have a white spot in the centre as well as the fore-wings. Sometimes only a single scale will be white, and sometimes they form a ring round a black centre. I have also found two at Black-Hall Rocks, in which the underside had black spots surrounded by rings only slightly paler than the ground colour, and showing no white at all. Others are found in which these spots are almost entirely eliminated.

While the *Salmacis* form has been named after one of our counties, the insect is by no means generally distributed with us. It occurs at Black-Hall Rocks, near Hartlepool, and along the coast to Castle Eden Dene. I have found it very little fur-

ther north, but see no reason why it should not occur on all the coast banks where *Helianthemum* abounds. I have also found it very sparingly in Hesleden Dene, and more abundantly in several places in Castle Eden Dene, particularly at the Shotton end of Gunners' Pool. Mr. Wailes speaks of it as occurring along the coast from Whitburn to Marsden, but regrets that from "close feeding of the rocky places where the food plant grows" it is nearly extinct at Marsden. This was written in 1857 or 1858, and I also regret that it appears now to be quite extinct in both places, no collector recording it in recent lists. Mr. Wailes, referring to its close connection with *Helianthemum*, adds, "Mr. Selby finds the same thing occur at Bamborough," so that the Butterfly evidently occurred then at that part of the Northumberland Coast, but it is not in the Twizell list, nor were any specimens in that collection when it was examined for me. The only record I have of its occurrence elsewhere in our counties, is that Dr. F. A. Lees informed me he took it in Upper Teesdale. I have not met with it there, nor has Mr. Gardner, who has collected much in that district.

10. *P. Alexis* (Hub.). COMMON BLUE.

Polyommatus Alexis. Staint. Man., vol. 1, p. 60.

" " Barrett's Lep. Brit. Is., vol. 1, p. 77.

Lycana Icarus. Newm. Brit. Butt., p. 128.

LARVA. Buck., vol. 1, pl. xv., fig. 2; Wils., pl. iv., fig. 11.

This is the commonest and most generally distributed of all the British Blues. The larva feeds on *Lotus corniculatus* (Birds-foot trefoil), and kindred plants, and wherever these are found the butterfly occurs. It is recorded in every list in my possession, and appears to be found everywhere throughout the district, except on the higher moorlands. It is not necessary therefore to give localities.

A variety called *Icarinus*, which is without the spots on the underside, between the base and central spot, is not uncommon at Black Hall Rocks, where I have also taken specimens with

two or more of the spots coalescing and forming a streak or streaks. The females also are frequently considerably suffused with the colour of the males on the upper wings.

11. *P. Argiolus* (Linn.). AZURE BLUE.

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| <i>Polyommatus Argiolus.</i> | Staint. Man., vol. 1, p. 57. |
| „ „ | Barrett's Lep. Brit. Is. vol. 1, p. 88. |
| <i>Lycæna</i> „ | Newm. Brit. Butt., p. 135. |

LARVA. Buck., vol. 1, pl. xiv., fig. 1; Wils., pl. iv., fig. 13.

This butterfly appears to have been tolerably common fifty years ago in the county of Durham. It is one of the earliest butterflies to emerge, appearing on the wing in May, or in favourable seasons even in April. Mr. Wailes records that he met with it once as early as the 18th April. He says (Cat., p. 22), "It frequents woods and lanes where the holly grows, upon which the larva feeds. It is nowhere more abundant than around Ravensworth, where that beautiful evergreen occurs in such luxuriance and abundance; Gibside, Dilston, Winlaton Mill, Darlington, and Shull.—William Backhouse, Esq." The first three of these localities appear to be Mr. Wailes' own records. Mr. Backhouse's papers in my possession only give "Darlington and Shull." Ornsby's Durham gives "Woods and Lanes near Durham, Castle Eden Dene in May." Both Mr. Maling and Mr. Hedworth repeat the localities I attribute to Mr. Wailes, and add Chopwell. It is certainly much less frequent now than formerly, and I never met with it myself. The species is not in the Twizell list, and the only notice I can find of it as a Northumberland insect is in the Entomologist's Weekly Intelligencer, vol. IX., p. 103, where Mr. J. B. Hodgkinson, speaking of *Argiolus* as a Cumberland species, says, "It again appears in the adjoining county of Northumberland in the limestone district, more frequently." Feeling doubtful about this record I wrote to Mr. Hodgkinson on the subject, and he informs me that it "must have been a misprint." This is a very unsatisfactory explanation of the matter, but it

must be taken that at present we have no trustworthy record of the occurrence of *Argiolus* in Northumberland. In Mr. Barrett's new work he states that it is found in Northumberland, but he informs me that the statement is made only on the authority of Mr. Hodgkinson's erroneous record.

12. *P. Alsus* (W. V., Fab.). SMALL BLUE.

Polyommatus Alsus. Staint. Man., vol. 1, p. 57.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 92.

Lycana „ Newm. Brit. Butt., p. 134.

LARVA. Buck., vol. 1, pl. xiv., fig. 2.

This, the smallest of the British, but not of the European Blues, occurs in several places in the county of Durham. It is not in the Twizell list, but is mentioned in the introduction as occurring at Twizell, and one specimen was in the collection when it was examined for me some years ago, for the purpose of this catalogue. This is the only evidence I have of its occurrence in Northumberland, but it is so very local an insect and flies for so short a time, that, being so small also, it may easily be overlooked. It should be sought for in the last week in June or first in July, near where the food plant, *Anthyllis vulneraria* (Kidney Vetch) abounds. It is not on the wing longer than a fortnight, and is particularly fond of damp grassy hollows near its food plant. Wailes says, "Marsden—Witton-le-Wear—Castle Eden Dene—old coal heap opposite Wylam—Shull.—Wm. Backhouse, Esq." The only note in Mr. Backhouse's paper is "Shull;" I conclude, therefore, as with the last species, that the first four localities are given on Mr. Wailes' own authority. Ornsby's Durham gives "Castle Eden Dene, Ragpeth near Flass." Mr. Maling found it at Witton-le-Wear, and also on Railway banks near Marsden. I found it over 30 years ago at the southern extremity of Black Hall Rocks. It disappeared from there and I saw no more of it for many years, but it turned up again in great abundance in 1885, some two or three miles further north. In 1892 I found so

many sheep had been put on this land, that they had eaten everything down to the roots, and the butterfly had again disappeared. I have no doubt it may be found in most dry pastures, where *Anthyllis* grows freely. The larvæ have the curious habit of feeding up in the autumn, and remaining unchanged till the following May, the pupa state lasting only about three weeks.

NYMPHALIDÆ.

VANESSA, Fab.

13. *Vanessa C-album* (Linn.). COMMA.

Vanessa C-album. Barrett's Lep. Brit. Is., vol. 1, p. 124.

Grapta „ Staint. Man., vol. 1, p. 40.

„ „ Newm. Brit. Butt., p. 48.

LARVA. Buck., vol. 1, pl. ix., fig. 3; Wils., pl. iii., fig. 1.

Wallis says of this species, "The Tortoise-shell Butterfly with lacinated wings is not unfrequent in vale-meadows and gardens in August." At that time it was probably widely distributed over both counties. It is not in the Twizell list, but there was a specimen in the collection when Mr. Evans examined it for me. More recent records are, "Castle Eden Dene, and occasionally in Pelaw Woods, May and September."—Ornsby's Durham. It was common in Castle Eden Dene thirty years ago, and I have taken it in spring and much more abundantly in autumn, but whether it is double-brooded here as in the Midlands and South I have not been able to verify, though I think there is but one brood, and the May or June examples are the hybernated females. Mr. Sang records it from Castle Eden Dene and from Darlington. Mr. Backhouse also records it from this Dene and at Shull. Mr. Eales also met with it at Castle Eden and at St. John's in Weardale. A single specimen is recorded as being taken at Newcastle by Mr. Hamilton, and one was seen by Mrs. Robson but not captured, in Hezleden Dene near Hartlepool. It will be observed that with the exception of Wallis no observer records it from Northumber-

land, except the solitary specimen taken by Mr. Hamilton at Newcastle. I do not think the insect is nearly so abundant now as it was thirty years ago, but it is a species that has disappeared from many localities in various parts of England during that period.

14. *V. Polychloros* (Linn.). Large Tortoise-shell.

Vanessa Polychloros. Staint. Man., vol. 1, p. 39.

„ „ Newm. Brit. Butt., p. 55.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 127.

LARVA. Buck., vol. 1, pl. ix., fig. 1; Wils., pl. iii., fig. 3.

It is very curious that Wallis should record this species as if it were a resident in his neighbourhood. He says, "The Tortoise-shell Butterfly is not unfrequent in Alpine Woods and shady pastures in July and August. I have also observed it in gardens." The only butterflies that could possibly be confounded with this, are the preceding and succeeding species, both of which he also records. But apart from this, Wailes points out that the list of authorities Wallis quotes sufficiently prove the identity of the species.

At the date of Wailes' Catalogue no other record had been made of its occurrence in either county, and he wrote, "It is certainly strange that this conspicuous species should not have been met with by any other person than the reverend author (Wallis), but we must recollect that few of the subsequent observers have had the same leisure for continued investigation that fell to his lot, and that the beautiful vale of the North Tyne, where his principal labours lay, is yet a *terra incognita*, so far as Entomology is concerned. There is certainly every probability that future researches will enable us to corroborate his record of the species, though the paucity of the English Elm, upon which the larva feeds, in many parts of the two counties, certainly does not add to the chance of success."

The larvæ are now known to feed also on *Ulmus montana* (Wych Elm), and have been found "abundantly upon Aspen

(*Populus tremula*), and by other observers on *Pyrus aria* and Sallow, and even, rarely, upon Osier, Birch, Cherry, Pear, and Apple."—Barrett's Lep. Brit. Is., vol. 1, p. 129. The scarcity of Elm is not, therefore, a sufficient reason for the disappearance of the species, which has probably resulted from the same causes that have affected so many others. The increase of towns, and manufactories, with the resulting pollution of the atmosphere from smoke and chemical vapours, being among the more likely agents affecting these susceptible creatures.

Since the publication of Wailes' list, two or three specimens have occurred within our district, but under circumstances that tend to confirm the idea, that whatever it may have been formerly, it is no longer a native of either county. A single specimen was taken in a house in the village of Whitburn by the late John Hancock. Another occurred at Jesmond cemetery, and was captured by the late M. Henderson. The late Mr. Wassermann of Cullercoats also wrote:—"I saw a specimen of this insect sitting on the palings of my garden, which had been smeared with sugar to attract moths, on the 12th Sept. last" (1877).—Nat. Hist. Trans., vol. V., p. 284.

15. *Vanessa Urticæ* (L.). SMALL TORTOISE-SHELL.

Vanessa Urticæ. Staint. Man., vol. 1, p. 39.

" " Newm. Brit. Butt., p. 52.

" " Barrett's Lep. Brit. Is., vol. 1, p. 131.

LARVA. Buck., vol. 1, pl. ix., fig. 2; Wils., pl. iii., fig. 2.

One of the commonest of our butterflies occurring in every part of the district except the higher moorlands, where the food plant (Common Nettle) does not grow. The larvæ are gregarious. Barrett (Lep. Brit. Is.) says, "May and July—August." This is certainly not so in this part of the country. We find the larvæ on nettles in June or July, producing imagines which generally hibernate. On one occasion larvæ were found near Hartlepool in October, 1881, by Mr. Alfred Woods. Some of these he gave me, and they produced imagines the same

year. Mr. Hedworth also found larvæ of the second brood at Dunston in 1870. These it will be observed differ from Mr. Barrett's second brood, and would probably represent a third emergence in places where the first appeared in May. This species sometimes, like *Atalanta*, but more rarely, comes to light at night. I took one in that way in 1876.

Urtica is fully and carefully described by Wallis, showing that he did not confound it with the preceding species. It is given in the Twizell list, and in that in Ornsby's Durham. It is also recorded in every MS. list in my possession. I need only mention that Dr. F. A. Lees records it from Upper Teesdale, and Mr. Howse from the Redewater district.

16. *Vanessa Io*. (Linn.). PEACOCK.

Vanessa Io. Staint. Man., vol. 1, p. 38.

„ „ Newm. Brit. Butt., p. 60.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 136.

„ „ Myrick Handbook Brit. Lepidoptera p. 333.

LARVA. Buck., vol. 1, pl. viii., fig. 3; Wils., pl. iii., fig. 5.

This beautiful butterfly was formerly widely distributed over both counties. Mr. Barrett (Lep. Brit. Is., vol. 1, p. 140) appears to think it has "a dislike to manufacturing districts and large towns." He goes on to quote a statement of mine that "Thirty years ago the larvæ were to be found near Hartlepool, on every bed of Nettles. For twenty-five years I have not seen a larva, and the Butterfly, although an occasional visitor, has become very rare." This really describes the position over both counties. Up to about the year 1860 it was common enough in most places.

The species is described by Wallis, who speaks of it as "often seen." It is in all the printed and MS. lists. Wailes says, "generally distributed over the two counties, but never very abundant."—Cat., p. 15. More recent records however show how scarce it has become. Mr. Howse reports that only one or two have been seen in the Redewater district during thirty years. The late Mr. Maling wrote, "I have not seen this species for many years." Mr. Eales writes, "I have collected

here (South Shields) for fifteen years, and saw it for the first time here in September, 1872." Mr. Hedworth says, "One at Dunston in 1872," and in 1874 "Two batches of larvæ were found at Dunston." Mr. Brady writes, "I have only seen one in Durham—in 1891." I have scarcely seen the insect since 1860, until 1893, when it was not uncommon, and I have not seen the larvæ at all since the earlier date. It would be impossible for the merest tyro to mistake the larvæ for those of *Urticæ*, which are of somewhat similar habit. Those of *Io* are quite black, spotted with white, and all the more conspicuous for being bright and shining, as though they were wet.

17. *Vanessa Antiopa* (Linn.). CAMBERWELL BEAUTY.

<i>Vanessa Antiopa.</i>	Staint. Man., vol. 1, p. 38.
" "	Newm. Brit. Butt., p. 58.
" "	Barrett's Lep. Brit. Is., vol. 1, p. 140.
" "	Meyrick, Handbook of British Lepidoptera, p. 333.

LARVA. Buck., vol. 1, pl. viii., fig. 4; Wils., pl. iii., fig. 4.

This large and beautiful species visits these counties on most of those rare occasions when a wandering horde strikes our shores. Mr. Wailes evidently thought it was a native, and did not believe in what has been called the "blown-over" theory. The earliest record I have of its appearance here is in the notes of the late William Backhouse, who, "about the year 1820," found it in vast numbers on the sands at Seaton Carew washing up by the tide. Many were dead but some were still living. Commenting on this occurrence Mr. Wailes says, "it were more reasonable to suppose that these specimens had been blown from the land than that they had crossed a sea at least 500 miles wide." He goes on to argue from the colour of the border of a specimen Mr. Backhouse showed him that they must have been of British origin, as this had "the white border so characteristic of our British specimens, which is replaced by yellow in nearly all the Continental and American specimens." He also referred to a friend who professed to have been familiar with the species,

and called it the "White Petticoats." That this is appropriate no one will dispute, and its use certainly implies that the insect occurred with sufficient frequency to have acquired a popular name. My own opinion is that a much larger number of Butterflies existed in Britain at a former period than have been found within the last half century. Comparing other groups of European Lepidoptera, as given in Dr. Staudinger's Catalogue, I find that only about half the proportion of *Rhopalocera* occur as of other groups. I therefore think it likely enough that *Antiopa* was at one time or another a species that might be regularly met with in Britain, and may then have propagated its race within the limits of these islands. But that is certainly not so at present. Much more is known now respecting the migration of insects. An American Butterfly, *Anosia plexippus*, has undoubtedly crossed the Atlantic and reached our shores, not once or singly, but several times, and twice in some numbers. There is therefore no great difficulty in understanding how *Antiopa* may cross the comparatively narrow North Sea. The late Mr. H. T. Stainton, whose knowledge and judgment in such matters were second to none, was of opinion that the larger swarms of *Antiopa*, which had been noticed in Britain, had a Scandinavian origin, the white-bordered form being found there. The cream-bordered specimens more frequently occurring singly in the south, probably cross from the French coast, where the insect is common.

Though Mr. Wailes appears to have held the opinion that *Antiopa* was reared within these counties, he was able to give but few instances of its occurrence, and those only singly. He quotes two records of its appearance in the south-eastern corner of Durham, besides those seen by Mr. Backhouse;—one on 7th August, 1831, and another on 2nd September, 1842, when Mr. Hogg saw the first, and captured the second specimen. The other records in his list are, "once near Gibside. Mr. J. Hancock." "One seen near Twizell some years ago. P. J. Selby, Esq." "A specimen at Longhirst about the middle of August, 1857. Ent. W. Intelligencer II., 182."

Later records are "one seen by keeper at Castle Eden Dene,"

Diary of the late J. Sang, 29th August, 1858. One taken by Mr. Barron at Castle Eden, 8th February, 1869. This specimen crawled out of some underwood he was burning, amongst which it had no doubt retired for hybernation. As the larva of this species has rarely, if ever, been met with in Britain, the record of a specimen passing the winter here is of considerable interest. In 1872 Mr. J. P. Taylor, of Hartlepool, had a specimen brought to him which had been taken at Sheraton, a small village some six miles away, and a few days afterwards he captured a second specimen himself on the sand-banks to the north of the town. Mr. Finlay, of Meldon, near Morpeth, took a specimen in Meldon Park in August, 1876. A specimen was taken the same year at Seaton Carew, and Mr. Henderson took one in Jesmond Cemetery, but I have no record of the date. In 1884 the last specimen I know of was taken near Norton by Mr. Leeming. These few captures and the long intervals between, are evidence enough that the species is but a casual visitor to our counties.

18. *Vanessa Atalanta* (L.). RED ADMIRAL.

- Vanessa Atalanta*. Staint. Man., vol. 1, p. 28.
 " " Barrett's Lep. Brit. Is., vol. 1, p. 145.
 " " Meyrick, Hdbk. Brit. Lep., p. 334.
Pyrameis " Newm. Brit. Butt., p. 62.

LARVA. Buck., vol. 1, pl. viii., fig. 2; O. Wils., pl. iii., fig. 6.

This beautiful Butterfly, which Wallis calls "the large stately Butterfly called The Admiral," was very abundant and widely distributed in our districts thirty or forty years ago. Wailes speaks of it abounding in 1857, and says "it is generally diffused over the two counties, and is mentioned in the Stockton and Twizell Fauna and in Ornsby's Durham." Mr. Backhouse says it was common in gardens at Darlington in 1857 and 1858. Records about the same period by Mr. C. Eales, Mr. William Maling, and Mr. T. H. Hedworth all speak of it as a species which occurred regularly and abundantly. In my early collecting days it was tolerably common, and the larva might be found

in its snug domicile on almost every bank of Nettles. Then, somewhere in the sixties, when so many other Butterflies left us, it almost disappeared from both counties, and for several years I have no record of its capture—except of chance specimens. Now, after more than twenty years absence, it has again become a more familiar object. In 1893 it was fairly abundant. This year (1895) it is quite common about Hartlepool, and I have even seen it feasting on a Sunflower in a garden in the town, with a crowd of hungry-eyed boys around the railings awaiting an opportunity of capturing it, but it soared up over the tops of the houses and escaped. Though recent records are not numerous, the Butterfly appears to have been noticed in districts sufficiently far apart to warrant the statement that it is still “widely distributed.” Mr. Howse tells me that it is rare in the Redewater district. I have seen it at Egglestone in Teesdale, but I have no record of it from the wilder moorland, where indeed its food-plant does not occur so frequently as in more cultivated parts. Mr. Finlay records it from the Morpeth district, Mr. Henderson took it in Jesmond Cemetery, Mr. Brady at Sunderland, Mr. Sibson at Stockton-on-Tees, and Mr. Wasserman gives it in his list of Coast Lepidoptera in the Transactions for 1877 (vol. 5, p. 284). *Atalanta* has the curious habit (for a Butterfly) of being on the wing late at night. It is sometimes seen on a gas-lamp. I have twice taken it at light and once at sugar. The larva conceals itself by drawing together the edges of a Nettle leaf, and never appears to feed in company, or openly, as do others of the genus.

19. *Vanessa Cardui* (L.). PAINTED LADY.

Cynthia Cardui. Staint. Man., vol. 1, p. 37.

Pyrameis „ Newm. Brit. Butt., p. 64.

Vanessa „ Barrett's Lep. Brit. Is., vol. 1, p. 149.

„ „ Meyrick, Hdbk. Brit. Lep., p. 334.

LARVA. Buck., vol. 1, pl. viii., fig. 1; O. Wils., pl. iii., fig. 9.

The “Painted Lady” is, of all our Butterflies, the most migratory in its habits,—so much so, that the range of the species

is said to be world-wide. Large swarms of it are sometimes observed, but perhaps that of 1879 was the most extraordinary.

In that year an immense flight of this species apparently took its rise in North Africa, crossed, first the Mediterranean, and then the entire Continent of Europe, enormous numbers reaching Britain early in June. A full account of this most unusual occurrence will be found in an article in the *Entomologist Magazine*, vol. xvi., old series, p. 49, in which the insect is traced from North Africa, where it was noticed about the middle of April, through Spain, Italy, Switzerland, Austria, France, etc. Near Geneva "the swarm is said to have obscured the sun for several minutes." At Angers it was estimated that 40,000 to 50,000 passed along a single street in an hour. At Steyer, in upper Austria, on the 11th June, it was "estimated at above rather than below 1,000,000." The general direction of flight seemed to be from south to north, and after its arrival here it appeared to spread quickly over the whole island and was abundant in these counties.

In other years it has been equally common. Then it will disappear altogether for some time, or appear in very small numbers. Various theories have been put forward to explain the phenomenon, but a lengthy discussion would be out of place in a catalogue. My opinion is that *Cardui* is a double-brooded species, and that the larvæ of the second brood often perish in our early winter. I have found the larvæ myself at Hartlepool in November, but was unable to obtain Butterflies from them. These autumn larvæ have, however, been reared indoors, but those exposed to the weather must all have perished. Thus, after a large immigration, we find the larva abundant in July, and the Butterfly in August, but these fail to perpetuate their race here. The species is recorded in all the lists in my possession, but it is unnecessary to give particular localities for a species that occurs everywhere, when it appears at all.

ARGYNNIS, Fab.

20. *Argynnis Paphia* (L.). SILVER-WASHED FRITILLARY.

- Argynnis Paphia*. Staint. Man., vol. 1, p. 41.
 „ „ Newm. Brit. Butt., p. 22.
 „ „ Barrett's Lep. Brit. Is., vol. 1, p. 156.
 „ „ Meyrick, Hdbk. Brit. Lep., p. 329.

LARVA. Buck., vol. 1, pl. x., fig. 1; O. Wils., pl. ii., fig. 1.

This beautiful species has occurred in our district, but I know of no recent records. I have seen specimens which were taken in 1855 in Castle Eden Dene, but I never saw it there myself. Mr. Backhouse took it there, and it is recorded in Ornsby's Durham from the same place. Stainton's Manual gives "Da" as a place of occurrence, but the only record I find in Mr. Sang's diary is "Hartford, 21/8/53."

Mr. Wailes, who also speaks of the insect as one that "has occurred," gives Gibside and Dilston in addition. Mr. Henderson took it at Jesmond, Newcastle.

21. *Argynnis Aglaia* (L.). DARK GREEN FRITILLARY.

- Argynnis Aglaia*. Staint. Man., vol. 1, p. 42.
 „ „ Newm. Brit. Butt., p. 25.
 „ „ Barrett's Lep. Brit. Is., vol. 1, p. 167.
 „ „ Meyrick, Hdbk. Brit. Lep., p. 329.

LARVA. Buck., vol. 1, pl. x., fig. 3; O. Wils., pl. ii., fig. 2.

Aglaia is another beautiful species which, I fear, is disappearing from our district. Mr. Wailes says, "appears along with the last species and in similar localities. Castle Eden Dene, Gibside, Seaton, and Shull. Common. W. Backhouse. Esq.;" "Castle Eden Dene and in fields near Flass, beginning of July. Ornsby's Durham; Twizell. P. J. Selby, Esq."

Mr. Backhouse's notes do not give Seaton as a locality, and it is an unlikely place, but "Shull and sea banks, Black Halls." I have seen it myself at the foot of Hesleden Dene, quite on the sea coast, and also in the same Dene two or three miles further inland, but only singly. A fine variety was taken near Byers Green by the late Thomas Hann. It was entirely suffused with

darker scales, not like the *Valezina* variety of *Paphia*, which has a green hue, but with a darker fulvous than the type. Mr. Hedworth recorded the species as common at Chopwell, but I do not know the date. He took it at Dunston in 1871, and a single specimen at the same place on the 26th August, 1877. I saw, but did not capture, a specimen in Hesleden Dene some few years later. I have no more recent records, but have been told it is not uncommon yet near Bishop Auckland.

22. *Argynnis Euphrosyne* (L.). PEARL-BORDERED

FRITILLARY.

- Argynnis Euphrosyne*. Staint. Man., vol. 1, p. 43.
 " " Newm. Brit. Butt., p. 35.
 " " Barrett's Lep. Brit. Is., vol. 1, p. 174.
 " " Meyrick, Hdbk. Brit. Lep., p. 330.
 LARVA. Buck., vol. 1, pl. xi., fig. 2.

This certainly was the commonest of the Fritillaries in our counties, and though it is no longer abundant as formerly, it has not entirely disappeared. Wailes says, "this pretty Butterfly abounds at the end of May and early in June in all the grassy paths in and around the woods." It is not given in the Twizell list. Ornsby's Durham says, "Horden and Castle Eden Denes, woods and fields near Brancepeth, Stanley pastures, etc. Mr. Sang took it at High Force on 28th February, 1858. It was abundant in Castle Eden Dene the same year, above the Water-fall, and all the Hartlepool collectors took it. Mr. Backhouse took it at Shull, and St. John's, Weardale. Mr. Hedworth took it sparingly at Thornley near Gibside, and abundantly at Chopwell, but Mr. Maling found it rare at the latter place in 1875. Both these collectors also met with it at Winlaton, and Mr. Henderson took it at Jesmond. It also occurred in the neighbourhood of Bishop Auckland and at Wynyard.

I have one record only for Northumberland the above-named locality, Jesmond, but it is certain to have occurred in the well-wooded portions of the county. Newman in his British Butterflies says, "it is generally abundant in Northumberland and Durham."

23. *Argynnis Selene* (Schiff). SMALL PEARL-BORDERED

FRITILLARY.

- Argynnis Selene.* Staint. Man., vol. 1. p. 43.
 " " Newm. Brit. Butt., p. 37.
 " " Barrett's Lep. Brit. Is., vol. 1, p. 178.
 " " Meyrick, Hdbk. Brit. Lep., p. 330.

LARVA. Buck., vol. 1, pl. xi., fig. 1.

Mr. Barrett says of this species that it "has been seen in Durham," but does not mention Northumberland. It certainly was widely distributed over both counties, and I do not think it has even yet entirely disappeared. Wailes says, "appears abundantly about the middle of June, and frequents the most of our woods: Gibside, Meldon Park, etc." Mr. Backhouse's list says, "Shull and Durham woodlands." Ornsby's Durham gives "woods and pastures near Flass." Dr. F. A. Lees found it on wooded banks at Cotherstone. My son took it in Hesleden Dene; Mr. Hedworth at Thornley on Derwent, Chopwell, and Winlaton Mill; Mr. Maling took it at Hexham and also at Chopwell; and Mr. Patterson, of Newcastle, took it at Ebchester and Chopwell.

MELITÆA, Fab.

24. *Melitæa Artemis* (Hub.). GREASY FRITILLARY.

- Melitæa Artemis.* Staint. Man., vol. 1, p. 47.
 " " Newm. Brit. Butt., p. 39.
 " " Barrett's Lep. Brit. Is., vol. 1, p. 196.
 " *Aurinia.* Meyrick, Hdbk. Brit. Lep., p. 331.

LARVA. Buck., vol. 1, pl. xii., fig. 2; O. Wils., pl. ii, fig. 5.

Of this Butterfly, Wailes says, "this species has only recently been noticed within these counties, and hitherto only in Durham. In the Flass locality, I am informed by Mr. Proctor, Jun., of the Durham Museum, that it is most abundant,—the food-plant of the larva, *Scabiosa succisa*, growing there in great quantity." Ornsby's Durham also gives "fields near Flass; near Castle Eden Dene." Neither the Twizell list nor that of Mr. Backhouse contains the species. It is reported as occurring near the High

Force, Teesdale, in 1860, in the Tyneside Naturalists' Trans., vol. v. It was met with in Upper Teesdale at the Field Meeting held there 16-18 July. See Trans., 1861, p. 7. Mr. Wm. Dinning found it abundant at Hamsterley. Mr. Hedworth found it in the Derwent district. In 1860 it was very plentiful at Black Hall Rocks, on the sandy flat, south of the rough banks. In 1861 I took a solitary specimen, and have never seen it since. *Scabiosa succisa* grows freely on all the banks, but most abundantly a mile and a half north of this place, but I never found the insect so far along. The last record I have of it is that Mr. Henderson took one only at Chopwell in 1872. It is a species that occasionally moves its head-quarters, and I think it will yet turn up again on the coast between Hartlepool and Sunderland. The specimens I took at Black Halls were of the Scotch form, var. *Scotica*, Robs.

SATYRIDÆ.

EREBIA, Bdv.

25. *Erebia Blandina* (Fab.). NORTHERN BROWN.

Erebia Blandina. Staint. Man., vol. 1, p. 29.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 216.

„ *Medea* Newm. Brit. Butt., p. 82.

„ *Æthiops*. Meyrick, Hdbk. Brit. Lep., p. 340.

LARVA. Buck., vol. 1, pl. vi., fig. 1.

This interesting species, which had previously only been taken in Scotland, was first recorded as an English insect by Mr. Backhouse, who found it abundantly in Castle Eden Dene. It is still abundant there, and occurs in all open grassy places down almost to the sea level at the mouth of the Dene. Its range extends westward as far as the Dene runs, and I have found it plentiful on the banks of the railway between Thornley and Wellfield stations and in Edderacres Wood adjoining. The wood extends to the turnpike and beyond, but I never found *Blandina* on the west side of the road. This has often struck me as being very singular, and also that the Butterfly does not occur in any portion of Hesleden Dene, which approaches in one

part to within a mile of Castle Eden Dene. It certainly is not because of some peculiar food-plant, for I reared the larva on almost any grass which was easily obtained.

SATYRUS, Bdv.

26. *Satyrus Semele* (L.). THE GRAYLING.

Hipparchia Semele, Staint. Man., vol. 1, p. 28.

Satyrus „ Newm. Brit. Butt., p. 89.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 222.

„ „ Meyrick, Hdbk. Brit. Lep., p. 338.

LARVA. Buck., vol. 1, pl. iv., fig. 3.

This Butterfly frequents dry rocky places, or gravelly banks. Wailes says it is "almost confined to the Magnesian-limestone district." It appears to occur on the coast wherever the locality is suitable. "Berwick," Mr. Pattison; "sea coast near Bamburgh," Fauna of Twizell. Bambro', 1869, W. Maling; Sunderland, W. Backhouse; Ryhope, L. S. Brady; Marsden, Chris. Eales; Castle Eden, John Sang, 1859, W. Backhouse. I have also found it plentifully at Black Hall Rocks, and have seen the larva on grass on the sand-banks. Wailes states that it swarmed "some years ago" on old ballast hills near Jarrow. I have also found it common on ballast hills close to Hartlepool, and in the railway cutting above Hart Station. Cassop is given as a locality in Ornsby's Durham. This species has one marked peculiarity, namely, the larva pupates below the surface of the soil, and the pupa is smooth, bright shiny-brown, much like that of a *Noctua*.

PARARGE, Hb.

27. *Pararge Aegeria* (L.). SPECKLED WOOD.

Lasiommata Aegeria. Staint. Man., vol. 1, p. 27.

Pararge „ Newm. Brit. Butt., p. 86.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 227.

„ „ Meyrick, Hdbk. Brit. Lep., p. 337.

LARVA. Buck., vol. 1, pl. iv., fig. 1.

This species was apparently well distributed over both counties

half a century or more ago. "The late Mr. R. Currie took it in the neighbourhood of Belford in the spring of 1826." Wailes. It is also in Selby's Twizell List, and the specimens were in the collection when it was examined for me. Mr. Wm. Backhouse found it in Castle Eden Dene, and Mr. E. Backhouse, Jun., took it near Sunderland. There are no recent records of its appearance and I never took it myself. The specimens taken in our counties, like those taken elsewhere in Britain, are a colder brown than the type, and are known as var. *Ægeroides*.

28. *Pararge Megæra* (L.). THE WALL.

<i>Lasiommata Megæra</i> .	Staint. Man., vol. 1, p. 27.
<i>Pararge</i>	„ Newm. Brit. Butt., p. 87.
„	„ Barrett's Lep. Brit. Is., vol. 1, p. 234.
„	„ Meyrick, Hdbk. Brit. Lep., p. 337.

LARVA. Buck., vol. 1, pl. iv., fig. 2; O. Wils., pl. iv., fig. 2.

This Butterfly was until 1861 generally distributed throughout both counties, occurring in May and June, and the second brood in August and September. When I commenced to collect it was much the most abundant Butterfly of the district; but in 1861 the first brood never appeared; in the autumn I saw a solitary specimen, and since then I have never seen it hereabouts. The years 1861-2-3 were particularly disastrous seasons for Lepidoptera, and, though this species appeared to survive in a few places for some years longer, I fear it has now totally disappeared. Wallis (1769) said, "it delights to rest on dry banks, stones, and rocks." Mr. Selby informed Mr. Wailes that "it was much less common about Twizell than formerly." Mr. Stephens, in his Illustrations of British Entomology, Haustellata, vol. 1, p. 57, says, that it "frequents the sea-coast where the Magnesian-limestone occurs at Marsden, near South Shields, while on the rocky shores of the opposite banks of the Tyne, where there is no limestone, it is not found." I scarcely think that it is in any way limited to limestone, as it was common here on the sand-banks. The following localities will show how widely it was spread and when the last specimens were taken.

It is recorded in 1769 by the Rev. Mr. Wallis. It is in the Twizell list, in that in Ornsby's Durham, and in Mr. Backhouse's manuscript list. These records practically cover both counties. A hundred years after the first record it had almost disappeared. I never saw one alive after 1861, but Mr. Maling saw two or three at Beadnell in 1870, and a solitary specimen the next season (1871). Mr. Henderson saw it at Jesmond in 1870, and Dr. F. A. Lees found it in Upper Teesdale so late as 1875, since which date no specimen has occurred in either county, so far as I know.

EPINEPHELE, Hb.

29. *Epinephele Janira* (L.). MEADOW BROWN.

Hipparchia Janira. Staint. Man., vol. 1, p. 28.

Epinephele „ Newm. Brit. Butt., p. 91.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 240.

„ „ Meyrick, Hdbk. Brit. Lep., p. 339.

LARVA. Buck., vol. 1, pl. v., fig. 2; O. Wils., pl. iv., fig. 3.

Common throughout the district in all grassy places. It is in every list in my possession, and is found even on the higher moorlands. Mr. Howse informs me that it occurs in the Redewater district (600 feet), while Dr. Lees found it abundant in Upper Teesdale.

30. *Epinephele Tithonus* (L.). THE LARGE HEATH.

Hipparchia Tithonus. Staint. Man., vol. 1, p. 28.

Epinephele „ Newm. Brit. Butt., p. 93.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 245.

„ „ Meyrick, Hdbk. Brit. Lep., p. 339.

LARVA. Buck., vol. 1, pl. v., fig. 2; O. Wils., pl. iv., fig. 4.

This Butterfly is widely distributed throughout both counties, though scarcely so plentiful as it was twenty or thirty years ago. Wailes says, "local, but generally abundant where found, making its appearance in July. In profusion in a single field near Whitley, where the road to Hartley crosses Briar Dene Burn;

fine example of the var. *Arete*, which is without the yellow rings, that give the common name (Ringlet) to the species, or has them represented only by a small white dot. I have no recent records of this species except "Jesmond," Mr. Henderson, and "Gilsland," Mr. Patterson.

CÆNONYMPHA, Hb.

32. *Cænonympha Davus* (Fab.). THE MARSH RINGLET.

Cænonympha Davus. Staint. Man., vol. 1, p. 32.

" " Newm. Brit. Butt., p. 97.

" " Barrett's Lep. Brit. Is., vol. 1, p. 255.

" *Tiphon*. Meyrick, Hdbk. Brit. Lep., p. 341.

LARVA. Buck., vol. 1, pl. vi., fig. 3.

This is exclusively a moorland species, occurring freely on most of the mountains, moors, and mosses. Wailes gives the following list of localities, apparently from his own knowledge: "Needless Hall Moor—moors about Cambo—Prestwick Car—Muckle Moss, near Haydon Bridge—moss near Crag Lough." Mr. Backhouse gives "moors near Shull." Ornsby's Durham gives "high marshy ground, near Hoppyland. Rev. E. Blenkinsopp." Mr. Howse saw it in great abundance at Blackstur Bog, in the Redewater district, in 1868–70. Mr. L. S. Brady found it "fairly common about the Northumberland Lakes in 1890." I had the pleasure of making its acquaintance on Greenleighton Moor in 1891, under the guidance of Mr. Finlay of Meldon. It was tolerably abundant, and I secured a nice series in little over an hour, after which, rain came on and we got no more. In the face of these quite recent Northumberland records I am surprised to see it stated in Mr. Barrett's new work that it "seems to have been exterminated in Northumberland."

C. Davus was taken in great plenty at the head of the "Wheel" above Cauldron Snout by the Members of the Tyneside Club in July, 1860. Trans., vol. v., p. 5. When we consider the great extent of the moors in the west and north-west of Durham and Northumberland, from the Tees to the Tweed, which have never

been trodden by an Entomologist, we may rightly assume that it will be long before this species becomes exterminated in these counties.

Our local specimens, while presenting great variety of marking, are fairly intermediate between the dark tawny form of the Manchester district, with many well-marked eyes and distinct fascia, and the paler more slightly marked forms found in Scotland.

33. *Cœnonympha Pamphilus* (L.). SMALL HEATH.

Cœnonymphus Pamphilus. Staint. Man., vol. 1, p. 32.

„ „ Newm. Brit. Butt., p. 101.

„ „ Barrett's Lep. Brit. Is., vol. 1,
p. 263.

„ „ Meyrick, Hdbk. Brit. Lep.,
p. 341.

LARVA. Buck., vol. 1, pl. vi., fig. 4.

This is another very common and abundant little Butterfly, occurring in all grassy places from June to September. A variety, with a distinct dark fascia on the underside, is not uncommon about Hartlepool and elsewhere in the district. I took a single specimen on the railway banks here, on which the whole of the underside was a deep, dark, tawny colour.

HESPERIDÆ.

HESPERIA, Bdv.

34. *Hesperia Sylvanus* (Esp.). LARGE SKIPPER.

Pamphila Sylvanus. Staint. Man., v. 1, p. 67.

„ „ Meyrick, Hdbk. Brit. Lep., p. 359.

Hesperia „ Newm. Brit. Butt., p. 172.

„ „ Barrett's Lep. Brit. Is., vol. 1, p. 289.

LARVA. Buck., vol. 1., pl. xvii., fig. 4,

This Butterfly has very seldom been met with in our district, and so far has been confined to the county of Durham. Mr. Sang took it at Darlington, and records it as scarce and local.

It is given in Ornsby's Durham as occurring in Castle Eden Dene, and I possess a single specimen that was taken in Hesleden Dene by Mr. Joseph Leeming. Mr. George Wailes records it in Castle Eden Dene, 27th June, 1860. Trans. Tynes. Nat. Field Club, vol. v., p. 4. Stainton's Manual records it for Darlington. It ought to occur in our Counties, as it is a species of general distribution and common in most places, occurring at York, Scarbro', and Richmond in Yorkshire, at many places in Lancashire, and in the south of Scotland.

NISONIADES, Hb.

35. *Nisoniades Tages* (L.). DINGY SKIPPER.

Thanaos Tages. Staint. Man., vol. i., p. 65.

Hesperia ,, Newm. Brit. Butt., p. 170.

,, ,, Meyrick, Hdbk. Brit. Lep., p. 357.

Nisoniades ,, Barrett's Lep. Brit. Is., vol. i., p. 304.

LARVA. Buck., vol. i., pl. xvii., fig. 3.

Wailes says, "common in most parts of the counties in dry lanes and on heaths at the end of May and during June. A second brood in August. It is enumerated in the Twizell Fauna and in Ornsby's Durham." With this statement I am inclined to agree, but I have very few recent records. Mr. Backhouse found it at Shull, and Mr. Maling and Mr. Hedworth at Chopwell. It occurs pretty generally about Hartlepool, particularly on the railway banks and at Black Hall Rocks. Its dark colour and peculiar flight render it very difficult to see and to capture, without carefully watching for it. The larva feeds on the common *Lotus corniculatus* (Bird's-foot Trefoil), and ought to be found wherever that plant is abundant, especially on railway embankments and dry hill sides. I have never seen the second brood.

This species completes the Butterflies, and I have not been able to add any to the thirty-five species enumerated in the Catalogue by Mr. Wailes in 1858. Mr. Fawcett of Satley published a list in a local newspaper, in which he included several

others, some of which were not at all likely to occur. He quoted me as the authority for one species which I never saw alive in my life. I had a long correspondence with him on the subject, and must say that he quite failed to produce the slightest evidence of the occurrence of any of them in our counties. I, therefore, am reluctantly compelled to ignore his statements altogether.

Mr. Wailes mentioned about a dozen species which he thought likely to be found in our counties. In the face of the rapidly decreasing number of those we know, I fear the occurrence of new species is but doubtful, though the recent discovery of *Hesperia lineola* in abundance in several localities in the South of England, shows that even where there is the greatest number of Entomologists, it is possible to overlook a species which is really plentiful.

Chrysophanus Phlæas var. Schmidtli, Gerh.

Since the foregoing was in type I have been informed that Miss Annie Rossie took two specimens of this interesting and rare variety of *Phlæas* a little to the north of Newcastle-upon-Tyne in the summer of 1895. In this form the bright coppery colour of the upper side is changed to pure silvery white. It is figured in Dr. Lang's *Butterflies of Europe*, p. 96, pl. xxii., f. 1, from a specimen taken in Perthshire: "It has been several times taken in Britain but is very rare." One of the specimens has been presented to the Museum of the Natural History Society by Miss Rossie.

SEC. II. *HETEROCERA*, Bois.

NOCTURNI.

GROUP. SPHINGINA.

FAMILY. SPHINGIDÆ, Leach.

SMERINTHUS, Latr.

1. *Smerinthus ocellatus* (Linn.). EYED HAWK MOTH.*Smerinthus ocellatus*. Staint. Man., vol. i., p. 87.

" " Newm. Brit. Moths, p. 4.

" " Barr. Lep. Brit. Is., vol. ii., p. 3.

" " Meyr. Hdbk. Brit. Lep., p. 300.

LARVA. Buck., vol. ii., pl. xx., p. 4; O. Wils., pl. v., fig. 1.

This beautiful Moth does not occur with any regularity in our district. Common in the South of England, it becomes rarer towards the North. In Cheshire, Lancashire, and Yorkshire it is found in many localities, and is common in some of them, but it is by no means met with everywhere. These counties may therefore be considered the extent of its range northward, and the records of its appearance in Durham or Northumberland are but few. The earliest in date is found in Stainton's Manual, published in 1857, where "*Da*," signifying that the species has occurred at Darlington, appears in the list of localities. No doubt this is the same specimen recorded in Wailes' Catalogue (Trans., vol. iii., p. 227, 1858), "once near Darlington, J. Sang." I have not found any record in Sang's Diary relating to this capture. The next occurrence appears to be a specimen taken at Swalwell in 1872 by Mr. G. Nowell (Trans., vol. v., p. 39). It almost seems as though there had been a small immigration of the species at this time, for I find records in each of the three following years. In 1873 Mr. Gardner collected a few larvæ of *S. Populi* in Crimdon Cut near Hartlepool, and among them must have been some *ocellatus*, for a specimen emerged in his breeding cage the following year among the *Populi*, and he found among the dead pupæ several with the smooth shining case that distinguishes *ocellatus* from those

of *Populi*. The resemblance of an *ocellatus* larva to one form of those of *Populi* makes it easy to understand how they were not distinguished as larvæ. The same year (1874) Mr. Wm. Fleetham found on 3rd July an example of the perfect insect, at rest on some palings formed of old sleepers, on the railway side at Hartlepool, and not two miles from where Mr. Gardner had found the larvæ. Also, in the same year, Mr. Hedworth found a full-grown larva at Darns Head, Axwell, which, in 1875, produced a specimen that afterwards passed into the collection of Mr. Wasserman, and is now in the Newcastle Museum. In this year (1875) an example came into my possession which had been taken near Hartlepool. Twenty years have elapsed since then, but I have met with no further record of its occurrence in either county, until the present year (1896), when Mr. J. Rhagg bred the imago from larvæ found on Willows at Wylam on the Tyne.

2. *S. Populi*, (Linn.). POPLAR HAWK MOTH.

- Smerinthus Populi*. Staint. Man., vol. i., p. 87.
 „ „ Newm. Brit. Moths, p. 4.
 „ „ Barr. Lep. Brit. Is., vol. ii., p. 7.
 „ „ Meyr. Hdbk. Brit. Lep., p. 299.

LARVA. Buck., vol. ii., pl. xx., fig. 2; O. Wils., pl. v., fig. 2.

This is the commonest of the large Hawk-Moths and the most widely distributed in both counties.

For Northumberland it is given in the Twizell list, and in Stephen's "Illustrations of British Entomology" (*Haustellata*, vol. 1, p. 113), it is mentioned as occurring in Northumberland on the authority of the late Mr. Hewitson. Mr. Finlay reports it as generally distributed in the neighbourhood of Morpeth, and Mr. Maling, Mr. Henderson, and others have taken it around Newcastle. In Durham Mr. Hedworth found the larvæ "generally common on Poplars throughout the district." This refers more particularly to the valley of the Derwent and the south banks of the Tyne. It is given in the list in Ornsby's Durham, and Mr. John Wood (*Ent. Mon. Mag.*, vol. 2, p. 150)

reported the species as abundant near that city, where Mr. Madison tells me it is still to be found. Mr. Ross found it common about Bishop Auckland. Further west, about Middleton-in-Teesdale, Dr. F. A. Lees reported it "common on riverside shallows in the larval state." Mr. Backhouse and many others took it about Darlington, which is also given as a locality in Stainton's Manual. Near Stockton it was found commonly by Mr. Sibson, whilst at and around Hartlepool we meet with the imago occasionally, but find the larva very abundant wherever there is Poplar. These localities cover most of the cultivated portions of both counties, and there is no doubt but *Populi* will be met with wherever there is plenty of the food plant. It appears to prefer the Balsam Poplar, but it is found on other species and also on Willow and Sallow. This year (1896) the imago has been very abundant, and a specimen flew into the library of the Rev. Robt. Taylor, of Monk Hesleden, in the day time, while I was paying him a visit with Mr. Howse in June.

ACHERONTIA, Och.

3. *Acherontia Atropos*, (Linn.). THE DEATH'S HEAD MOTH.

- Acherontia Atropos*. Staint. Man., vol. i., p. 88.
 " " Newm. Brit. Moths, p. 5.
 " " Barr. Lep. Brit. Is., vol. ii., p. 16.
 " " Meyr. Hdbk. Brit. Lep., p. 299.

LARVA. Buck., vol. ii., pl. xxi., fig. 1; O. Wils., pl. vi., fig. 1.

This curious and interesting species has occurred in most parts of both counties, and there is no doubt it frequently passes through all its stages within our borders. Indeed, I have had both larva, pupa, and perfect insect brought to me at various times. But it is certain that frequent immigration takes place, and possibly the race might die out without this aid. The earliest record of its occurrence is found in Wallis (vol. 1, p. 358): "The large, beautiful Moth, called the Bee Tiger, was taken some years ago in one of the rooms at Felton Hall, in October. It is now in the collection of Mr. Thompson, of Northumberland

Street, in Newcastle-on-Tyne." By the name "Bee Tiger," used by the Reverend author, it is clear that its habit of entering the hives of the Honey Bee was known at that date. Mr. Howse has an interesting example of *Atropos* enclosed in a waxen covering by the Bees to whose stores it had penetrated. This was found in a hive at Cresswell Hall. Stephens (Illust. Haust., vol. i., p. 118) says *Atropos* occurs in Northumberland, on the authority of W. C. Hewitson, and also "not uncommon in Durham; once taken four miles at sea; a second buzzing about a bee-hive. Mr. J. O. Backhouse." It is also given in Ornsby's Durham. More recent records are "one taken at River Green Mill." J. Finlay, Morpeth. Mr. Bulmer met with a specimen at Winlaton Mill. Two were taken at Dunston on board a wherry, and one on a door-step, August 19, 1877, now in my possession." T. H. Hedworth. "Larvæ sometimes occur in small quantities in the neighbourhood, and occasionally an imago is found." W. Maling, Newcastle-on-Tyne. "Mouth of the Tyne, both sides of the river." J. C. Wasserman (Trans., vol. v., p. 285). "Near Jesmond." M. Henderson. "Several larvæ and one imago." Chris. Eales, South Shields. Mr. Eales also found the larvæ in potato grounds near Darlington (Ent. W. Int., vol 4, p. 163). Mr. J. Orde makes a similar record in the same volume, p. 180. Mr. W. Backhouse also met with it there and at Shull. "A friend had several brought him which had been found in the town." L. S. Brady, Sunderland. At Hartlepool I have had a great many given to me from time to time. When herring nets are spread out to dry, it is occasionally found entangled by its hooked claws. Possibly it may be attracted by the smell. It has also been brought to me by herring-fishers, flying to the lights of the boat when at sea. I have also had the larva brought to me by potato-pickers, and one of them, who brought me a pupa, told me they had sometimes found several and destroyed them. This year (1896) the imago has occurred at Hartlepool, and Mr. Howse has had both the imago and the larvæ brought to him, which latter, however, he failed to rear. These were found in potato fields at Hexham and Monkseaton.

SPHINX, Linn.

4. *Sphinx Convolvuli*, Linn. CONVULVULUS HAWK MOTH.

Sphinx Convolvuli. Staint. Man., vol. i., p. 89.

„ „ Newm. Brit. Moths, p. 6.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 22.

„ „ Meyr. Hdbk. Brit. Lep., p. 248.

LARVA. Buck., vol. ii., pl. xxi., fig. 2, and pl. xxii., fig. 1.

This noble insect was formerly a great rarity in Britain, and especially so in the North of England. In 1846 a large migratory swarm reached our shores, and a similar flight arrived in 1887. In the years 1858-9, 1868, 1875, and 1885 it occurred in considerable numbers, but not in such abundance as in the two years first named. There is no doubt that on all these occasions it passed through all its transformations here, but I am not aware that the larva was ever found within our district, in fact it has very seldom been met with in Britain, but this is because it feeds only at night and hides under the surface of the soil by day. An imago found in a garden at Hartlepool, and given to Mr. Gardner, had undoubtedly fed on the *Convolvulus sepium* which grew by the house side where it was taken, for the Moth emitted the red fluid, always ejected before flight, after it came into Mr. Gardner's possession. *Convolvuli* is an insect of such powerful flight that it may be met with anywhere, and is more frequently picked up casually, than captured by Entomologists, though when abundant it is often taken at Petunias and other attractive flowers. I give a few localities for its occurrence. "Near Darlington and Newcastle—Mr. J. O. Backhouse—a few specimens have been met with near Newcastle. G. Wailes, Esq." (Step., Illust. Haust., vol. 1, p. 121). "At rest on a keel up the Tyne." V. R. Perkins. (Ent. W. Intell., vol. x., p. 202). One at Swalwell by Mr. G. Nowell, 1871. "One at Axwell by Mr. Nowell, 1872." T. H. Hedworth. "Abundant along the coast in 1875." W. Maling. "Thirty at Darlington in 1875." J. Sang. "A fine specimen was found at rest on a scaffolding pole at South Shields," 1876. J. C. Wasserman. (N. H. Tr., vol. v., p. 285). Other records are—

"Mitford Hall, not uncommon." J. Finlay. "Stockton-on-Tees." S. Sibson. The late W. Backhouse took it at Darlington, which is one of the "Manual" localities. At Hartlepool a year seldom passes without one or more being brought to me. It occasionally rests on clothes hung up to dry and left out all night. It also flies to light. It has been taken in fishing boats at sea at night, and at brightly-lighted windows. One brought to me last year was found in a draper's shop. It had parted with all its eggs, as have most of the females I have seen. Indeed, with the exception named above, those met with here have been more or less in a wasted condition.

5. *S. Ligustri*, Linn. PRIVET HAWK-MOTH.

Sphinx Ligustri. Staint. Man., vol. i., p. 90.

" " Newm. Brit. Moths, p. 7.

" " Barr. Lep. Brit. Is., vol. ii., p. 31.

" " Meyr. Hdbk., Brit. Lep., p. 298.

LARVA. Buck., vol. ii., pl. xxii., fig. 3; O. Wils., pl. vi., fig. 3.

The only claim this species has to be included in our list is that Mr. Gardner picked up a specimen in Union Street, Hartlepool, which had so recently emerged from pupa, that its wings were unexpanded. It was impossible it could have bred there naturally, and must have come there by some accident. The species has only once occurred in Lancashire, and is very rare in Yorkshire, though eight widely-spread localities are given for it in Porritt's Yorkshire List. The food plant, *Ligustrum vulgare* (Privet), is very abundant in Hesleden Dene, three or four miles from Hartlepool. I include the species here because there is no mistake as to the occurrence in Hartlepool.

DEILEPHILA, Och.

6. *Deilephila Galii*, (W. V.). BEDSTRAW HAWK-MOTH.

Deilephila Galii. Staint. Man., vol. i., p. 94.

" " Newm. Brit. Moths, p. 8.

" " Barr. Lep. Brit. Is., vol. ii., p. 42.

" " Meyr. Hdbk. Brit. Lep., p. 297.

LARVA. Buck., vol. ii., pl. xxiv.; O. Wils., pl. viii., fig. 1.

Wailes says of this species, "rarely met with, but probably more abundant than supposed, if sought for on the sea-coast, where the food of the larva, *Galium verum*, abounds. Twizell, twice—P. J. Selby, Esq.; Embleton—Robert Embleton, Esq." Since 1857, when that was written, we have learnt much more of the life-history of this species. It was known that when the larvæ were found at large, though it was not difficult to get them to pupate, the imago rarely emerged. The late Mr. W. H. Tugwell, of Greenwich, reared a larger number of this species than perhaps any other British Entomologist. This he accomplished by "forcing" the pupæ in the autumn. He found that the imagines so produced were always smaller than captured specimens, and arrived at the conclusion, which has been generally accepted, that *D. Galii*, when found as a perfect insect is an immigrant, and when as a larva it is the progeny of an immigrant. That if fed up on our sandy shores, though it may, and probably often does pupate, it lacks strength to survive the winter, and, notwithstanding its abundance one year, it is seen no more until there is another immigration. It is a species which appears occasionally to migrate in large numbers, and it has happened, as in 1859, 1870, and 1888, that it has spread over the entire island, and been found in one stage or another in almost all parts of the kingdom. A single larva was taken at Hartlepool by Mr. Appleton in 1859. It pupated, but the imago did not emerge. Another was taken by Mr. Christopher Eales at South Shields on 24th Sept., 1861. This pupated, and the perfect insect appeared 18th July, 1862 (see Nat. Hist. Trans., vol. v., p. 285). An imago was taken at rest in a ship-yard at Hartlepool in 1870 by Mr. Ritchie and given to me. Another was found on the dock side 19th August, 1888, and given to Mr. Gardner, and a third was brought to me the next day. These three specimens were all in beautiful condition and it was difficult to believe they had travelled far. In the autumn of that year Mr. Gardner found two larvæ on the sand-hills to the north of Hartlepool, but he failed to rear the perfect insect.

7. *Deilephila Livornica* (Esp.). STRIPED HAWK-MOTH.

- Deilephila Livornica*. Staint. Man., vol. i., p. 94.
 " " Newm. Brit. Moths., p. 9.
 " " Barr. Lep. Brit. Is., vol. ii., p. 46.
 " *lineata*. Meyr. Hdbk. Brit. Lep., p. 296.

LARVA. Buck., vol. ii., pl. xxv., fig. 1; O. Wils., pl. viii., fig. 1.

This also is one of the rarer of the occasional visitors to Britain, and it has but seldom been met with in our district. A specimen was taken by the late E. Backhouse, Jun., in his garden at Sunnyside, Sunderland, many years ago (see Stephens' Illust. Haust., vol. i., p. 129). A second specimen was brought to me in 1878 by some boys who had caught it on the Town Moor, Hartlepool. It was slightly injured by their fingers, but was otherwise in fair condition. A third was obtained this year (1896) by Mr. Lumsden, also at Hartlepool. I have no other records from either county.

CHÆROCAMPA, Dup.

8. *Chærocampa Celerio* (Linn.). SILVER-STRIPED HAWK-MOTH.

- Chærocampa Celerio*. Staint. Man., vol. i., p. 96.
 " " Newm. Brit. Moths, p. 10.
 " " Barr. Lep. Brit. Is., vol. ii., p. 51.
Deilephila " Meyr. Hdbk. Brit. Lep., p. 296.

LARVA. Buck., vol. ii., pl. xxv., fig. 2.

This is another rare visitor to our shores, but rather more frequent than the last, both in these counties and the country generally. Mr. Wailes records four specimens: "One many years ago in the late Mr. Crighton's house in Northumberland Square, North Shields. One at Darlington in a room. Mr. Sang. In a room in Gallowgate, Newcastle, in 1846. Mr. John Hancock. One at rest between the folds of a dish-cloth, hung up to dry outside a house in Bishopwearmouth. E. Backhouse, Jun., Esq."

The species is marked "Da" (Darlington) in Stainton's

Manual, but probably Mr. Sang's record above refers to the same capture. A specimen occurred on a window ledge there subsequently, and is recorded in the Ent. W. Int., vol. ix., p. 10, by Mr. W. Breadnell. It has twice been taken at Hartlepool, the first being left at my house by a boy in the year 1870, during the prevalence of a strong easterly gale. The second was taken in a grocer's shop in Northgate in 1885. The larva, which feeds on the Vine or on the Virginia Creeper, has once or twice been met with in England but never in our district.

9. *C. Porcellus* (Linn.). SMALL ELEPHANT HAWK-MOTH.

<i>Chærocampa Porcellus.</i>	Staint. Man., vol. i., p. 97.
" "	Newm. Brit. Moths, p. 10.
" "	Barr. Lep. Brit. Is., vol. ii., p. 55.
" "	Meyr. Hdbk. Brit. Lep., p. 296.

LARVA. Buck., vol. ii., pl. xxv., fig. 1; O. Wils., pl. viii., fig. 3.

This beautiful Hawk-Moth occurs all along our coasts, wherever the sandy banks produce the favourite food of the larva, *Galium verum* (Yellow Bedstraw). It is true that it will feed on *G. Mollugo* (White Bedstraw) and *G. aparine* (Goose-Grass), and even on *Epilobium* and *Lythrum*, but *Galium verum* is the food preferred. It also appears to prefer a sandy habitat, perhaps because it can so easily burrow in the loose sand during the heat of the day. Mr. Wailes (Trans. T. N. F. C., vol. iii., p. 230) mentions finding the larvæ early in the morning of a wet, gloomy day, but when he came the following day to procure more, not one was to be found until he disturbed the sand at the roots of the plants. He also relates that Capt. C. Blomer, when in Egypt, used a garden rake successfully for this purpose. I have only found the larva at night by searching with a lantern.

The earliest record of the species in our district is that of the Twizell List, which states that the species is not uncommon. Mr. J. T. Bold took three specimens of the perfect insect on the sea-banks. In the same neighbourhood, Bambro', Mr. L. S.

Brady took an imago in 1889, which had just emerged from the pupa. Mr. Maling says, "larvæ sometimes plentiful at Blyth Links, Whitley, and South Shields." Mr. C. Eales took the imago at South Shields. Mr. Hedworth informed me that in 1869 about sixty larvæ were taken at Blyth Links by Mr. Raine, Mr. Johnston and himself. Mr. Wasserman recorded in his list (Nat. Hist. Trans., vol. v., p. 285) the further occurrence of this species on the sea-banks on both sides of the Tyne. At Hartlepool the imago was not uncommon thirty years ago at flowers of *Silene inflata*, close to the town, and I found the larva then on *Galium verum*. The extension of the town northward destroyed this locality, and I have not seen the insect here since 1874, but I have no doubt it could be found on the sand-banks further north.

At Seaton Carew, the southern extremity of our coast boundary, Mr. Backhouse found the species. The only inland record I have is that Mr. Henderson took one at Jesmond, which might only be a stray specimen from the coast.

10. *C. Elpenor* (Linn.) ELEPHANT HAWK-MOTH.

Charocampa Elpenor. Staint. Man., vol. i., p. 96.

" " Newm. Brit. Moths, p. 10.

" " Barr. Lep. Brit. Is., vol. ii., p. 59.

Deilephila " Meyr. Hdbk. Brit. Lep., p. 295.

LARVA. Buck., vol. ii., pl. xxv., fig. 3; O. Wils., pl. vii., fig. 2.

This species is an exceedingly rare visitor to our district, and I am not able to add anything to what is given in Wailes' Catalogue. "Hitherto rarely met with. A single specimen taken near Newcastle several years ago. Once at Twizell. P. J. Selby, Esq." Trans. T. N. F. C., vol. iii., p. 231. The distribution of this insect is rather peculiar. Common in the South of England, it occurs at many places in Cheshire, Lancashire, and Yorkshire. It is found in the West of Scotland, and also on the East Coast towards Aberdeen. Why our counties do not produce it regularly is not easy to explain. The food plants (*Epilobium*, etc.) abound, and perhaps it may occur again some day.

11. *C. Nerii* (Linn.). OLEANDER HAWK-MOTH.

- Chærocampa Nerii*. Staint. Man., vol. i., p. 95.
 " " Newm. Brit. Moths, p. 10.
 " " Barr. Lep. Brit. Is., vol. ii., p. 62.
 " " Meyr. Hdbk. Brit. Lep., p. 296.

Mr. Gardner took a specimen of this exceedingly rare visitor on the gate-post of his own timber-yard at Hartlepool on the morning of 23rd July, 1885. The larva has never been found in this country.

MACROGLOSSA, Scop. et Och.

12. *Macroglossa Stellatarum* (Linn.). HUMMING-BIRD
HAWK-MOTH.

- Macroglossa Stellatarum*. Staint. Man., vol. i., p. 98.
 " " Newm. Brit. Moths, p. 11.
 " " Barr. Lep. Brit. Is., vol. ii., p. 66.
 " " Meyr. Hdbk. Brit. Lep., p. 294.

LARVA. Buck., vol. ii., pl. xxvi., fig. 2; O. Wils., pl. viii., fig. 4.

This species flies freely to flowers in the day-time, and has occurred in most parts of the district. Mr. Wailes says, "far from rare, especially about the seaside, Tynemouth, Cullercoats, etc. Darlington, William Backhouse, Esq.; Twizell, P. J. Selby, Esq.; Ornsby's Durham List." The other records I have are—"Generally plentiful on the coast." W. Maling. "On the ballast heaps at South Shields." C. Eales. "Two full-grown larvæ at Dunston on Hedge-Bedstraw. Larvæ also at Blyth Links and at South Shields. Imago at Axwell, Dunston, and South Shields." T. H. Hedworth. Mr. Bold recorded it as "rather common" in 1868, but gave no special locality. E. M. M., ii., 172. "Axwell." G. Nowell. "Jesmond." M. Henderson. "One over flowers in garden at Barnard Castle, 1874." F. A. Lees. "Seaton Carew." John Sang. At Hartlepool it is occasionally abundant, and we sometimes find the larvæ very numerous. There is considerable diversity of opinion about the life-history of this species, but from my own experience I can

say that the imago emerges here in September, and seldom flies much before going into hybernation. It appears again in spring, sometimes as early as April, but more generally about the end of May or June, when the eggs are deposited on the food plant. The larva is full fed in August.

13. *M. Bombyliformis* (Esp.). NARROW-BORDERED BEE-HAWK-MOTH.

- Sesia Bombyliformis*. Staint. Man., vol. i., p. 99.
 „ „ Newm. Brit. Moths, p. 12.
 „ „ Barr. Lep. Brit. Is., vol. ii., p. 73.
 „ „ Meyr. Hdbk. Brit. Lep., p. 293.

LARVA. Buck., vol. ii., pl. xxvi., fig. 4.

Of this species Wailes wrote, "probably more generally diffused over the two counties than supposed, as the food of the larva, *Scabiosa succisa*, is plentiful with us. Shull, William Backhouse, Esq.; once at Twizell, P. J. Selby, Esq.; "near Flass, end of June." Ornsby's Durham."

The efforts of Entomologists, since the publication of Wailes' List in 1858, have not confirmed his view of its general diffusion, and only two additional records have come under my notice. "Near Durham." J. Wood in E. W. I., vol. i., p. 150. (This record, made in 1856, appears to have escaped Mr. Wailes' notice). "Saw two on the wing near Winlaton Mill, May 29, 1869." T. H. Hedworth.

FAMILY. SESIIDÆ.

SESIA, Fab.

14. *Sesia Tipuliformis* (Linn.). CURRANT CLEARWING.

- Trochilium Tipuliforme*. Staint. Man., vol. i., p. 105.
Sesia Tipuliformis. Newm. Brit. Moths, p. 15.
 „ „ Barr. Lep. Brit. Is., vol. ii., p. 86.
Trochilium Tipuliforme. Meyr. Hdbk. Brit. Lep., p. 565.

LARVA. Buck., vol. ii., pl. xxvii., fig. 3; O. Wils., pl. ix., fig. 4.

This species is probably distributed over both counties, and would no doubt be found, wherever there were old Currant Bushes, by any one acquainted with the habits of the insect, but it is so small and inconspicuous, and so unlike a Moth, that it has been very little noticed. Mr. Wailes gives "Newcastle, Darlington. Wm. Backhouse, Esq.; common in one garden at Darlington. J. Sang." The Newcastle record is probably from Mr. Wailes' own observations, as Mr. Backhouse's notes only have "Currant Trees, Darlington." Darlington is also given in Stainton's Manual. Further west Mr. Pickard found it in his garden at Wolsingham. It is recorded in Ornsby's Durham (which Mr. Wailes has overlooked) as occurring "in gardens on Currant Bushes." Mr. T. Maddison of that city says, "I took five or six specimens in my garden in 1888 and 1889. I cut the Currant Bushes down to make room for Clematis and have not seen it since." I feel sure it will be found elsewhere if looked for. As the larva is an internal feeder, it would not be affected by smoke, so that it might occur near towns wherever the Currant could live. Collectors about Newcastle and elsewhere should therefore look out for this species.

15. *Sesia Formicæformis*, (Esp.). RED-TIPPED CLEARWING.

Trochilium Formicæforme. Staint. Man., vol. i., p. 106.

Sesia Formicæformis. Newm. Brit. Moths, p. 14.

" " Barr. Lep. Brit. Is., vol. ii., p. 94.

Trochilium Formicæforme. Meyr. Hdbk. Brit. Lep., p. 566.

LARVA. Buck., vol. ii., pl. xxix., fig. 3; O. Wils., pl. ix., fig. 3.

There is only one record of the occurrence of this species, which I quote from Wailes' Catalogue. "Three specimens on an Umbelliferous plant near Gibside. Mr. Thomas Pigg."

The larva feeds in the wood of Osiers, and the species ought to occur with us. Probably the explanation given why the *Tipuliformis* is seldom observed applies with still greater force to this species.

SPHECIA, Hub.

16. *Sphecia Apiformis*, (Linn.). POPLAR CLEARWING.*Sphecia Apiformis*. Staint. Man., vol. i., p. 102.*Sesia* „ Newm. Brit. Moths, p. 106.*Sphæcia* „ Barr. Lep. Brit. Is., vol. ii., p. 106.*Ægeria* „ Meyr. Hdbk. Brit. Lep., p. 563.LARVA. Buck., vol. ii., pl. xxvii., fig. 1; O. Wils., pl. ix.,
fig. 7, 7a.

The only record I have found of the occurrence of this species in our district is in Wailes' Catalogue, p. 45. "Once near High Force, Teesdale." W. Backhouse, Esq."

17. *S. Bembeciformis*, Hub. WILLOW CLEARWING.*Sphecia Bembeciformis*. Staint. Man., vol. i., ip. 102.*Sesia* „ Newm. Brit. Moths, p. 16.*Sphæcia* „ Barr. Lep. Brit. Is., vol. ii., p. 103.*Ægeria crabroniformis*. Meyr. Hdbk. Brit. Lep., p. 563.LARVA. Buck., vol. ii., pl. xxvii., fig. 2; O. Wils., pl. ix.,
fig. 6.

Wailes says of this species, "common throughout the district, and especially so around Newcastle. There is scarcely a Willow (*Salix Capræa*) of ten years' growth in the fences of our suburban gardens that is not perforated by the larvæ, and ultimately so weakened that the first gale of wind blows it down. In July, the remains of the pupa cases may be observed protruded through the bark in great numbers, though the insects are seldom seen. This species abounded in some Willows in a garden at the West-gate some twenty-five years ago, and I was accustomed to surround their trunks with gauze at the proper season, and so secured the Moths. Twizell. P. J. Selby. 'In Rennie's Lane.' Ornsby's Durham."

Mr. Wailes appears to have had the idea, which is very generally held, that the larva of one of these feeds only on Poplar, and the other only on Willow or Osier. (See Stainton's Manual, vol. i., p. 102, Newman's Brit. Moths, p. 16, Meyrick, Hdbk. Brit. Lep., p. 563, etc.). This is certainly not so. Mr. Barrett

says the larva of *Bembeciformis* feeds more commonly in the wood of Sallows in the South of England, but in the North and West, Poplar seems to be preferred. (Lep. Brit. Is., vol. ii., p. 104, 5). About Hartlepool it feeds plentifully in the wood of Poplars. I have bred it both from Balsam Poplar (*Populus balsamifera*) and Black Poplar (*Populus nigra*), and have never found it in Sallows or Willows, but Mr. Gardner tells me he has done so, and has found it even in the small dwarf Willows. I have taken the imago at Wideopen near Newcastle, on Willow trunks, as it emerged from the pupa, and about Newcastle it seems to prefer that tree, though it is not confined to it, as Mr. Howse took it formerly on a Poplar in his garden, and Mr. Henderson found it in Jesmond Cemetery on both Poplar and Willow. Though the species is no doubt generally common, its habits prevent it being much observed, and a non-Entomologist would probably think it a wasp. The only record I have that is not named above is that Mr. Hedworth took a female at Axwell on 25th July, 1877.

FAMILY. ZYGÆNIDÆ, Bois.

PROCRIS, Fab.

18. *Procris Statices*, (Linn.). THE FORESTER.

Procris Statices. Staint. Man., vol. i., p. 78.

„ „ Newm. Brit. Moths, p. 22.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 112.

„ „ Meyr. Hdbk. Brit. Lep., p. 449.

LARVA. Buck., vol. ii., pl. xviii., fig. 1.

Wailes says, "very abundant in June, on the lawn near the chapel at Gibside, where the specimens are all of the blue-green variety; and also on the sea-banks at Castle Eden, where nearly everyone is of the bright copper variety. 'In a field near Flass. On the sea-banks near Castle Eden Dene, middle of June.' Ornsby's Durham."

At the time this was written the next species had not been separated from *Statices*. There can be little question but the Gibside specimens were *Statices*, as well as those taken at Flass. Those near Castle Eden Dene were certainly *Geryon*. I have

not been able to ascertain if *Statice*s still occurs at either of these places. Mr. Fawcett of Satley sent me a list of his captures, in which he wrote under this species, "in a field near Flass; on the sea-banks near Castle Eden, middle of June." This, it will be noticed, is an exact transcript of the words used in Ornsby's Durham, written when *Geryon* was not recognised as British, though it had been separated quarter of a century when Mr. Fawcett wrote. The only additional notice I have met with is that Mr. Sang records having taken *Statice*s "near Darlington on 22nd June, 1854." I do not know the exact locality, but *Statice*s is likely to occur in permanent meadows and pastures, or on railway embankments where the common Sorrel grows freely. It should be looked for on sunny mornings about the end of June.

19. *Procris Geryon*, Hb. CISTUS FORESTER.

Procris Geryon.* Newm. Brit. Moths, p. 472.

" " Barr. Lep. Brit. Is., vol. ii., p. 115.

" " Meyr. Hdbk. Brit. Lep., p. 449.

LARVA. Buck., vol. ii., pl. xviii., fig. 3.

This pretty little species is very abundant at several places at Black-Hall Rocks, frequenting the upper part of dry banks having a southern or south-eastern aspect. It is very peculiar in its choice of habitat, being plentiful on one bank, and entirely absent from another, perhaps only a few yards away, that appears to be of precisely similar character, and on which the food plant, *Helianthemum vulgare* (Rock Rose), is equally abundant. It occurs on the banks at the mouth of Castle Eden Dene, and is abundant in the next ravine northward. Beyond this I have not met with the species, though I think it probably occurs. It is so exceedingly local that it may easily be missed. Above the volunteers' target at Black-Halls, it swarms on the upper part of the bank, from the sea edge for about two-thirds of the south face, then it ceases altogether. Here it may be taken flying in the morning sun, or later in the day, singly or in pairs, sitting on the grass and flowers. Though this locality is so

* This species was not separated from *Statice*s when Stainton's Manual was published in 1857.

limited in extent, is much trodden over, and the herbage is eaten down by sheep, *Geryon* shows no diminution in number, and it would be quite easy to take a hundred or two on a suitable day.

ZYGÆNA, Fab.

20. *Zygæna Loniceræ*, (Esp.). NARROW-BORDERED FIVE-SPOTTED BURNET.

<i>Anthrocera Loniceræ</i> .	Staint. Man., vol. i., p. 81.
<i>Zygæna</i> ,,	Newm. Brit. Moths, p. 24.
,,	Barr. Lep. Brit. Is., vol. ii., p. 130.
,,	Meyr. Hdbk. Brit. Lep., p. 448.

LARVA. Buck., vol. ii., pl. xix., fig. 3; O. Wils., pl. x., fig. 5.

Mr. Wailes wrote as follows, under the head of *Trifolii*:—"Sea-banks near the Spanish battery, Tynemouth, in June; Shull, abundant, W. Backhouse, Esq.; Gibside, Mr. J. Hancock." I presume the first record is on the authority of Mr. Wailes, but I have been unable to trace a specimen which has been taken at Tynemouth, and certainly the species does not occur there now. When Mr. Wailes' insects were sold in London (14th May, 1884), no Burnets were mentioned in the catalogue, nor have I been able to learn that there were any in the collection.

In the papers of the late Mr. Backhouse *Trifolii* is not marked as being taken at Shull, but "*Loti*," the name then used for *Loniceræ*. With respect to the specimens said to be found at Gibside, I called some years ago on the late Mr. John Hancock, and examined those in his collection which he had taken there. They were of the form now known as *Loniceræ*. Besides this, *Loniceræ* occurs in Yorkshire "in profusion on the east coast, but local inland." (Porritt's List of Yorkshire Lepidoptera, p. 23). For *Trifolii* Mr. Porritt gives but three localities, and says he thinks it "is often confounded with *Z. Loniceræ*." From York, one of his localities for *Trifolii*, I have had specimens sent me. They were all *Loniceræ*. In the face of this evidence I have ventured to alter the name from that used by Mr. Wailes. I have very little doubt but these two, so called species, are only

local forms or races of one. Mr. W. H. B. Fletcher has paired them, and not only has he reared the hybrids, but has proved them to be fertile with other hybrids or with either form.

A few years ago I put down nearly a thousand pupæ of *Lonicera*, at what I thought a suitable place near Black Hall Rocks. For two or three years afterwards specimens were taken where I had placed the pupæ, but I have heard of none recently. The place seemed to me somewhat similar to its habitat near Scarbro'. I mention it here so that, should the species establish itself there, it may be known that it had been introduced.

21. *Z. Filipendulæ*, (Linn.). SIX-SPOTTED BURNET.

<i>Anthrocera Filipendulæ</i> .	Staint. Man., vol. i., p. 81.
<i>Zygæna</i> „	Newm. Brit. Moths, p. 24.
„ „	Barr. Lep. Brit. Is., vol. ii., p. 133.
„ „	Meyr. Hdbk. Brit. Lep., p. 447.

LARVA. Buck., vol. 2, pl. xix., fig. 4; O. Wils., pl. x., fig. 6.

Mr. Wailes says, "apparently more generally diffused than the last species, appearing two or three weeks later. Gibside; on the sea-banks at Tynemouth, Marsden, Whitley, Seaton Sluice, and Castle Eden, Shull, Seaton Carew, etc. Wm. Backhouse, Jun., Esq., who has shown me a beautiful variety captured rarely there, in which the red of the spots on the upper wings, and the entire under wings, except the usual margin, is replaced by a bright orange-yellow. 'Twizell.' P. J. Selby, Esq. *Ornsby's Durham*. 'Not unfrequent on plants in hedges in the months of June and July. Very common on the bents at Seaton Snook.' J. Hogg, Esq."

This species appears to be as abundant and widely distributed as when Mr. Wailes wrote. Of recent records I have Newbiggin. W. Maling: "Chopwell, Shields, and Blyth Links." T. H. Hedworth: Marsden Rocks. C. Eales: Sea-banks, Whitburn, etc. L. S. Brady. Shotley. W. Patterson. It is abundant on the sea-banks and railway embankments about Hartlepool, and I have found the larvæ on hedge sides near Stockton-on-Tees.

The larva of this species has a peculiar habit of hibernating in any stage of growth, or of ceasing to feed for a while and then going on again. After emerging from the egg it hibernates, and in spring begins again to feed. Then it is quite uncertain what will follow. In some years very few attain maturity, and the next year they may appear in extraordinary numbers. I speak of my own neighbourhood only, and was long puzzled with the abundance of the yellow cocoons, after a season when the insect had scarcely put in an appearance at all.

The yellow form (*Ceronus*, Robson), which Mr. Wailes mentions, has several times occurred at Hartlepool. We have also reared specimens in which the brilliant scarlet of the spots and of the hind-wing is changed to a dull reddish-pink. The variety in which one of the spots is divided into two, by the nervure which passes through it being coloured dark instead of scarlet, is of ordinary occurrence. Specimens with any of the spots confluent are very rare, but a curious and interesting form sometimes occurs in which the upper spot of the central pair is reduced to a mere dot.

This species concludes the group of Sphingidæ, and with it I arrive at the termination of the list published by Mr. Wailes in 1857. I very much regret that, after every possible enquiry, I have failed in obtaining any trace of papers left by that gentleman. The fact that after forty years I have only been able to add a single species (*C. Nerii*) to his list, and that only an accidental visitor, is sufficient evidence of the value of his labours, and makes it the more to be regretted that the information he must have collected concerning other groups is lost to us. *Procris Geryon* of course is added, but the insect and its localities were known to him, but it had not then been separated from *Statice*. There is really no other species in this group likely to occur unless *Sesia philanthiformis*, which feeds in the root stock of *Statice armeria* (Thrift), should possibly turn up on the rocks of the East coast, except of course a casual visitor.

GROUP. BOMBYCINA.

FAMILY. ZEUZERIDÆ, Bdv.

COSSUS, Fab.

1. *Cossus ligniperda*, Fab. GOAT MOTH.*Cossus ligniperda*. Staint. Man., vol. i., p. 114.

" " Newm. Brit. Moths, p. 18.

" " Barr. Lep. Brit. Is., vol. ii., p. 146.

Trypanus Cossus. Meyr. Hdbk. Brit. Lep., p. 560.

LARVA. Buck., vol. ii., pl. xxxi., fig. 3; O. Wils., pl. ix., fig. 9.

The earliest record of this insect in our district appears to be that in "Ornsby's Durham," which gives Elvet Bank, Durham, and Brancepeth Park, as localities where it occurs. The Durham collectors do not appear to have met with it recently, though Mr. Fawcett of Satley, who published a list of Durham Lepidoptera, gave these localities as though its occurrence there was within his own knowledge, but he admitted to me that he merely copied it. Still, there is no reason to believe that the insect has disappeared.

The next record is that of the late William Backhouse, who found the larvæ in Pear trees at Darlington. In 1861 a living specimen of the perfect insect was brought to me at Hartlepool, but it could not have bred there as we have no trees within a reasonable distance. In 1874 my brother found a larva on the flags in Skinner Street, Stockton-on-Tees, which he afterwards found had wandered from an old garden which bordered one side of the street. This garden contained several old elms (now cut down), which were bored through and through with the larvæ of *Ligniperda*. A few years later a larva was brought from Elwick, near Hartlepool, and given to the late Thomas Belk, then Town Clerk here. Mr. Belk put it on his desk, placed a tumbler over it, and left it. It was forgotten for a few days. When he looked for it there was a circular hole in the wood of the desk, but the larva was gone. Mr. Barrett (Lep. Brit. Is., vol. ii., p. 148) gives an account of a somewhat similar occurrence where a larva gnawed through the bottom of a cigar case

in which it was confined, then through the lid of a piano on which the box had been placed. I have little doubt that the species is widely distributed in the district, though I have no further records, except that Mr. Sang found a larva at Great-ham. As the larva feeds internally it is rarely seen, and the imago is very retiring. It has, however, one peculiar habit, no satisfactory explanation of which has yet been suggested. Though the insect is tongueless it comes to sugar, and may be occasionally taken flying about sugared trees, or sitting on the patch of sweets. Those who sugar where there are plenty of old trees should be on the look out for the Goat Moth in June and July.

HEPIALUS, Fab.

2. *Hepialus Hectus*, Och. GOLDEN SWIFT.

Hepialus Hectus. Staint. Man., vol. i., p. 110.

" " Newm. Brit. Moths, p. 19.

" " Barr. Lep. Brit. Is., vol. ii., p. 152.

" " Meyr. Hdbk. Brit. Lep., p. 799.

LARVA. Buck., vol. ii., pl. xxx., fig. 1.

This pretty little Moth is probably common in most of the wooded parts of our district. It is often very local and its flight is of short duration, while the larvæ, feeding under-ground, help to conceal it from general observation. It is in the Twizell list, and has been found in South Northumberland, at Jesmond by Mr. Henderson, and Kenton by Miss Rossie. In Durham Mr. Maling took it in Chopwell Wood, and Mr. Hedworth found it at Thornley, on the Derwent, flying at sunset among ferns. The late W. Backhouse found it at Hoffall Wood. Mr. Ross recorded it as very local around Bishop Auckland. Dr. F. A. Lees reported it as being very abundant in Upper Teesdale. About Hartlepool we find it common in all the woods and denes. The male flies about sunset for a short time, generally selecting some sheltered nook among the undergrowth. It flies gently backwards and forwards, diffusing a faint odour resembling over-ripe pine apples, by which it attracts the opposite sex. In the

places they frequent, it is curious to observe how they are all affected by the same conditions. On a suitable evening you may see a male take up its position under a bracken, and swing backward and forward for six or eight inches, as if it were suspended by a thread. You look around; there is another, and another, and another,—under every fern frond, or beside every low bush, there is *Hectus*. A female flies up with a hesitating, uncertain flight, attracted by the perfume the male is diffusing. As soon as they perceive each other they retire to the herbage. The same procedure has gone on all round, and in comparatively a few minutes they have all disappeared. You come to the same place next evening at the same hour. To your perception the conditions are the same as before, but the Golden Swift knows better, and not one is to be seen. Perhaps the third night you will watch the males with their pendulous motion, for a quarter of an hour or more, but no female disturbs them and they retire alone. Sometimes, but not often, the male may be found at rest on tree trunks. I have never found the female there.

A variety with golden marks on the hind wings is occasionally met with in the North of Scotland. I have taken one or two in Hesleden Dene in which there were traces of these markings.

3. *Hepialus Lupulinus*, (Linn.). COMMON SWIFT.

Hepialus Lupulinus. Staint. Man., vol. i., p. 111.

„ „ Newm. Brit. Moths, p. 19.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 155.

„ „ Meyr. Hdbk., Brit. Lep., p. 800.

LARVA Buck., vol. ii., pl. xxx., fig. 2.

Mr. Barrett says, this species is “plentiful in suitable places as far north as Yorkshire and Lancashire, but less common further north.” It is certainly abundant enough in Durham, and I expect when Northumberland has been more fully collected over, that it will be found equally common there.

Its habits are the very opposite of those of the last species. The female *Lupulinus* climbs up a grass stem and commences to vibrate her wings rapidly, to diffuse the odour which serves to

attract the opposite sex. The male flies a little before sunset in a wild, erratic manner about the tops of low herbage until he comes within the range of attraction, then he flies more slowly and carefully until he finds his mate. This flight seldom lasts more than a quarter of an hour.

The shortness of time the insect is on the wing, and the subterranean life of the larvæ, causes the species to be less noticed than might be expected from its abundance. For Northumberland I have but few notes. It is in the Twizell list; Mr. Henderson found it freely about Jesmond, and Mr. Wasserman (Nat. Hist. Trans., vol. v., p. 286), records it from both sides of the river Tyne. In Durham, notes of its occurrence are more numerous and it is more generally spread over the county. In the west Dr. F. A. Lees found it common in Upper Teesdale, Mr. Pickard at Wolsingham, and Mr. Hedworth from the Derwent district say it is always plentiful. Mr. Ross found it common at Bishop Auckland, Mr. Backhouse took it freely in Hoffall Woods, Mr. Sibson about Stockton, and Mr. Maddison at Durham. On the coast we find it swarming around Hartlepool, and Mr. Brady says it occurs in "myriads" at Sunderland. It is also recorded in Ornsby's Durham.

4. *Hepialus Sylvinus*, (Linn). THE BEAUTIFUL SWIFT.

Hepialus Sylvinus. Staint. Man., vol. i., p. 111.

" " Newm. Brit. Moths, p. 19.

" " Barr. Lep. Brit Is., vol. ii., p. 158.

" " Meyr. Hdbk. Brit. Lep., p. 800.

LARVA. Buck, vol. ii., pl. xxx., fig. 5; O. Wils., pl. ix., fig. 10.

This species is also well distributed in our district. I have records as follows: Twizell; Chollerford, W. Patterson; "Plentiful at Newbiggin-by-the-Sea and at Whitley, W. Maling; Jesmond, W. Henderson; on both sides of the Tyne, Wasserman (Nat. Hist. Trans., vol. v., p. 286); Thornley-on-Derwent among ferns, T. H. Hedworth; South Shields, on the sandbanks, C. Eales and T. H. Hedworth; Ryhope, L. S. Brady; Darlington and Shull, W. Backhouse; Bishop Auckland, Geo. Ross; Upper Teesdale, F. A. Lees; Darlington, J. Sang; Stock-

ton-on-Tees, W. Sibson. Newman calls this the "Wood Swift," but I never found it in any of the woods about Hartlepool. It is very common on the Greatham Salt Marshes and south of the village, and may be taken in any number by looking on the grass after dusk with a lantern. It is equally common on the dry sand-banks to the north of Hartlepool and on the Railway embankments. The males fly at dusk in search of their mates, who sit on a grass stem vibrating their wings to diffuse the attractive odour which emanates from glands in their hind legs, much as in the last species.

5. *H. Velleda*, Esp. THE NORTHERN SWIFT.

Hepialus Velleda. Staint. Man., vol. i., p. 111.

" " Newm. Brit. Moths, p. 20.

" " Barr. Lep. Brit. Is., vol. ii., p. 161.

" " Meyr. Hdbk. Brit. Lep., p. 800.

LARVA. Buck., vol. ii., pl. xxx., fig. 4.

Another abundant species, occurring in woods as well as on open ground. The habits of the insect are as in the last two. I have never observed the mode of attraction, nor am I aware it has been noticed, but the flight of the males so closely resembles that of *Lupulinus* and *Sylvinus*, that there is no doubt on the point. The males fly exceedingly quickly and in such an erratic manner that they are very difficult to capture on the wing. I have seen both sexes, though very rarely, at rest on tree trunks, but never so low down as obtains with *Hectus*. This I cannot explain, as the insect flies low when on the wing. The records for the two counties are as follows: type and var. *Carnus*, Twizell List. Alnmouth, W. Maling and M. Henderson; Thornley and Gibside, "abundant among ferns and very variable," T. H. Hedworth; Ornsby's Durham; Hoffall Woods and var. *Carnus*, W. Backhouse; Satley, J. W. Fawcett; Upper Teesdale, F. A. Lees; "not so common about Bishop Auckland as others of the genus," Geo. Ross; "Da" (Darlington), Stainton's Manual. It is common in and near Hesleden Dene, Hartlepool, also the unicolor variety *Carnus*, which probably occurs wherever the species is found in our counties.

6. *Hepialus Humuli*, (Linn.). THE GHOST SWIFT.*Hepialus Humuli*. Staint. Man., vol. i., p. 111.

" " Newm. Brit. Moths, p. 20.

" " Barr. Lep. Brit. Is., vol. ii., p. 165.

" " Meyr. Hdbk. Brit. Lep., p. 801.

LARVA. Buck., vol. ii., pl. xxx., fig. 3; O. Wils., pl. ii.,
figure not numbered.

This is the commonest and most widely distributed of all the Swifts. The larva feeds underground on the roots of many common plants, and can thus find food almost everywhere.

The imago may be seen in early twilight in midsummer, swinging like a pendulum, not as *Hectus*, which selects a secluded nook, but openly, in the most conspicuous position it can find. Like *Hectus*, a faint odour is emitted as it flies, and the female, attracted to the place by the perfume, flies to the male by sight, the silvery colour of that sex being very conspicuous in the fading light. As the species really occurs everywhere, except perhaps in the wetter moorlands, I do not give localities.

FAMILY. CHLOEPHORIDÆ, Steph.

HALIAS, Duponch.

7. *Halias Prasinana*, (L.). GREEN SILVERLINES.*Chloephora Prasinana*. Staint Man., vol. ii., p. 187.*Halias* " Barr. Lep. Brit. Is., vol. ii., p. 175.

" " Meyr. Hdbk. Brit. Lep., p. 36.

This pretty species is not very common, though widely distributed in our district. It is generally found in open woods, but is said to occur in hedgerow trees in well-wooded districts. The male 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, like the seeds of certain trees. If caught as it falls, it feigns death. It is recorded in the Twizell list; Mr. Maling found it elsewhere in Northumberland, but I have not the exact locality;

Mr. Finlay took it at "Coal-Law Wood, never common"; Mr. Henderson found it at Jesmond; Mr. Wailes took the species at Gibside (Step. Brit. Ent., vol. iv., p. 67); Mr. Henderson found it at Thornley-on-Derwent in the same district, where he also obtained the larva. We take it sparingly in most of the woods and denes around Hartlepool, but I have met with it most frequently at Edder Acres near Thornley Colliery and the upper portion of Castle Eden Dene, which adjoins this wood.

FAMILY. NOLIDÆ.

NOLA, Léach.

8. *Nola cuculatella*, (Linn). SHORT-CLOAKED MOTH.

Nola cuculatella. Staint. Man., vol. ii., p. 156.

" " Newm. Brit. Moths, p. 25.

" " Barr. Lep. Brit. Is., vol. ii., p. 183.

" " Meyr. Hdbk., Brit. Lep., p. 33.

LARVA. Buck., vol. iii., pl. xliii., fig. 3.

Mr. Sang once said this species was common in every old hedge in the county of Durham, but the accounts of its occurrence that have reached me are very few. Mr. Sang himself only records it from one lane near Darlington. Mr. Gardner found it on a hedge by the Railway side near Greatham, and Mr. Finlay reports it from Meldon Park, Northumberland, but adds that it is "never plentiful." It is a small, inconspicuous species, flying in July, when insects abound, and may very easily be overlooked, especially by those who do not collect micros.

9. *Nola confusalis*, Hub. LEAST BLACK ARCHES.

Nola cristulalis. Staint. Man., vol. ii., p. 157.

" " Newm. Brit. Moths, p. 25.

" *confusalis*. Barr. Lep. Brit. Is., vol. ii., p. 187.

Roeselia " Meyr. Hdbk. Brit. Lep., p. 52.

LARVA. Buck., vol. iii., pl. xliii., fig. 7.

Though this species is generally distributed in England, I have no records of its occurrence in Northumberland, and only for the southern portion of Durham.

Dr. Lees reported it as common on tree boles in Upper Teesdale. Mr. Sang found it in Park Lane and elsewhere near Darlington. It is not uncommon in Castle Eden and Hesleden Denes, and I have found it in the Cemetery at West Hartlepool, and occasionally on palings on the Railway side at Hartlepool. Mr. Gardner has met with it at Greatham.

It ought to occur in all open woods of any extent. The imago sits on the tree trunks, generally six or eight feet from the ground, always with its head downwards.

FAMILY. LITHOSIDÆ, Steph.

NUDARIA, Haw.

10. *Nudaria Mundana*, (Linn). THE MUSLIN.

Nudaria Mundana. Staint. Man., vol. i., p. 141.

„ „ Newm. Brit. Moths, p. 27.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 198.

„ „ Meyr. Hdbk. Brit. Lep., p. 31.

LARVA. Buck., vol. iii., pl. xliii., fig. 1; O. Wils., pl. x.,
fig. 10, 10a.

This inconspicuous little Moth is common in many parts of our district, probably in all, though I have no records for Northumberland except in the Newcastle district. I have myself taken it on tree boles in a wood near Wideopen. Mr. Maling records it from "Newbiggin and Inggall on lichen-covered walls." Mr. Patterson found it about Jesmond. Mr. Wasserman (Nat. Hist. Trans., vol. v., p. 286), said "it is found in the larva state feeding on the lichens growing on walls near Marsden." Mr. Eales and Mr. Hedworth both report it from the same locality, and the latter found the larvæ abundantly. Mr. Backhouse took it at Darlington; Mr. Picard at Wolsingham. I met with it at Tow Law (not a very promising locality), whilst in Upper Teesdale it is excessively abundant. Dr. Lees writes, "a perfect pest for a month, to be seen everywhere, on wall sides, on tree boles, and in spiders' webs in windows of houses. I never found the larvæ." Mr. Gardner did so, however, "under the top stones of lichen-covered walls. Imagines on walls later."

This abundance is more noticeable as Mr. Barrett omits our counties in his remarks on its distribution. Though it appears to be so plentiful about Marsden, we have never found it in the Hartlepool district.

LITHOSIA, Fab.

11. *Lithosia helveola*, Ochs. THE BUFF FOOTMAN.

- Lithosia helveola*. Staint. Man., vol. i., p. 138.
 „ „ Newm. Brit. Moths, p. 28.
 „ *helveola*. Barr. Lep. Brit. Is., vol. ii., p. 215.
 „ *deplana*. Meyr. Hdbk. Brit. Lep., p. 27.

LARVA. Buck., vol. iii., pl. xl., fig. 3; O Wils., pl. x., fig. 13.

The late John Sang recorded that he took this insect at lamps in Darlington in August, 1860. I would have hesitated to include the species in my Catalogue on any less reliable authority than Mr. Sang, for it is almost exclusively a southern insect. Mr. Barrett, however, says, "formerly it certainly occurred at York, and Mr. R. N. Young has a specimen taken by himself at Rotherham." This, and its known partiality for light, makes the record more acceptable, but it must only be taken as an accidental occurrence. Mr. Porritt says the York "specimens are much larger than south of England examples, and the female is bright yellow: it is a well-marked variety, possibly a distinct species." (List of Yorkshire Lep., p. 24).

12. *Lithosia complana*, (Linn.). THE SCARCE FOOTMAN.

- Lithosia complana*. Staint. Man., vol. i., p. 138.
 „ „ Newm. Brit. Moths, p. 28.
 „ „ Barr. Lep. Brit. Is., vol. ii., p. 221.
 „ „ Meyr. Hdbk. Brit. Lep., p. 27.

LARVA. Buck., vol. iii., pl. xli, fig. 2; O. Wils., pl. x., fig. 15.

This rather scarce species is recorded on the authority of the late W. Backhouse, who met with it both at Darlington and Seaton Carew. It is also in a MS. list of species in the handwriting of the late John Sang, but I have found no corresponding

entry in his diary. Meyrick gives it as occurring as far north as Lancashire, but no collector appears to have met with it recently in our district.

13. *Lithosia companula*, Bdv. THE COMMON FOOTMAN.

Lithosia companula. Staint. Man., vol. i., p. 138.

„ „ Newm. Brit. Moths, p. 28.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 224.

„ *lurideola*. Meyr. Hdbk. Brit. Lep., p. 27.

LARVA. Buck., vol. iii., pl. xli., fig. 3; O. Wils., pl. x., fig. 14.

This, the commonest and most widely-distributed of the genus, has been very seldom met with in these counties. Dr. Lees took a single specimen on the Railway embankment at Hartlepool in 1873. I got a second in 1876, and Mr. Gardner has taken one or more at Ragwort flowers about the same date. It has not since been met with here, and the only additional record I have is that Mr. Henderson obtained it at Jesmond, but I am not aware whether he got more than one specimen. It is certain to occur elsewhere, but is very retiring in its habits and very unlike a Moth when at rest.

14. *Lithosia griseola*, Hub. THE DINGY FOOTMAN.

Lithosia griseola. Staint. Man., vol. i., p. 132.

„ „ Newm. Brit. Moths, p. 29.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 226.

„ „ Meyr. Hdbk. Brit. Lep., p. 28.

LARVA. Buck., vol. iii., pl. xli., fig. 5; O. Wils., pl. x., fig. 16.

This species appears in the Twizell list as having occurred there. I was inclined to doubt the correctness of the record, especially as there was no specimen in the collection when it was examined for me. I now find it "has occurred not uncommonly near Scarborough" (Barr. Lep. Brit. Is., vol. ii., p. 229). This being a somewhat similar locality renders the Twizell record more probable, and I have therefore included the species here, though no recent specimen appears to be known. Collectors on the coast should be on the look out for these peculiar looking insects.

CENISTIS, Hub.

15. *Cenistis quadra*, (Linn.). FOUR-SPOTTED FOOTMAN.

- Cenistis quadra*. Staint. Man., vol. i., p. 139.
Lithosia „ Newm. Brit. Moths, p. 29.
Cenistis „ Barr. Lep. Brit. Is., vol. ii., p. 232.
 „ „ Meyr. Hdbk. Brit. Lep., p. 25.

LARVA. Buck., vol. iii., pl. xlii., fig. 1; O. Wils., pl. x., fig. 17.

This large Footman is but a rare visitor to our district. The earliest notice I have of its occurrence is that Mr. G. Nowell took a male "near Swalwell Station in 1872, now in the possession of Mr. Johnston of Gateshead." T. H. Hedworth. In June, 1874, Mr. Maling took a second in Sandymoor Lane, Newcastle. The following year (1875) Mr. Eales took one on the Shields Ballast Hills (Entom. viii., 196), and Mr. Wasserman another at Summerhill (Nat. Hist. Trans., v., 286). The same year I was fortunate enough to take five males and a female on posts and rails near Hartlepool, Mr. Taylor took another, and Mr. Gardner got one at sugar. There must have been a partial migration into this part of the country about that period; Mr. George Brook of Huddersfield took one at Redcar at the same time, Redcar being on the Yorkshire side of Hartlepool Bay. About this time also a specimen was picked up in Sunderland streets, but my informant, Mr. J. W. Corder, is not certain of the date. Since then I have not heard of its occurrence.

EUCHELIA, Boisd.

16. *Euchelia Jacobææ*, (Linn.). THE CINNABAR.

- Callimorpha Jacobææ*. Staint. Man., vol. i., p. 148.
Euchelia „ Newm. Brit. Moths, p. 31.
 „ „ Barr. Lep. Brit. Is., vol. ii., p. 247.
Tyria „ Meyr. Hdbk. Brit. Lep., p. 37.

LARVA. Buck., vol. iii., pl. xlvi., fig. 1; O. Wils., pl. xi., fig. 4.

This lovely insect was formerly common all along the coast of both counties. It is recorded in the Twizell list. Mr. Maling

found it swarming at Newbiggin in 1875, where he took a grand variety. This, one of the gems of his collection when I saw it, is nearly all black, and is the only departure from the type in this very constant species which I have seen. Mr. Finlay and others have also met with the insect at Newbiggin. Mr. Hedworth says, "from Marsden to Bambro', most numerous at Newbiggin; larvæ swarming on Ragwort in June." Mr. Patterson records it from Alnmouth, Mr. Rhagg from Warkworth, and Mr. Corder from Bambro'. In all these places, except Marsden, it is still to be found, but in the county of Durham it appears to be almost entirely a thing of the past. It is given in the list in Ornsby's Durham, and Mr. Backhouse found it abundantly in his day at Seaton Carew. On the sand banks and ballast hills beyond Hartlepool, it was very abundant when I commenced to collect, but, except one specimen I took in 1892, I have not seen or heard of it here for more than twenty years. This insect happened to be the first I ever captured, and its extreme beauty had much to do with confirming my taste for the *Lepidoptera*.

EUTHEMONIA, Steph.

17. *Euthemonia russula*, (Linn.). CLOUDED BUFF.

- Euthemonia russula*. Staint. Man., vol. i., p. 144.
 , " Newm. Brit. Moths, p. 32.
 , " Barr. Lep. Brit. Is., vol. ii., p. 257.
Diacrisia , " Meyr. Hdbk. Brit. Lep., p. 41.

LARVA. Buck., vol. iii., pl. xlv., fig. 2; O. Wils., pl. xi., fig. 7.

This heath-loving insect is found on several of our moors, but is not very common. It is recorded in the Twizell list. Mr. Finlay found it on Needless Hall Moor, but never very plentiful. Mr. Backhouse took it at Shull, and Mr. Pickard at Wolsingham. This is a somewhat meagre list of localities, but it is certain to occur on most of the heaths and moors in both counties, being taken in all the surrounding counties and also in many suitable places in Scotland.

NEMEOPHILA, Steph.

18. *Nemeophila Plantaginis*, (Linn.). WOOD TIGER.
Nemeophila Plantaginis. Staint. Man., vol. i., p. 146.
Chelonia „ Newm. Brit. Moths, p. 32.
Nemeophila „ Barr. Lep. Brit. Is., vol. ii., p. 260.
Arctia „ Meyr. Hdbk. Brit. Lep., p. 41.
 LARVA. Buck., vol. iii., pl. xlv., fig. 5; O. Wils., pl. xi., fig. 8.

This beautiful insect is widely distributed over both counties, occurring, apparently, wherever there is a suitable locality, and, as it is equally fond of heathery moors, or dry banks overgrown with mixed herbage, it is seldom very far to seek. The males fly freely in the sun, especially in the afternoon, and both sexes sit quite exposed on the low herbage, the vivid contrast of colour making them very conspicuous. The larvæ, which hybernate very small, appear to be almost omnivorous, and are equally conspicuous with the imagines, the red hairs on the anal portion being very noticeable. They feed in the bright morning sun, retiring soon after mid-day. They run with great swiftness, and require to be closely confined or they will escape from the breeding cage.

In Northumberland, the earliest record is that of the Twizell list, and it no doubt occurs there yet, for Mr. Brady and Mr. Corder found it recently at Bamborough, and Messrs. Patterson and Rhagg at Warkworth, where Mr. Maling found the larvæ, and also on the moors at Redesdale. Mr. Finlay found it at Needless Hall Moor in fair numbers.

In Durham it is recorded from "fields near Flass, Castle Eden and banks," in Ornsby's Durham. Mr. Backhouse's papers have "heaths and Shull. Mr. Pickard met with it freely on the moors at Wolsingham, where he also got the variety *Hospita*, in which the creamy yellow is replaced by white. Dr. Lees found it "not uncommon on Widdy Bank and by Wynch Bridge." Mr. Gardner has also taken it in Upper Teesdale, and Mr. Greenwell met with it at Hamsterley. At Hartlepool it was formerly common on waste ground close to the town, now built over, and on the banks at Black Hall Rocks. It is still abundant on

the railway banks between Hart and Hesleden, especially in "Crimdon Cut," where the species often swarms. In 1896 I took two specimens there, in which the paler markings much predominate.

ARCTIA, Schrk.

19. *Arctia caja*, (Linn.). COMMON TIGER.

Arctia caja. Staint. Man., vol. i., p. 145.

Chelonia ,, Newm. Brit. Moths, p. 33.

Arctia ,, Barr. Lep. Brit. Is., vol. ii., p. 265.

,, ,, Meyr. Hdbk. Brit. Lep., p. 42.

LARVA. Buck., vol. iii., pl. xlv., fig. 3; O. Wils., pl. xi., fig. 9.

This large and variable species is abundant in all parts of both counties, except the higher moorlands, but even there it is found in the more cultivated portions. Its favourite haunts are hedge sides, gardens, railway embankments, etc., where the larvæ may be found on sunny mornings feeding on Dock, Nettle, Thistle, and a great variety of low plants. Little indeed comes amiss to it, and I once found a batch of newly-hatched larvæ on a Balsam Poplar. The perfect insect is very retiring, and rarely seen on the wing, for it does not fly till midnight or later, but the larvæ may be collected in abundance wherever there is a suitable place. To test its numbers I once picked up every larva I could find on a hedge bank about 250 yards long, by the side of a public road close to where I then resided, on the outskirts of West Hartlepool. I gathered a thousand and then abandoned it. Yet I never saw the imago there except when I used a powerful light very late at night.

Caja is named in every list in my possession, therefore I do not give localities, but I think it is most abundant near the coast.

It is one of the most variable of British species, no two specimens being exactly alike, but this extreme variability appears to have prevented even the establishment of local races or forms. A specimen was bred at Hartlepool by Mr. T. Tweddell, in which all the wings were black, the usual markings being distinguishable only by appearing rather more glossy. I bred a

very curious form difficult to describe in words, but figured in Mosely's "Varieties of British Lepidoptera" (*Chelonia*, pl. vi., fig. 4). Others with yellow hind-wings, or more or less suffused with dark, have been occasionally reared. Though it is not difficult to obtain two broods in confinement, I am not aware that this has ever happened in our district naturally.

PHRAGMATOBIA, Steph.

20. *Phragmatobia fuliginosa*, (Linn.). RUBY TIGER.

Phragmatobia fuliginosa. Staint. Man., vol. i., p. 146.

Arctia ,, Newm. Brit. Moths, p. 34.

Phragmatobia ,, Barr. Lep. Brit. Is., vol. ii., p. 274.

 ,, ,, Meyr. Hdbk. Brit. Lep., p. 39.

LARVA. Buck., vol. iii., pl. xlv., fig. 1; O. Wils., pl. xii.,
fig. 1, 1a, 1b, and 1c.

Another common species, perhaps even more ubiquitous than the last, as the larvæ, being fond of ling and heather, the species occurs freely on the moors and heaths, as well as on coast sand-hills, railway and other dry banks, etc. Mr. Gardner says "the larva spins its cocoon upon the top of the ling, where it is readily observed, and large numbers of the pupæ are devoured by birds." Mr. Pickard of Wolsingham bred a specimen in which yellow was substituted for red in the hind-wings, a change of colour which appears to obtain occasionally with nearly all those species which bear any shade of red. The form occurring with us approaches the var. *Borealis*, the hind-wings being much suffused with black. At Seaton Snook, a small range of sand-hills near the mouth of the Tees, surrounded by the sea at high water, a dwarf form of this species is found, with still less red on the hind-wings. Probably it is the result of in-breeding for many years.

This insect is given on every list I have received, and I do not therefore give localities. It is always single brooded here, the larva hybernating full fed, but in more southern localities a portion of the brood generally feeds up quickly and produces the imagines the same year.

SPILOSOMA, Steph.

21. *Spilosoma mendica*, (Linn.). THE MUSLIN MOTH.

Diaphora mendica. Staint. Man., vol. i., p. 148.

Arctia „ Newm. Brit. Moths, p. 35.

Spilosoma „ Barr. Lep. Brit. Is., vol. ii., p. 277.

Diacrisia „ Meyr. Hdbk. Brit. Lep., p. 40.

LARVA. Buck., vol. iii., pl. xlv., fig. 5; O. Wils., pl. xii.,
fig. 2.

Though well distributed in Durham, *Mendica* has not been often recorded from Northumberland. Mr. Henderson and Mr. Maling met with it at Jesmond, the latter also taking it near Winlaton, and Mr. Rhagg found it at Kenton, which exhaust the list for that county. In Durham it has been found at Thornley on the Derwent, at Dunston and Whickham by Mr. Hedworth. Mr. Wasserman found it in a marshy field near Sunderland Road, South Shields; Mr. Backhouse took it at Darlington; Mr. Greenwell met with it at Bishop Auckland; and Dr. Lees took a single specimen on a wall at Cotherstone in Upper Teesdale. The species is not uncommon around Hartlepool, and I have often seen them on the herbage on the railway side, paired and exposed to the morning sun. The females sit on palings and are very conspicuous, but the males are much more difficult to see. I have also taken it at Castle Eden, and at Carlton near Stockton-on-Tees.

Though the sexes are so very different in hue, it is not a variable insect, and extreme forms are rare. Mr. Barrett says, "from a larva found near Durham, Mr. J. Gardner has reared a greyish-white male, of quite a different tone of colour from the var. *rustica*. Mr. J. E. Robson has a female from the same district, having the fore-wings clouded with pale brown, and the black spots reduced in number to two upon the median nervure; its fore-wings are moreover very broad and almost ovate" (Lep. Brit. Is., vol. ii., p. 280, 1). My specimen was reared from Hartlepool eggs by Mr. Lumsden. The only other local variety I have seen is a female with the black spots unusually numerous.

22. *Spilosoma lubricepeda*, (Linn.). BUFF ERMINE.*Spilosoma lubricepeda*. Staint. Man., vol. i., p. 148.*Arctia* „ Newm. Brit. Moths, p. 35.*Spilosoma* „ Barr. Lep. Brit. Is., vol. ii., p. 281.*Diacrisia* „ Meyr. Hdbk. Brit. Lep., p. 40.

LARVA. Buck., vol. iii., pl. xlv., fig. 4; O.Wils., pl. xii., fig. 3.

This species is common over the greater part of Britain, extending in the west to the extreme north of Scotland, but in the east it appears to reach the extremity of its northward range within the boundaries of our counties. It is very abundant in Durham along the river Tees, from its mouth by Stockton where Mr. Sibson found it freely, by Darlington where Mr. Backhouse met with it, and Barnard Castle where Mr. Greenwell took it, to the extreme of the upper valley of the river, where Dr. Lees found it plentifully. Again from the Tees northward, it is common at Greatham and Hartlepool; Mr. Corder obtained it abundantly at Sunderland, Mr. Brady at Jarrow, and Mr. Hedworth, who collected mostly on the Durham side of the Tyne above Gateshead, reports it as abundant throughout this district. It is in the list in Ornsby's Durham, and Mr. Maddison still finds it around that city. These records practically cover the entire county. In Northumberland Mr. Wasserman found it on the coast as far as Cullercoats, where he resided, but does not record it any further north. Mr. Henderson also found it at Jesmond, and Miss Rossie at Kenton, while this year (1897) Mr. Howse sent me larvæ which were found in great numbers in a garden at Gosforth, feeding on *Convallaria majalis*. Mr. Maling collected much about Newbiggin but did not find *Lubricepeda* there. Messrs. Patterson, Brady, Corder, Rhagg, and others who have collected at Warkworth, Alnmouth, Bamborough, and elsewhere on the Northumberland coast do not record it from any of these places, nor is it on the Twizell list. Mr. Finlay never met with it about Morpeth, Meldon Park, or elsewhere in his district, and he was so good a collector that it is reasonable to assume it did not occur where he failed to find it. It thus appears that its north-eastern boundary is the valley of the Tyne.

It is probable that it will be found in the Hexham district, indeed, it would only be in harmony with its general distribution to find it further to the north in the west of Northumberland than in the east. The larva is not at all choice in its food, and will eat almost everything. It can only therefore be climatal causes that restrict its range.

Very extreme forms of this species have been met with, but none have occurred in our district to my knowledge. I have reared very well marked examples sometimes, but always strictly typical.

23. *Spilosoma Menthastris*, W. V. WHITE ERMINE.

<i>Spilosoma Menthastris</i> .	Staint. Man., vol. i., p. 147.
<i>Arctia</i> „	Newm. Brit. Moths, p. 35.
<i>Spilosoma</i> „	Barr. Lep. Brit. Is., vol. ii., p. 286.
<i>Diacrisia</i> „	Meyr. Hdbk. Brit. Lep., p. 40.

LARVA. Buck., vol. iii., pl. xlv., fig. 2; O. Wils., pl. xii., fig. 4.

This species is much more generally distributed in our counties than the last. It is reported from Newcastle as far back as 1829 by Mr. W. C. Hewitson (Steph. Illus. Haust., vol. ii., p. 175). It is also in the Twizell list. More recently Mr. Wasserman reported it as "common and conspicuous on the coast" (Trans., vol. v., p. 286). Mr. Finlay took it, though not plentifully, at Meldon Park, Miss Rossie took it at Kenton, Mr. Patterson at Corbridge, and Mr. Henderson at Jesmond. In Durham it is recorded as an abundant species in all the lists, I therefore omit the references.

I took some very fine varieties of this species at light near Throston, Hartlepool, in 1880 and 1881. They had the wings suffused with pale brown, the spots being as usual. This form has since been taken by Mr. Reid in Aberdeenshire. One of those I took deposited ova, from part of which Mrs. Hutchinson of Leominster reared some similar specimens, but those I retained for myself produced only the normal form.

FAMILY. LIPARIDÆ, Bdv.

GENUS. PORTHESIA, Steph.

24. *Porthesia chrysorrhœa*, (Linn.). BROWN TAIL.*Porthesia chrysorrhœa*. Staint. Man., vol. i., p. 134.*Liparis* „ Newm. Brit. Moths, p. 36.*Porthesia* „ Barr. Lep. Brit. Is., vol. ii., p. 292.*Euproctis* „ Meyr. Hdbk. Brit. Lep., p. 174.

LARVA. Buck., vol. iii., pl. xl., fig. 1; O. Wils., pl. xii., fig. 5.

This species is but a casual visitor to our counties. Mr. Backhouse met with it many years ago at Darlington. Mr. Wasserman records two. "Has been twice taken on the coast; once at South Shields on the ballast, and once on a mignonette bed" (Trans., vol. v., p. 287). I gather from Entom. viii., p. 196, that Mr. Wasserman took the Cullercoats specimen himself. Mr. Eales took other two in 1875 at South Shields, one of which was floating in a pond. The same year I took about a dozen at Hartlepool, most of them at rest on a paling on the railway side formed of old sleepers. It does not appear to have been met with since, and is in no more recent lists. The sudden appearance of a number of specimens of a strange insect is always interesting and suggestive. This insect has become much rarer in recent years in its southern localities.

25. *Porthesia auriflua*, W. V. GOLD TAIL.*Porthesia auriflua*. Staint. Man., vol. i., p. 135.*Liparis* „ Newm. Brit. Moths, p. 36.*Porthesia* „ Barr. Lep. Brit. Is., vol. ii., p. 296.„ *similis*. Meyr. Hdbk. Brit. Lep., p. 174.

LARVA. Buck., vol. iii., pl. xl., fig. 2; O. Wils., pl. xii., fig. 6.

This species is recorded from Newcastle in 1829 by Mr. Hewitson (Steph. Illust. Haust., vol. ii., p. 18), and curiously enough I have no more recent records from Northumberland, neither Mr. Maling nor Mr. Finlay ever having met with it. In 1875 Mr. C. Eales reported that he had taken it at South Shields on 27th July, and that it was new to the district (Entom.

viii., 196). Mr. Wasserman (Trans., vol. v., p. 287) says, "it is met with on ballast on the coast." Possibly that general statement refers only to Mr. Eales' specimen. The species is not likely to occur on ballast, the larva feeding on Hawthorn and other trees. Durham would appear to be the limit of the species on the east coast, and, except Mr. Eales' stray specimen, it has only occurred in the southern part of the county. Dr. Lees found the larvæ "not uncommon on Hawthorn" in Upper Teesdale, but rarely saw the perfect insect. Mr. Greenwell also records it from Bishop Auckland. At Hartlepool I have occasionally found the imago on palings about the town, perhaps attracted by the lights. I have found the larvæ common on Hawthorn hedges at High Throston and also at Greatham, where I once found the Moths flying freely in the lane near the railway station just before twilight.

LIPARIS, Och.

26. *Liparis Salicis*, (Linn.). SATIN MOTH.

Stilpnotia Salicis. Staint. Man., vol. i., p. 136.

Liparis ,, Newm. Brit. Moths, p. 36.

,, ,, Barr. Lep. Brit. Is., vol. ii., p. 299.

Stilpnotia ,, Meyr. Hdbk. Brit. Lep., p. 175.

LARVA. Buck., vol. iii., pl. xxxix., fig. 4; O. Wils., pl. xii., fig. 2.

This is a very uncertain species everywhere. In southern localities it appears irregularly, the larvæ being sometimes numerous enough to be injurious, then it may almost disappear—perhaps only for a time, but it has left many of its old haunts altogether. In our counties it has only been a casual visitor. The earliest, and only Northumbrian record, is that of the Twizell list. Mr. Eales took one at South Shields on 27th July, 1875 (Entom. viii., p. 196). Two have been taken in the streets at Hartlepool, and one in Upper Teesdale by the footman at Eggleston Hall. I do not know the dates when these occurred, but it was about 1875, a period, as will be seen, when there was a good deal of migratory movement among several species of Lepidoptera.

DASYCHIRA, Hub.

27. *Dasychira fascelina*, (Linn.). DARK TUSsock*Dasychira fascelina*. Staint. Man., vol. i., p. 131.*Orgyia* „ Newm. Brit. Moths, p. 39.*Dasychira* „ Barr. Lep. Brit. Is., vol. ii., p. 320.

„ „ Meyr. Hdbk. Brit. Lep., p. 172.

LARVA. Buck., vol. iii., pl. xxxviii., fig. 1; O. Wils., pl. xii., fig. 2.

Mr. Barrett says of this species: "In England usually found near the coast, but occasionally also on heaths." The only coast record I have is that Mr. Joseph Leeming found a solitary larva in 1859 on the banks near the mouth of Hesleden Dene, which I failed to rear. Among Mr. Backhouse's papers I found three water-colour figures of an immature larva of this species marked "on Ling 13.5.59, fixed for casting its skin." He records also that he found the chrysalis at Shull on Ling, and the perfect insect at St. Johns Weardale. Mr. Gardner met with the species at Wolsingham, also on Ling. In Northumberland Mr. Finlay found it rare on Needless Hall Moor, and Mr. Maling had pupæ sent him from Redesdale. These exhaust my records. The larva is not by any means confined to Ling, but will eat a variety of low plants.

DEMAs, Steph.

28. *Demas Coryli*, (Linn.). NUT-TREE TUSsock.*Demas Coryli*. Staint. Man., vol. i., p. 132.

„ „ Newm. Brit. Moths, p. 40.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 323.

Colocasia „ Meyr. Hdbk. Brit. Lep., p. 173.

LARVA. Buck., vol. iii., pl. xxxviii., fig. 3; O. Wils., pl. xiii., fig. 5.

A very rare species here, and at present only observed in Northumberland. It is recorded in the Twizell list, and Mr. Finlay found larvæ feeding on Hazel in Coal Law Wood in September, 1891, the imagines emerging in April, 1892. It will

probably be found in many other parts of our district, for it is generally distributed throughout Britain. The larva feeds between united leaves, and is therefore not easily observed. The imago is said to sit on tree trunks, but it does not appear to have been much seen, most of our cabinet specimens being bred. Mr. Barrett says the species affects hill tops and sides, and hedges in exposed situations.

ORGYIA, Och.

29. *Orgyia antiqua*, (Linn.). THE VAPOURER.

Orgyia antiqua. Staint. Man., vol. i., p. 132.

„ „ Newm. Brit. Moths, p. 40.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 329.

„ „ Meyr. Hdbk. Brit. Lep., p. 172.

LARVA. Buck., vol. iii., pl. xxxix., fig. 1; O. Wils., pl. xiii.,
fig. 4.

This insect should be common throughout the district, but I have not very many records of its occurrence. The earliest is that of the Twizell list. Mr. Finlay found it at Coal Law Wood, Mr. Rhagg at Chopwell, and Mr. Henderson at Jesmond, which are all the notices I have for Northumberland. In Ornsby's Durham it is said to occur at Houghall and Maiden Castle Woods, Bearpark and Castle Eden Dene. Mr. Backhouse found larvæ "on Thorn" at Darlington. Mr. Sang found it at Hell Kettles near Darlington. Mr. Hedworth says "plentiful always at Dunston." About Hartlepool we find it commonly on the sand banks, where the larvæ feed on *Rosa spinosissima* (Burnet Rose). Elsewhere on Hawthorn and most of trees, sometimes being numerous enough to be classed as a destructive insect. I have no records at all from the south-west of Durham, but can scarcely think it does not occur there.

The female is apterous, and deposits her eggs on the outside of the cocoon. These are conspicuous objects in winter when the leaves have fallen. I have sometimes found a batch in March with a portion of the eggs hatched, as though part of the larvæ had emerged in autumn, but I never could satisfy myself this

really was so. Generally the larvæ do not appear till May. The male flies in the sun in September or October and strays far from its larval haunts. I often see them in the streets of Hartlepool.

EPICHNOPTERYX, Hub.

30. *Epichnopteryx calvella*, Och.

Psyche fusca. Staint. Man., vol. i. p. 166.

Epichnopteryx calvella. Barr. Lep. Brit. Is., vol. ii., p. 344.

Sterrhopterix hirsutella. Meyr. Hdbk. Brit. Lep., p. 444.

Though this is given in the three works named above as occurring in our district, I feel very doubtful if it has done so, and it will be better to give the evidence in detail.

The first volume of Stainton's Manual is dated in 1857, but it was issued in monthly parts. On page 166 this species is described with "Da," the contraction for Darlington, below. It is more than probable that the part containing this page was issued in 1856.

In the *Intelligencer* for 4th September, 1858 (vol. iv., p. 180), is a paragraph which I will quote in full.

"*Psyche fusca*.—I have bred three specimens of this insect from pupæ this season, all males. I have seen four larvæ of *A. Atropos*, all taken near Darlington: two of them are in my possession.—Jonathan Orde, 6, East Street, Darlington. August 26."

Mr. Barrett (Lep. Brit. Is., vol. ii., p. 337), in speaking of the distribution of this species says, "records exist for the neighbourhood of Darlington."

Mr. Meyrick (Hdbk. Brit. Lep., p. 445) gives as its distribution in Britain "Surrey, Middlesex, Lancashire, Durham, Perth, local."

The only personal record here is that by Mr. Orde, and it must be noticed that while he specially says the *Atropos* larvæ were "taken near Darlington," he does not give any hint as to the place where the *P. fusca* were obtained, but only that he had bred three. I do not know anything of the authority for the Manual "Da," which was prior to Mr. Orde's notice, but the

late John Sang, who was much the best Lepidopterist we have had here, always assured me it was an error, and that none of the Psychidæ ever occurred there. Mr. Barrett, to whom I have referred, writes (15th Dec., 1897) in respect to Mr. Orde's note, "the record certainly *appeared* as of a species found near Darlington. If not, it seemed to be objectless; and this in the absence of any contradiction would seem quite authority enough for my statement,—which is that a *record exists* for it at Darlington. If our late friend Sang had communicated to me a doubt on the subject, I should have accepted it, as this is not exactly a probable Durham insect." Mr. Meyrick also writes, "I may say that I received no private lists of species from Durham, and cannot therefore add anything to information already published. I could not definitely remember whether I found any other published record, beyond that in Stainton's Manual, but very probably not."

I do not quite agree with Mr. Barrett that Mr. Orde's note was purposeless if it did not mean that *fusca* was found near Darlington, but the note, as it stands, is not a clear and unquestionable statement that *fusca* occurred near Darlington, and there is Mr. Sang's evidence against the Manual "Da." Mr. Stainton was, no doubt, exceedingly careful, but there are others marked "Da" in the Manual that certainly never occurred there. These will be referred to in their places. The present species being recorded in all the works quoted, as a Durham insect, I include it in the Catalogue, but my own opinion is that the records are made in error.

PCÆCLOCAMPA, Steph.

31. *Pæcilocampa Populi*, (Linn.). DECEMBER MOTH.

Pæcilocampa Populi. Staint. Man., vol. i., p. 154.

" " Newm. Brit. Moths, p. 41.

" " Barr. Lep. Brit. Is., vol. iii., p. 2.

Eriogaster " Meyr. Hdbk. Brit. Lep., p. 343.

LARVA. Buck., vol. iii., pl. xlviii., fig. 2, pl. xlix., fig. 1;

O. Wils., pl. P., fig. 7.

This species appears to be well distributed over both counties,

but the imago, as its English name implies, not appearing till after the collecting season is over, is only occasionally met with, and most frequently at light, which has a great attraction for the male. Consequently records are fewer than if it flew earlier in the year. Mr. Finlay found it in Meldon Park but not commonly. Mr. Henderson took it at Jesmond, and Mr. Rhagg at Chopwell Wood. Mr. Sang and Mr. Backhouse at Darlington, the former at light. It is also recorded in the Manual from the same place. Mr. Gardner found it not uncommon in Upper Teesdale. About Hartlepool it occurs now and then; I have had it sent me from Castle Eden and have taken it at light in Crimdon Cut.

TRICHIURA, Steph.

32. *Trichiura Cratægi*, (Linn.). PALE OAK EGGER.

- Trichiura Cratægi*. Staint. Man., vol. i., p. 155.
 „ „ Newm. Brit. Moths, p. 41.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 5.
Eriogaster „ Meyr. Hdbk. Brit. Lep., p. 322.

LARVA. Buck., vol. iii., pl. xlix., fig. 2; O. Wils., pl. xiii., fig. 6.

This species, though generally distributed in Britain, is scarcely known in our counties, and I have no recent records. It is included in the list in Ornsby's Durham, but no localities are given. It is also given in Stainton's Manual as occurring at Darlington. I have no personal knowledge of its occurrence, though I can scarcely think it is so rare with us as is implied by this dearth of records.

ERIOGASTER, Germ.

33. *Eriogaster lanestris*, (Linn.). SMALL EGGER.

- Eriogaster lanestris*. Staint. Man., vol. i., p. 154.
 „ „ Newm. Brit. Moths, p. 42.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 9.
 „ „ Meyr. Hdbk. Brit. Lep., p. 321.

LARVA. Buck., vol. iii., pl. xlvi., fig.; O. Wils., pl. xiii., fig. 8.

The Small Egger occurs in most parts of our district, but

appears to be much rarer than it formerly was. It is given in the Twizell list, Mr. Finlay found it in Meldon Park, and Mr. Henderson at Jesmond. Mr. Maling also found it near Newcastle. I have no records for the northern part of Durham, but it is stated in Ornsby's Durham that Mr. J. Bungey met with it at Horden. Mr. Backhouse's papers have "larvæ on Thorn in June." Darlington is also a "Manual" locality. I have found the larvæ myself on hedges round Stockton, at Greatham, and about Hartlepool. These are all the records I have. The larvæ being gregarious and spinning a web as they move about, become conspicuous in the hedges and should be easily seen. The imago emerges in February, a time when Lepidopterists are not generally on the look out for insects on the wing, and it is very rarely seen, all our cabinet specimens being bred. Mr. Barrett says, "even when sitting on a Hawthorn spray, it so accurately mimics a dead leaf twisted round the tree that it is almost impossible of recognition."

Lanestris has the peculiarity of remaining perfectly developed within the cocoon for an almost unlimited period. My brother, Mr. H. T. Robson, of Stockton-Tees, reared a number, some of which emerged, on almost the same day of February, over six or seven years. It is said to have remained in the cocoon for nine years. If we think what the weather often is in February we will see how important a provision this is for the preservation of the race.

CLISIOCAMPA, Curt.

34. *Clisiocampa neustria*, (Linn.) LACKEY.

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|-------------------------------|---|
| <i>Clisiocampa neustria</i> . | Staint. Man., vol. i., p. 156. |
| <i>Bombyx</i> ,, | Newm. Brit. Moths, p. 42. |
| <i>Clisiocampa</i> ,, | Barr. Lep. Brit. Is., vol. iii., p. 13. |
| ,, | Meyr. Hdbk. Brit. Lep., p. 323. |

LARVA. Buck., vol. iii., pl. 1., fig. 2; O. Wils., pl. xiv., fig. 7.

Rather abundant in the south but becoming rarer northward. It is common but local in Lancashire and Cheshire. Rare and local in Yorkshire. These appear to be the northern limits of

its range. Only two specimens have been recorded from our district, both from South Shields, where Mr. C. Eales took one at rest on a wall, and Mr. C. Wasserman found another floating in a pond at the Lawe (see Trans., vol. v., p. 287).

LASIOCAMPA, Lat.

35. *Lasiocampa Quercus*, (Linn). OAK EGGER.

Lasiocampa Quercus. Staint. Man., vol. i., p. 153.

Bombyx „ Newm. Brit. Moths, p. 43.

Lasiocampa „ Barr. Lep. Brit. Is., vol. iii., p. 25.

„ „ Meyr. Hdbk. Brit. Lep., p. 320.

LARVA. Buck., vol. iii., pl. xlvii., fig. 2; O. Wils., pl. xiv., fig. 2.

An abundant and widely-distributed insect, occurring almost everywhere. The larva is equally at home on the herbage of our sand-banks, on the heather of our moors and mosses, or on the hedgerows of our country lanes. Much uncertainty obtained formerly respecting this insect, some holding there were two distinct species, but it is now well understood there is but one, and the two forms depend more or less on habitat. The larva hibernates when about an inch long, and feeds up the following season. In southern counties it generally does so rather rapidly and the imago emerges the same year. Further north only a portion of the brood appears in the perfect state, and in our districts all, or nearly all of them, remain in pupa till the following season. In the south the males are bright chestnut-brown with paler markings, the females bright yellowish-brown. The variety *Callunæ* (formerly called a species) is dark chocolate-brown in the male and dark yellow-brown in the other sex. This form occurs on our moors; those found on the coast, though darker than southern examples, are much lighter than *Callunæ*. Another unnamed variety has a lighter brown spot near the base of the forewings, sometimes called an epaulet. The margin of the darker part of the hindwing also varies in direction, sometimes running off at the anal angle and more frequently towards the middle of the hind margin. These forms occur with us, but another rarer and more peculiar variety having green stripes and

rays has been taken in Yorkshire, for which our collectors on moors should be on the look out.

The species is given in the Twizell list as *Roboris*, a name no longer used. Mr. Howse reported it from the Redewater district; Mr. Finlay found it on Needless Hall Moor, but more abundantly on Greenleighton Moss; Mr. Maling also found *Cal-lunæ* elsewhere on the Northumberland moors. In Durham it is reported from Chopwell and Marsden by Mr. Hedworth; Mr. Backhouse found it at Shull; Mr. Howse met with it above High Force; from which Dr. Lees wrote "now and then seen but never so plentiful as on Hartlepool sand hills." Mr. Gardner, on the other hand, found it very common on the Teesdale moors. Mr. Eales found the larvæ on Bramble at Marsden and Mr. Greenwell reported the species from Bishop Auckland. About Hartlepool it is abundant on the sand hills, but not so plentiful on the hedges.

36. *Lasiocampa Rubi*, (Linn.). Fox Moth.

Lasiocampa Rubi. Staint. Man., vol. i., p. 153.

Bombyx ,, Newm. Brit. Moths, p. 43.

Lasiocampa ,, Barr. Lep. Brit. Is., vol. iii., p. 32

Eriogaster ,, Meyr. Hdbk. Brit. Lep., p. 322.

LARVA. Buck., vol. iii., pl. xlv., fig. 4; O. Wils., pl. xiv., fig. 3.

This is very common in both counties, occurring abundantly wherever there is a suitable locality. It swarms all along the coast, both on the sand banks and cliffs. It is common on all the moors and mosses in both counties, ascending to nearly 2000 feet on the Cheviots, and I have found the larvæ feeding on hedge banks both at Hartlepool and near Stockton-on-Tees. Inland localities may be quoted as follows: Twizell list, and list in Ornsby's Durham. "Bogs at Shull," W. Backhouse; "On heaths near Stockton," L. Rudd, in Steph. Illust. Brit. Ent., vol. ii., p. 39; Upper Teesdale, common on the moors, F. A. Lees, J. Gardner; Needless Hall Moor, sometimes very plentiful, J. Finlay. Coast localities, "very common at Bambro', a few at Castle Eden," L. S. Brady; Warkworth, Amble, T. Rhagg; "Cliffs near Castle Eden," M. Corder.

L. Rubi passes the winter on a full fed larva, emerging in early spring to bask in the morning sun, but never eating anything. The larva cannot be forced, as I have shewn elsewhere (E. M. M., vol. xxxiii., p. 199), but is very easily reared if found after hybernation. I have this year (1897) bred several forms in which the central band varies in shape and width till in some specimens there is but a double ochreous line crossing the wing. I never met with these varieties before except in one single specimen. These were from larvæ taken on the sand banks between Hezleden Dene and Black Halls.

ODONESTIS.

37. *Odonestis potatoria*, (Linn.). THE DRINKER.

Odonestis potatoria. Staint. Man., vol. i., p. 157.

" " Newm. Brit. Moths, p. 45.

" " Barr. Lep. Brit. Is., vol. iii., p. 37.

" " Meyr. Hdbk., p. 323.

LARVA. Buck., vol. iii., pl. l., fig. 3; O. Wils., pl. xv., fig. 1.

This interesting insect is common throughout our district, except on the wetter moorlands; perhaps most abundant on the coast, but generally plentiful in the larval state on the coarse grass of hedge sides, where it sits conspicuously stretched out on a dry stem. It is a species that varies little in markings but considerably in depth of colour. From larvæ found here Mr. Gardner and I have sometimes reared females almost as dark as the males, but we have never seen the very pale forms that have been met with in the fens.

I do not quote localities, as it is in all the lists and occurs even at such places as Holy Island and St. Mary's Island.

GASTROPACHA.

38. *Gastropacha Illeifolia*, (Linn.). SMALL LAPPET.

Gastropacha Illeifolia. Staint. Man., vol. i., p. 158.

Lasiocampa " Newm. Brit. Moths, p. 46.

Gastropacha " Barr. Lep. Brit. Is., vol. iii., p. 46.

" " Meyr. Hdbk. Brit. Lep., p. 325.

LARVA. Buck., vol. iii., pl. li., fig. 2.

The only notice I have of this very rare species is that "a nice female from Castle Eden" was sold at the sale of Dr. Wheeler's Collection, 10th July, 1895, for 32/6 (see Entom. xxviii., p. 231).

The price shows there could be no doubt as to the authenticity of the specimen, but I would rather expect it to occur on the higher moors in the western part of the county, where *Vaccinium myrtillus* (Bilberry) grows freely. My friend Mr. Gardner has searched assiduously for the larva on the Teesdale moors, so far without success, but does not despair yet of finding it there.

SATURNIA, Sch.

39. *Saturnia Carpini*, Bork. EMPEROR MOTH.

- Saturnia Pavonia-minor*. Staint. Man., vol. i., p. 140.
 „ *Carpini*. Newm. Brit. Moths, p. 48.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 57.
 „ *Pavonia*. Meyr. Hdbk. Brit. Lep., p. 313.

LARVA. Buck., vol. iii., pl. lii., fig. 1; O. Wils., pl. xv., fig. 4.

The Emperor Moth, beautiful both as a larva and as a perfect insect, occurs on all the heaths and moors in both counties, generally fairly plentiful. It is given in the Twizell list, and other Northumberland records are—"Redewater district," R. Howse; "common on the moors," J. Finlay; "larvæ on the moors at Rothbury and Sweethope, males flying in the sun," W. Maling; "Bellingham," J. Rhagg. Durham records are—"On heaths near Durham and in the west of the county," Ornsby's Durham; "larvæ on Ling at Shull," W. Backhouse; "above High Force," R. Howse; "common on the Teesdale moors," J. Gardner; "locally abundant on the Ling," F. A. Lees; "common on the moors," R. Greenwell, Bishop Auckland. Though Ling or Heather is the natural food of the larva it will eat many other plants, and a solitary example was found on a Willow tree in a garden at West Hartlepool in 1874.

DREPANA, Schrk.

40. *Drepana falcataria*, (Linn.). PEBBLE HOOK-TIP.*Drepana falcataria*. Staint. Man., vol. i., p. 163.*Platypteryx falcata*. Newm. Brit. Moths, p. 207.*Drepana falcataria*. Barr. Lep. Brit. Is., vol. iii., p. 63.*Falcaria* ,, Meyr. Hdbk. Brit. Lep., p. 316.

LARVA. Buck., vol. iii., pl. liii., fig. 1; O. Wils., pl. xxviii., fig. 2.

The Pebble Hook-tip has not been very frequently recorded in either county, but it is generally distributed, and will probably be found in all woods where Birch abounds. It is not in the Twizell list, but Mr. G. Bolam records it not uncommonly from Twizell House, Newham Bog, and Kyloe; Mr. Finlay found it not uncommonly in the Old Park, Netherwiton; Miss Rossie has taken it at Kenton; Mr. Hedworth at Thornley, Chopwell, and near Winlaton Mill. Mr. Maling also met with it at Chopwell, and Mr. Rhagg in Thornley Wood. Mr. Sang often took it at Wolsingham, and found larvæ in the woods at High Force in August, 1877. I never met with it in the Hartlepool district, but my brother, Mr. H. T. Robson, has taken it in Castle Eden Dene. It should be looked for at the end of May or the first week in June, where Birch is plentiful. It does not fly till night, but is easily disturbed by day. When at rest, like so many other species, it very closely resembles a withered leaf.

41. *D. hamula*, Esp. OAK HOOK-TIP.*Drepana hamula*. Staint. Man., vol. i., p. 164.*Platypteryx* ,, Newm. Brit. Moths, p. 208.*Drepana* ,, Barr. Lep. Brit. Is., vol. iii., p. 70.,, *binaria*. Meyr. Hdbk. Brit. Lep., p. 317.

LARVA. Buck., vol. iii., pl. liii., fig. 2.

The only record I have of the occurrence of *Hamula* is that Mr. Henderson took it at Jesmond. Whether he got more than one I do not know, but it seems probable that he only met with

a stray specimen, as its range does not extend nearly so far north as these counties. It is recorded for Lincolnshire, but is not in Mr. Porritt's Yorkshire list, nor in that for Lancashire and Cheshire by Dr. Ellis. If it were a regular inhabitant of Jesmond it ought to be found on the gas lamps there.

PLATYPTERYX, Lasp.

42. *Platypteryx lacertinaria*, (Linn.). SCALLOPED HOOK-TIP.

Platypteryx lacertinaria. Staint. Man., vol. i., p. 162.

„ *lacertula*. Newm. Brit. Moths, p. 206.

„ *lacertinaria*. Barr. Lep. Brit. Is., vol. iii., p. 76.

Falcaria „ Meyr. Hdbk. Brit. Lep., p. 316.

LARVA. Buck., vol. iii., pl. lii., fig. 3; O. Wils., pl. xxviii., fig. 1.

This species is widely distributed in these counties, but is recorded from few localities. Mr. Finlay met with it in the Old Park, Netherwitton, in fair numbers, and Mr. G. Bolam met with larva of this species in 1891 at Kyloe Wood and has found it not uncommonly both in the larval and perfect state (Berwickshire Nat. Club, vol. xv., p. 305). In Durham Mr. Sang obtained larvæ at High Force in August, 1873. Mr. Gardner subsequently found it elsewhere in Upper Teesdale, but not commonly. I have taken it in Castle Eden Dene, Mr. Gardner in Hesleden Dene and also at Edder Acres, a wood adjoining the upper end of Castle Eden Dene. It is certain to occur elsewhere.

CILIX, Leach.

43. *Cilix spinula*, W.V. GOOSE EGG.

Cilix spinula. Staint. Man., vol. i., p. 162.

„ „ Newm. Brit. Moths, p. 299.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 79.

„ *glauca*. Meyr. Hdbk. Brit. Lep., p. 315.

LARVA. Buck., vol. iii., pl. lii., fig. 2; O. Wils., pl. xxviii., fig. 4.

Mr. Wailes recorded this interesting little species as occurring at Meldon Park and Newcastle, as far back as 1834 (see Steph.

Illust. vol. iv., p. 9). It was then called *Cilix compressa*. It is given in the Twizell list as *Cilix impressa*. More recent records are: Ancroft, Mr. G. Bolam; Hexham, Newbiggin-by-the-Sea, and Witton-le-Wear, W. Maling; Thornley and Dunston Carr, T. H. Hedworth; Ebchester, W. Patterson; Meldon Park, "not scarce," J. Finlay; Upper Teesdale, "not uncommon," F. A. Lees; Bishop Auckland, "very common," Messrs. Ross and Greenwell. Though these records are not numerous, I have no doubt it occurs commonly throughout the cultivated parts of both counties, perhaps not so frequently in North Northumberland. Mr. Bolam's record is of one specimen only in July, 1888. We find it all round Hartlepool, and the larva, which is not unlike, in general appearance, that of the Puss Moth in miniature, may be beaten out of every hedge. The imago sits with its wings sloping like a very steep roof, and is wonderfully like the droppings of a bird, which is no doubt a useful protective resemblance.

NOTODONTIDÆ, Bdv.

CERURA, Schrk.

44. *Cerura bicuspis*, Bkhn. THE ALDER KITTEN.

- Cerura bicuspis*. Staint. Man., vol. i., p. 117.
Dicranura ,, Newm. Brit. Moths, p. 210.
Cerura ,, Barr. Lep. Brit. Is., vol. iii., p. 84.
 ,, ,, Meyr. Hdbk. Brit. Lep., p. 312.
 LARVA. Buck., vol. ii., pl. xxxii., fig. 1.

This rare species has never been met with in the perfect state in either county, but Mr. George Bolam, of Berwick, in his "Notes on the Rarer Lepidoptera" says, "although I have not yet been able to capture a specimen, this Moth undoubtedly occurs at Allerdean Mill, where for some years past I have occasionally found the cocoons—always empty—upon the old Alder trunks; an experience which is common in other parts of the county, for the Alder Kitten seems to be one of the most difficult of all pupæ to discover." (Trans. Berwickshire Nat. Field Club, vol. xv., p. 303). This is confirmed by Mr. Barrett,

who says, "In all localities in which it has been found, the collector appears to be bitterly tantalised by the easy discovery of *empty* cocoons, while full ones seem almost undiscoverable." (Lep. Brit. Is., vol. iii., p. 86). Mr. Barrett also says he knows of no captures of this species in Scotland. Mr. Bolam's discovery brings it very close to the Scottish border. Mr. Meyrick assumes it does not occur north of York.

45. *C. furcula*, (Linn). THE SALLOW KITTEN.

Cerura furcula. Staint. Man., vol. i., p. 117.

Dicranura ,, Newm. Brit. Moths, p. 211.

Cerura ,, Barr. Lep. Brit. Is., vol. iii., p. 86.

,, ,, Meyr. Hdbk. Brit. Lep., p. 312.

LARVA. Buck., vol. ii., pl. xxxii., fig. 2; O. Wils., pl. xxviii.,
fig. 5 (xxxviii. in text).

The Sallow Kitten appears to have been rarely met with in Northumberland. Mr. Hedworth found "one full-grown larva at Lockhaugh, August, 1870," and Mr. Finlay took a second at Longwitton feeding on Dwarf Sallow in September, 1892, which produced an imago in May, 1893. Dr. Lees says it is "not uncommon on river-side willows in Upper Teesdale, larvæ beaten in autumn." Mr. Gardner writes "Hezleden Dene, Greatham and Upper Teesdale, not uncommon in the larva state." Mr. C. Trechmann, Jun., has found the larva at Castle Eden. It is also given in Stainton's Manual as occurring at Darlington. I took the larva on Willow in Crimdon Cut, near Hartlepool, as far back as 1865, where it still occurs occasionally.

46. *C. bifida*, Hub. THE POPLAR KITTEN.

Cerura bifida. Staint. Man., vol. i., p. 117.

Dicranura ,, Newm. Brit. Moths, p. 212.

Cerura ,, Barr. Lep. Brit. Is., vol. iii., p. 90.

,, ,, Meyr. Hdbk. Brit. Lep., p. 311.

LARVA. Buck., vol. ii., pl. xxxii., fig. 3; O. Wils., pl. xxviii.,
fig. 6.

I have no Northumberland records for this species, nor for

any part of Durham except around Hartlepool. Dr. Lees certainly reported it as "commoner on river-side Sallows in the larva state than the preceding," but this must have been a mistake, as the larva does not eat Sallow. Mr. Gardner also, who has collected carefully in Upper Teesdale, has not met with this species there. He writes, "on Poplars in gardens about Hartlepool, scarcer now than formerly." Some years ago a number of small Poplars were planted in hedges between West Hartlepool and Elwick. A year or two after they were planted I found, on examining them, one or two larvæ of this species on every tree. *Bifida* is generally commoner than *Furcula*, and I do not think it is really so rare in our counties as the dearth of records implies. Possibly the larva is passed over for that of *Vinula*.

47. *C. vinula*, (Linn.). PUSS MOTH.

Cerura vinula. Staint. Man., vol. i., p. 118.

Dicranura ,, Newm. Brit. Moths, p. 214.

Cerura ,, Barr. Lep. Brit. Is., vol. iii., p. 93.

,, ,, Meyr. Hdbk. Brit. Lep., p. 311.

LARVA. Buck., vol. ii., pl. xxxii., fig. 4; O. Wils., pl. xxviii., fig. 7.

The Puss Moth is found in most parts of our district and is generally common. It is mentioned in Stephen's Illustrations (vol. ii., p. 9) as occurring at Newcastle. It is also in the Twizell list. Ornsby's Durham gives Castle Eden and Durham, and most of the more recent lists contain the species. Mr. Finlay found it "generally distributed and not uncommon;" Mr. Henderson met with it at Jesmond, Mr. Rhagg at Newcastle; Mr. Hedworth says, "larvæ always plentiful on Poplars and Sallows;" Mr. Brady found it very common at Ryhope, Thornley, etc.; Dr. Lees found it common in Upper Teesdale; Mr. Greenwell says "fairly common about Bishop Auckland," where Mr. Ross only met with a single example. About Hartlepool it is always common in the larva state, sometimes abundant, and the imago is often seen also.

NOTODONTA, Och.

48. *Notodonta dictæa*, (Linn.). SWALLOW PROMINENT.*Leiocampa dictæa*. Staint. Man., vol. i., p. 122.*Notodonta* ,, Newm. Brit. Moths, p. 228.

,, ,, Barr. Lep. Brit. Is., vol. iii., p. 105.

Drymonia tremula. Meyr. Hdbk. Brit. Lep., p. 305.

LARVA. Buck., vol. ii., pl. xxxv., fig. 1; O. Wils., pl. xxx., fig. 3.

The Swallow Prominent is well distributed over both counties and probably occurs wherever there are plenty of Poplars. It is in the Twizell list; Mr. Finlay found it generally throughout his district, though not very common; Mr. Maling took an imago at light in June, 1868, and found the larva occasionally on Poplars about Newcastle; Mr. Henderson met with it at Jesmond; Mr. Rhagg at Newcastle and at Chopwell Wood; Mr. Hedworth found eggs on Poplar at Lintz Green and larva at Rowland's Gill; Mr. J. Wood recorded six fine specimens near Durham (Ent. Weekly Intell., vol. i., p. 150); Mr. Pickard met with it at Wolsingham, Mr. Gardner in Upper Teesdale, Mr. Greenwell at Bishop Auckland; Mr. Backhouse bred it from "chrysalides found at Darlington," which is also a "Manual" locality. About Hartlepool it occurs wherever there are Poplars. I have taken it in West Hartlepool Cemetery and in Poplar plantations near Hezleden. Mr. Gardner has also met with it at Edder Acres, always in the larva state. They feed rather high up the trees, but generally quite at the end of the branches. It is not confined to Poplar, but I never saw it on anything else.

49. *N. dictæoides*, Esp. LESSER SWALLOW PROMINENT.*Leiocampa dictæoides*. Staint. Man., vol. i., p. 123.*Notodonta* ,, Newm. Brit. Moths, p. 229.

,, ,, Barr. Lep. Brit. Is., vol. iii., p. 188.

Drymonia ,, Meyr. Hdbk. Brit. Lep., p. 305.

LARVA. Buck., vol. ii., pl. xxxv., fig. 2; O. Wils., pl. xxx., fig. 4.

This species very closely resembles the preceding, not only in the perfect state, but the larva is much like the brown variety

of that of *Dictæa*. It is, however, a much rarer species, and I have found it much more difficult to rear. Mr. Barrett suggests that both species are fond of imbibing drops of water. I never sprinkled their food or I might have been more successful. Mr. G. Bolam records it from Alwinton, Kylee, and Newham Bog. Mr. Finlay found *Dictæoides* scarce at Old Park, Netherwilton; Mr. Maling found a solitary larva on Birch at Sweethope in 1869. Mr. Pickard met with it at Wolsingham, Mr. Gardner in Upper Teesdale, and it is given in Ornsby's Durham as occurring in Rennie's Lane near that city. About Hartlepool I have found it very sparingly in Castle Eden and Hezleden Denes, and Mr. Gardner has also met with it at Edder Acres.

50. *N. ziczac*, (Linn.). PEBBLE PROMINENT.

- Notodonta ziczac*. Staint. Man., vol. i., p. 119.
 „ „ Newm. Brit. Moths, p. 231.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 111.
 „ „ Meyr. Hdbk. Brit. Lep., p. 304.

LARVA. Buck., vol. ii., pl. xxxiii., fig. 4; O. Wils., pl. xxx., fig. 6.

This species is well distributed over both counties, but is nowhere common or of very regular occurrence. It is in the Twizell list; Mr. Finlay found it in most parts of his district but never common; Mr. Maling found one larva at Jesmond in August, 1869; Mr. Hedworth found eggs on Poplar at Thornley and larva on Sallow at Dunston; Mr. Brady got two larvæ at Ryhope in 1888. Dr. Lees and Mr. Gardner report larvæ in various parts of Upper Teesdale; Mr. Greenwell from Bishop Auckland and Mr. C. Trechmann, Junr., from Castle Eden. It is also given in the Manual as occurring at Darlington. We find it occasionally around Hartlepool, on Poplar more frequently than on Sallow. I have always found it quite on the lower branches, whether in a wood or on a solitary tree, though these may have but few and partly withered leaves.

51. *N. dromedarius*, (Linn.). IRON PROMINENT.*Notodonta dromedarius*. Staint. Man., vol. i., p. 119.

,, ,, Newm. Brit. Moths., p. 219.

,, ,, Barr. Lep. Brit. Is., vol. iii., p. 123.

,, ,, Meyr. Hdbk. Brit. Lep., p. 304.

LARVA. Buck., vol. ii., pl. xxxiii., fig. 2; O. Wils., pl. xxx., fig. 5.

Another widely distributed species, also rarely seen except as a larva. It is in the Twizell list. Mr. Finlay found it at Old Park, Netherwitton., but never plentiful; Mr. Henderson got it at Jesmond; Mr. Maling obtained larvæ at Sweethope in September, 1869, both on Birch and Alder; Mr. Sang found larvæ at High Force on 28th August, 1873, and also at Castle Eden, where Mr. C. Trechmann, Junr., found it in 1897. It is not very uncommon in Hezleden Dene and other places about Hartlepool, where I think it is oftenest found on Hazel.

DRYMONIA, Hub.

52. *Drymonia chaonia*, Hub. THE LUNAR MARBLED BROWN.*Drymonia chaonia*. Staint. Man., vol. i., p. 121.*Notodonta* ,, Newm. Brit. Moths., p. 233.*Drymonia* ,, Barr. Lep. Brit. Is., vol. iii., p. 120.

,, ,, Meyr. Hdbk. Brit. Lep., p. 306.

LARVA. Buck., vol. ii., pl. xxxiv., fig. 3; O. Wils., pl. xxx., fig. 8.

A very scarce species and not yet met with in the perfect state. Mr. Finlay found a single larva in Meldon Park. I beat one out of Oak in Hezleden Dene on July 27th, 1890. Mr. Gardner got another subsequently in the same place and has found three in Upper Teesdale. I know of no others.

LOPHOPTERYX, Steph.

53. *Lophopteryx camelina*, (Linn.). COXCOMB PROMINENT.*Lophopteryx camelina*. Staint. Man., vol. i., p. 124.*Notodonta* ,, Newm. Brit. Moths., p. 225.*Lophopteryx* ,, Barr. Lep. Brit. Is., vol. iii., p. 139.*Odontosis* ,, Meyr. Hdbk. Brit. Lep., p. 309.

LARVA. Buck., vol. ii., pl. xxxv., fig. 3; O. Wils., pl. xxx., fig. 1.

This is the commonest of the group. It occurs in most parts

of both counties, and is far from rare. It is recorded in 1829 by Mr. W. C. Hewitson as occurring "near Newcastle-on-Tyne, rarely" (Steph. Illust., vol. iii., p. 27). It is also in the Twizell list. It was found by Mr. Finlay generally throughout his district and not uncommon; by Mr. Maling at Sweethope; by Miss Rossie at Kenton; by Mr. Henderson at Jesmond; by Mr. Rhagg at Winlaton Mill; by Mr. Hedworth at Thornley on the Derwent; by Mr. Brady at Thornley near Hartlepool; by Dr. Lees and Mr. Gardner in Upper Teesdale, "commonly." It is rather common in Hezleden Dene, where it appears to prefer Hazel. The larva gives me the idea of being very small for an insect often expanding two inches. The imago is more frequently seen than others of the group. I took one on the Cemetery palings here in 1874, and have once or twice found it on the railway side, both places being some distance from its probable larval home.

PTEROSTOMA, Germ.

54. *Pterostoma palpina*, (Linn.). PALE PROMINENT.

Pterostoma palpina. Staint. Man., vol. i., p. 120.

Ptilodontis ,, Newm. Brit. Moths, p. 224.

Pterostoma ,, Barr. Lep. Brit. Is., vol. ili., p. 145.

,, ,, Meyr. Hdbk. Brit. Lep., p. 308.

LARVA. Buck., vol. ii., pl. xxxiv., fig. 1; O. Wils., pl. xxix., fig. 7.

This is exceedingly rare with us. It is in the Twizell list. Mr. Finlay found a solitary larva in Meldon Park, and I found another (which I failed to rear) on Sallows in Crimdon Cut in the year 1860. It is given in Mr. Porritt's Yorkshire list for several localities, but only one specimen is given in Dr. Ellis's Catalogue of Lancashire and Cheshire Lepidoptera.

PTILOPHORA, Steph.

55. *Ptilophora plumigera*, Esp. PLUMED PROMINENT.

Ptilophora plumigera. Staint. Man., vol. i., p. 121.

,, ,, Newm. Brit. Moths, p. 224.

,, ,, Barr. Lep. Brit. Is., vol. iii., p. 149.

,, ,, Meyr. Hdbk. Brit. Lep., p. 308.

LARVA. Buck., vol. ii., pl. xxxiv., fig. 2; O. Wils., pl. xxix., fig. 6.

Mr. Finlay is the only collector who has met with this insect, and that but a single specimen which he reared from a larva found in Meldon Park. It is not easy to explain how it got there. The species is said to be confined to chalk, and its range does not extend north of Buckinghamshire.

PETASIA, Steph.

56. *Petasia cassinea*, Fab. THE SPRAWLER.

- Petasia cassinea*. Staint. Man., vol. i., p. 125.
 „ „ Newm. Brit. Moths, p. 217.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 155.
Asteroscopus sphinx Meyr. Hdbk. Brit. Lep., p. 57.

LARVA. Buck., vol. iii., pl. xxxvi., fig. 2; O.Wils., pl. xxix., fig. 1.

This has been very rarely met with, and only in the extreme south of Durham. Mr. Sang took it at lamps in Darlington in 1853, which locality was subsequently given in Stainton's Manual. The late Mr. Winter of Beccles told me he had taken it at lamps at Hartlepool about the same date. It is found in several parts of Yorkshire, and the curious larva should be looked for in our counties. It feeds on a variety of trees, and the imago (as does that of the last species) emerges quite late in the year after the ordinary collecting season is over.

PYGÆRA, Ochs.

57. *Pygæra bucephala*, (Linn.). BUFF TIP.

- Pygæra bucephala*. Staint. Man., vol. i., p. 128.
 „ „ Newm. Brit. Moths, p. 219.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 161.
Phalera „ Meyr. Hdbk. Brit. Lep., p. 312.

LARVA. Buck., vol. iii., pl. xxxvii., fig. 4; O.Wils., pl. xxix., fig. 2.

Wallis was the earliest to record this species, which he calls the "silvery brown and yellow Moth." It is in the Twizell

list, and in that in Ornsby's Durham. Mr. Backhouse found larvæ on oak in September, 1844. More recent records are: "Meldon Park, not uncommon," J. Finlay; "Jesmond," M. Henderson; "Winlaton Mill and Staward Peel," T. Rhagg; "larvæ sometimes abundant at Axwell and Thornley," T. H. Hedworth. When I commenced to collect, the larvæ swarmed in Crimdon Cut and in Hezleden Dene, but they have not been seen for a long time until Mr. Gardner took one larva last year. This is not easy to explain. The larvæ are gregarious and feed on a great many different trees, and are tolerably hardy. The imago, when at rest, folds its wings closely round its body, and looks curiously like a piece of birch twig broken off at each end, the buff head and buff tips to the wings closely resembling the broken wood, while the striped, silvery wings are very like a bit of Birch bark. This is called a protective resemblance, but pieces of Birch twig broken about an inch long do not lie about everywhere as do withered leaves or bird droppings. Nevertheless the resemblance is very close and very curious.

CLOSTERA, Hoff.

58. *Clostera curtula*, (Linn.). CHOCOLATE TIP.

Clostera curtula. Staint. Man., vol. i., p. 127.

" " Newm. Brit. Moths, p. 221.

" " Barr. Lep. Brit. Is., vol. iii., p. 166.

Pygæra " Meyr. Hdbk. Brit. Lep., p. 203.

LARVA. Buck., vol. iii., pl. xxxvii., fig. 3; O. Wils., pl. xxix., fig. 3.

The only claim *Curtula* has to inclusion in our fauna is that Mr. C. Eales took a specimen at rest on palings at South Shields. There was a specimen in the Twizell collection when it was examined for me, but it is not in the Twizell list, and I have no evidence that this specimen was taken there. In any case it could but be a casual visitor, for though it has occurred in the York district its range does not extend nearly so far north,

59. *C. reclusa*, W. V. SMALL CHOCOLATE TIP.*Clostera reclusa*. Staint. Man., vol. i., p. 127.

" " Newm. Brit. Moths, p. 223.

" " Barr. Lep. Brit. Is., vol. iii., p. 166.

LARVA. Buck., vol. iii., pl. xxxvii., fig. 1; O.Wils., pl. xxix.,
fig. 5.

The Small Chocolate Tip is given in the Twizell list, and though there was no specimen in the collection there is no reason to doubt its occurrence. Mr. Bolam of Berwick says: "The larvæ may be found in plenty, spun up between the leaves of the Creeping Sallow (*Salix fusca*) in most localities where that plant is found, and the Moth is not difficult to rear. I have taken it at Kyloe, Newham Bog, Gordon Moss, etc." Trans. Berwickshire Field Club, vol. xv., p. 303. Mr. Finlay found the species in great abundance on Needless Hall Moor and elsewhere. Mr. Pickard also found it on the Durham moors about Wolsingham, and it probably occurs on most of the boggy moors where Dwarf Sallow grows freely. It is a species that flies very early in the morning rather than at night.

DILOBA, Bdv.

60. *Diloba cæruleocephala*, (Linn.). FIGURE OF EIGHT.*Diloba cæruleocephala*. Staint. Man., vol. i., p. 125.

" " Newm. Brit. Moths, p. 234.

" " Barr. Lep. Brit. Is., vol. iii., p. 175.

" " Meyr. Hdbk. Brit. Lep., p. 56.

LARVA. Buck., vol. iii., pl. xxxvi., fig. 1; O.Wils., pl. xxx.,
fig. 10.

This species is in the Twizell list, and in that in Ornsby's Durham, where it is said to occur near Shincliffe. Mr. Finlay took the imago at Netherwitton in September, and sometimes found the larvæ very plentiful. Mr. Rhagg found it at Bellingham, and Mr. Henderson at Jesmond. Mr. Backhouse found the larvæ "on Thorn at Darlington," where Mr. Sang took the imago on street lamps. Dr. Lees found larvæ locally abundant

about Ronald Mill. My brother, Mr. H. T. Robson, found larvæ on Black Thorn at Stockton in 1864. The only Hartlepool record I have is that I was with Mr. Taylor when he took an imago on the Cemetery palings on 25th October, 1874.

This concludes the Bombyces, Drepanulidæ and Pseudo-Bombyces. It will be noticed that many of the species are represented only by captures of stray specimens of insects whose home is elsewhere. Of the recognised British species that have not occurred, I cannot point to any and say they are likely to be found in our district.

Following Mr. Barrett's arrangement I now pass to the large group known as Noctuina, the imagines of which are chiefly of nocturnal or crepuscular flight, only very few flying by day.

GROUP. NOCTUINA.

FAMILY. CYMATOPHORIDÆ.

GENUS. GONOPHORA, Bruand.

1. *Gonophora derasa*, (Linn). BUFF ARCHES.*Thyatira derasa*. Staint. Man., vol. i, p. 173.*Gonophora* „ Newm. Brit. Moths, p. 237.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 186.

Habrosyne „ Meyr. Hdbk. Brit. Lep., p. 289.

LARVA. Buck., vol. iv., pl. liv., fig. 1.

This beautiful insect has only been recorded from the Tyne Valley, where it has occurred on both sides of the river, Mr. Henderson having taken it at Jesmond and Mr. Hedworth at Thornley and Gibside. It will probably be turned up elsewhere in both counties, as it is not uncommon in various parts of Yorkshire.

THYATIRA, Och.

2. *Thyatira batis*, (Linn.). PEACH BLOSSOM.*Thyatira batis*. Staint. Man., vol. i., p. 174.

„ „ Newm. Brit. Moths, p. 238.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 190.

„ „ Meyr. Hdbk. Brit., 289.

LARVA. Buck., vol. iv., pl. liv., fig. 2.

This, which is even more beautiful than the last, is widely distributed in both counties. Mr. Finlay took it in many parts of the district over which he collected; Mr. Lofthouse of Middlesbro' also met with it at Morpeth; Mr. Patterson took it at Lesbury; Mr. Henderson at Jesmond; Mr. Maling took it on the wing near Hexham in June, 1869. In Durham Mr. Hedworth found it at Thornley and Gibside, his earliest captures being on 1st June and latest on 20th July; Mr. Rhagg also obtained it at Thornley; Mr. Backhouse met with it at Shotley;

Mr. Maddison in the Durham district. In the Hartlepool district Mr. J. Wilson, Junr., took it at Castle Eden Dene in 1859 (E. W. I., vol. vi., p. 155); Mr. Harrison got it at sugar near Wingate in 1864 and Mr. Gardner in Hezleden Dene in 1895. Only Mr. Finlay obtained it at all plentifully. Probably we are not sufficiently acquainted with its habits. Mr. Meyrick suggests that it "probably imitates a group of fallen petals of the Bramble."

CYMATOPHORA, Tr.

3. *Cymatophora duplaris*, (Linn.) LESSER SATIN.

- Cymatophora duplaris*. Staint. Man., vol. i., p. 174.
 " " Newm. Brit. Moths, p. 239.
 " " Barr. Lep. Brit. Is., vol. iii., p. 193.
Palimpsestis " Meyr. Hdbk. Brit. Lep., p. 290.

LARVA. Buck., vol. iv., pl. liv., fig. 3.

A widely-distributed but not very common species. Mr. Bolam "bred two or three specimens from larvæ got in the autumn on Birch at Kyloe and Newham Bog." Mr. Finlay found it "not scarce" in the Old Park, Netherwitton; Mr. Henderson found it at Jesmond; Mr. Hedworth at Thornley; Mr. Sang at Wolsingham; it is recorded in "the Manual" for Darlington, and Mr. Gardner and I have occasionally taken it in Hezleden Dene. The larvæ feed between united leaves of Birch.

4. *Cymatophora or.* W. V. POPLAR LUTESTRING.

- Cymatophora or.* Staint. Man., vol. i., p. 175.
 " " Newm. Brit. Moths, p. 241.
 " " Barr. Lep. Brit. Is., vol. iii., p. 198.
Palimpsestis " Meyr. Hdbk. Brit. Lep., p. 290.

LARVA. Buck., vol. iv., pl. liv., fig. 6.

The only record of this species in these counties that I have seen is that in Ornsby's Durham. It is not, however, an unlikely insect to occur, and will probably be found among Poplars in many parts of both counties.

ASPHALIA, Hub.

5. *Asphalia diluta*, W. V. LESSER LUTESTRING.

Cymatophora diluta. Staint. Man., vol. i., p. 175.

„ „ Newm. Brit. Moths, p. 240.

Asphalia „ Barr. Lep. Brit. Is., vol. iii., p. 204.

Polyphoca „ Meyr. Hdbk. Brit. Lep., p. 291.

LARVA. Buck., vol. iv., pl. liv., fig. 5.

Though this is generally a common species, it has been recorded but from few places in our district. Mr. Henderson met with it at Jesmond, the only Northumberland record. Further up the Tyne on the Durham side Mr. Hedworth met with it very abundantly about Thornley, and took several specimens of a beautiful variety with three or more dark bands, and which I have elsewhere named *nubilata*. This form is figured in Newman's British Moths, p. 240, from a specimen in the collection of the late Mr. Bond. Newman states it is a species not given to variation. The only additional record that I have is that Mr. Maddison met with it in the Durham district.

6. *A. flavicornis*, Linn. YELLOW HORNED.

Cymatophora flavicornis. Staint. Man., vol. i., p. 176.

„ „ Newm. Brit. Moths, p. 242.

Asphalia „ Barr. Lep. Brit. Is., vol. iii., p. 207.

Polyphoca „ Meyr. Hdbk. Brit. Lep., p. 291.

LARVA. Buck., vol. iv., pl. lv., fig. 1; O. Wils., pl. xxxi., fig. 1.

I have no doubt this species occurs in most parts of both counties where there is plenty of Birch, but, perhaps from the early appearance of the imago, perhaps from the difficulty of finding the larva until you learn its habits, it has been seldom recorded. Mr. Bolam found the larva "not uncommonly on Birch at Kylloe and Newham Bog." On 12th March, 1896, he "watched a female flying in the sunshine at Kylloe, busily engaged in depositing her eggs on the outer shoots of a Birch tree. She laid her eggs singly, resting just a moment and curling her body round so as generally to place them on the under-

side of the branch." (Trans. Berwickshire Nat. F. C., vol. xv., p. 304). Mr. Henderson met with the species at Jesmond, Mr. Hedworth took one at Lockhaugh, 6th March, 1871; Mr. Rhagg found it both at Gibside and Thornley Wood; Mr. Sang found larvæ on Birch at Wolsingham, 13th June, 1872; Dr. Lees took one in Upper Teesdale, where Mr. Gardner found the larvæ common. Mr. Greenwell reported it as rare at Bishop Auckland. It is rare in Hezleden Dene near Hartlepool, but common at Edder Acres. The larva spins leaves together and conceals itself therein, being very difficult to see or beat out. It feeds at night and is then more easy to dislodge. The perfect insect at rest so closely resembles the Birch bark that it requires a practised eye to notice it.

7. *A. ridens*, Fab. FROSTED GREEN.

Cymatophora ridens. Staint. Man., vol. i., p. 176.

" " Newm. Brit. Moths, p. 243.

Asphalia " Barr. Lep. Brit. Is., vol. iii., p. 211.

Polyploca " Meyr. Hdbk. Brit. Lep., p. 292.

LARVA. Buck., vol. iv., pl. lv., fig. 2; O. Wils., pl. xxxi., fig. 2.

The only record of this pretty little species is that Mr. Hedworth bred a single specimen from a larva he found at Gibside. (See Ent., vol. x., p. 256). Mr. Hedworth gave the specimen to the late Mr. Wasserman and it is now in the Museum of the Natural History Society of Newcastle.

(*Diptera orion*, Esp., is marked "Da" in the Manual in error).

FAMILY. TRIFIDÆ.

ACRONYCTA, Och.

8. *Acronycta leporina*, (Linn). MILLER.

Acronycta leporina. Staint. Man., vol. i., p. 181.

" " Newm. Brit. Moths, p. 251.

" " Barr. Lep. Brit. Is., vol. i., p. 224.

" " Meyr. Hdbk. Brit. Lep., p. 140.

LARVA. Buck., vol. iv., pl. lvi., fig. 3; O. Wils., pl. xxxii., fig. 3.

This species has been found in few places in our district, but not as yet northward of the Tyne Valley. Mr. Henderson took it at Jesmond, where Mr. Maling found the larvæ on Poplar. Mr. Nicholson found larvæ on Alder near Swalwell, and in the Derwent Valley. Mr. Hamilton found larva in the Danes Head Wood, and Mr. Hedworth at Rowland's Mill and near Lintz Green. About Hartlepool we have also found them on Poplar in gardens in the outskirts, and Mr. Gardner has taken them both on Poplar and Birch in Cole Hill Wood, but not commonly. The imago has never been taken. Though the larvæ, with its long white or pale yellow hairs would seem to be a conspicuous object, it is really very difficult to recognize. Mr. Barrett says it looks like a twisted downy feather. Dr. Chapman, one of our most observant naturalists, says it sits on the underside of an Alder leaf, quite hidden when looked at from above. "In looking up from below, through the foliage of an Alder tree, most of the lower leaves are in the shade of the sun, but here and there a gleam of light falls through on to a portion of a leaf, and gives it quite a different appearance as seen from beneath. A larva of *Leporina* seated beneath an illuminated leaf precisely resembles one of these patches."

9. *A. Aceris*, (Linn.). SYCAMORE.

Acronycta Aceris. Staint. Man., vol. i., p. 181.

" " Newm. Brit. Moths, p. 251.

" " Barr. Lep. Brit. Is., vol. iii., p. 229.

" " Meyr. Hdbk. Brit. Lep., p. 142.

LARVA. Buck., vol. iv., pl. lvi., fig. 4; O. Wils., pl. xxxiil.,
fig. 4.

The only occurrence of this insect in our counties that has come under my notice is that Mr. Brady took a single specimen in a garden at Sunderland. As the range of the species does not extend beyond the Midlands, this can only have been an accidental visitor, possibly introduced in pupa in the bark of a transplanted tree.

10. *A. megacephala*, W. V. THE POPLAR GREY.*Acronycta megacephala*. Staint. Man., vol. i., p. 181.

" " Newm. Brit. Moths, p. 252.

" " Barr. Lep. Brit. Is., vol. iii., p. 233.

" " Meyr. Hdbk. Brit. Lep., p. 142.

LARVA. Buck., vol. iv., pl. lvi., fig. 5; O. Wils., pl. xxxii.,
fig. 5.

This species is not very common, and only one appears to have been met with in Northumberland. "A pupa got under moss at Sallows near Allerdean Mill, turned out this Moth on 12th June, 1887." (G. Bolam, Trans. Ber. F. C., vol. xv., p. 304). In Durham it is reported from "Gibside, not common," by Mr. T. H. Hedworth; "not common at Greatham and Norton," by Mr. Gardner. I took a single specimen at Hartlepool in 1875, and have occasionally found it on tree trunks on the road side between Hartlepool and Stockton-on-Tees, the last being in 1893.

11. *A. tridens*, W. V. DARK DAGGER.*Acronycta tridens*. Staint. Man., vol. i., p. 180.

" " Newm. Brit. Moths, p. 248.

" " Barr. Lep. Brit. Is., vol. iii., p. 245.

" " Meyr. Hdbk. Brit. Lep., p. 141.

LARVA. Buck., vol. iv., pl. lvi., fig. 1; O. Wils., pl. xxii.,
fig. 6.

I have met with but two notes of the occurrence of this species—one in Ornsby's Durham; the other in the MSS. of the late Wm. Backhouse, who says he took it on tree trunks at Sunnyside. I admit it with some hesitation, for neither in Ornsby's Durham nor in Mr. Backhouse's notes do I find any record of the next species, which, while generally common, is almost undistinguishable from *Tridens* except in the larval stage. *Tridens*, however, has been taken in various parts of Yorkshire, and there is nothing improbable in its occurrence with us. I, therefore, include it, with these remarks, and with the idea that if these

records have been made in error for *Psi*, that the genuine *Tridens* will yet be found.

12. *A. Psi*, (Linn.). GREY DAGGER.

Acronycta Psi. Staint. Man., vol. i., p. 180.

„ „ Newm. Brit. Moths, p. 250.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 250.

„ „ Meyr. Hdbk. Brit. Lep., p. 141.

LARVA. Buck., vol. iv., pl. lvi., fig. 2; O. Wils., pl. xxxii., fig. 2.

Though not recorded in the Twizell list, this is certain to occur in North Northumberland. In the Morpeth district Mr. Finlay found it generally distributed though not very abundant. Mr. Henderson met with it at Jesmond, Mr. Rhagg also obtained it in the same neighbourhood. Mr. Hedworth recorded it from the Derwent district as generally distributed and fairly common in the larval state. Mr. Maddison recorded it from Durham, Mr. Greenwell and Mr. Ross as common on walls, etc., about Bishop Auckland, and Dr. Lees found it in Upper Teesdale. It is common enough about Hartlepool in most of the woods and denes, and plentiful in West Hartlepool Cemetery. The larvæ are seen more frequently than the imago, and, like some others of the genus, they appear very small for the size of the insect produced.

13. *A. Menyanthidis*, Esp. LIGHT KNOT GRASS.

Acronycta Menyanthidis. Staint. Man., vol. 1., p. 183.

„ „ Newm. Brit. Moths, p. 257.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 253.

„ „ Meyr. Hdbk. Brit. Lep., p. 142.

LARVA. Buck., vol. iv., pl. lvii., fig. 5; O. Wils., pl. xxx.,
fig. 9.

Menyanthidis is a northern and moorland species which has scarcely ever been met with south of Yorkshire and Cheshire. It is most numerous in Scotland, but occurs freely on the moors of both these counties. The perfect insect sits on walls or palings, but the bulk of our cabinet specimens are bred. It

comes freely enough to sugar, but the places it frequents are not always easily accessible for night work. Mr. Nicholson reports it from the moors near Gilsland; Mr. Finlay from Needless Hall and other moors in Northumberland. In Durham Mr. Gardner and Dr. Lees found larvæ freely on the moors of Upper Teesdale.

14. *A. Rumicis*, (Linn.). KNOT GRASS.

Acronycta Rumicis. Staint. Man., vol. i., p. 182.

„ „ Newm. Brit. Moths, p. 255.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 265.

„ „ Meyr. Hdbk. Brit. Lep., p. 143.

LARVA. Buck., vol. iv., pl. lvii., fig. 3; O. Wils., pl. xxxii., fig. 7.

The Knot Grass is well distributed over both counties and is generally common. It comes very freely to sugar, sits on palings and tree trunks, and the conspicuous-looking larva feeds in the day time, so that it is a species that comes in the way of the beginner in his first season. The larvæ appear to me to have a partiality for Bramble, but they eat a variety of low plants.

A dark form of this insect was figured by Curtis under the name *Salicis*, and the larva of *Menyanthidis* was depicted as that which produced the Moth. How the error was made does not concern us, but Mr. Backhouse records the variety from Darlington, and I bred one here.

15. *A. Ligustri*, W. V. CORONET.

Acronycta Ligustri. Staint. Man., vol. i., p. 182.

„ „ Newm. Brit. Moths, p. 255.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 270.

„ „ Hdbk. Brit. Lep., p. 142.

LARVA. Buck., vol. iv., pl. lvii., fig. 2; O. Wils., pl. xxxi., fig. 7.

The Coronet has only been recorded by Mr. Finlay, who found it generally distributed in the Morpeth district, but not very

common. It ought to be found elsewhere in both counties, and should be looked for where there is an abundance of Ash.

AGROTIS, Och.

16. *Agrotis valligera*, Hub. ARCHER'S DART.

- Agrotis valligera*. Staint. Man., vol. i., p. 223.
 „ „ Newm. Brit. Moths, p. 316.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 278.
 „ *vestigialis*. Meyr. Hdbk. Brit. Lep., p. 90.

LARVA. Buck., vol. v., pl. lxx., fig. 2.

A coast species, and generally found on sand-hills, where the larva feeds on a number of low plants, hiding during the day below the sand and coming up at night to feed. Mr. Maling reports it from the Northumberland coast; Mr. Eales as "generally common on the coast;" Mr. Rhagg at South Shields links; Mr. Backhouse at Seaton Carew. It is abundant on the sand-hills at Hartlepool, and very easily reared from the larvæ, which closely resemble those of *Tritici*; in fact I have more than once bred *Valligera* when I expected I had *Tritici* larvæ.

17. *A. suffusa*, Hub. DARK SWORD GRASS.

- Agrotis suffusa*. Staint. Man., vol. i., p. 223.
 „ „ Newm. Brit. Moths, p. 318.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 283.
 „ „ Meyr. Hdbk. Brit. Lep., p. 91.

LARVA. Buck., vol. v., pl. lxx., fig. 4.

Suffusa is not a very common insect in either county. It is in the Twizell list; Mr. Finlay found it in Coal Law Woods, but not plentiful, Mr. Maling met with it in several places on the Northumberland coast, and Mr. Eales reported it as generally common on the coast. We take it at Hartlepool at sugar but not every season, and never more than one or two. The only inland record I have for Durham, is that Mr. Ross has taken three at Bishop Auckland.

18. *A. segetum*, W. V. TURNIP MOTH.

- Agrotis segetum*. Staint. Man., vol. i., p. 224.
 " " Newm. Brit. Moths, p. 320.
 " " Barr. Lep. Brit. Is., vol. iii., p. 288.
 " " Meyr. Hdbk. Brit. Lep., p. 91.

LARVA. Buck., vol. v., pl. lxxi., fig. 1; O. Wils., pl. xxxiv.,
 fig. 12.

An abundant species everywhere. Mr. Barrett, quoting Sir Thomas Moncrieff, says it ascends to 600 feet above the sea level. This it may do on an open hill side, but Dr. Lees found it in valleys in Upper Teesdale at a considerably higher elevation.

19. *A. corticea*, Hub. HEART AND CLUB.

- Agrotis corticea*. Staint. Man., vol. i., p. 225.
 " " Newm. Brit. Moths, p. 327.
 " " Barr. Lep. Brit. Is., vol. iii., p. 293.
 " " Meyr. Hdbk. Brit. Lep., p. 91.

LARVA. Buck., vol. v., pl. lxxi., fig. 4; O. Wils., pl. xxxiv.,
 fig. 14.

Only recorded from two localities,—Twizell, in Northumberland, and Bishop Auckland, in Durham, where Mr. Ross found it fairly common. Only four localities are given for it in Porritt's Yorkshire list.

20. *A. exclamationis*, (Linn.). HEART AND DART.

- Agrotis exclamationis*. Staint. Man., vol. i., p. 224.
 " " Newm. Brit. Moths, p. 326.
 " " Barr. Lep. Brit. Is., vol. iii., p. 306.
 " " Meyr. Hdbk. Brit. Lep., p. 93.

LARVA. Buck., vol. v., pl. lxxi., fig. 3; O. Wils., pl. xxxiv.,
 fig. 13.

A very abundant insect, occurring plentifully everywhere. Mr. Barrett thinks it the most abundant of all our Noctuae. It is rather a variable species, and many interesting forms may be selected from the swarms that come to sugar.

(*Agrotis ripæ* is likely to be met with on some of our sandy shores. Yorkshire appears to be the limit of its range, but it has been taken in Ayrshire, and stray specimens might readily occur with us).

21. *A. cursoria*, Hub. COAST DART.

- Agrotis cursoria*. Staint. Man., vol. i., p. 225.
 „ „ Newm. Brit. Moths, p. 329.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 324.
 „ „ Meyr. Hdbk. Brit. Lep., p. 94.

LARVA. Buck., vol. v., lxxi., fig. 7.

Another coast species, in this country at least. It was very common at Hartlepool until some twenty-five years ago, when the northward extension of the town probably drove it away. The last specimen I took was in 1876. Mr. Eales took it freely in his time on the links at South Shields, from whence Mr. Rhagg reports it more recently. Mr. Maling found it in similar places on the South Northumberland coast. Mr. Bolam says, "I took a single specimen on the sea-banks near Scremerston Sea House on 25th August, 1888, and it is the only record that I am aware of for this district. It seems, however, to be not uncommon about the mouth of the Tyne, and would no doubt be found upon other parts of the coast if carefully looked for." Trans. Ber. Field Club, vol. xv., p. 305.

Cursoria is a very variable species, and some of the forms are very difficult to separate from *Tritici*. Those we took at Hartlepool in former years were always a lighter brown, though the markings were often very close to *Tritici*.

22. *A. nigricans*, Linn. GARDEN DART.

- Agrotis nigricans*. Staint. Man., vol. i., p. 225.
 „ „ Newm. Brit. Moths, p. 329.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 331.
 „ „ Meyr. Hdbk. Brit. Lep., p. 92.

LARVA. Buck., vol. v., pl. lxxii., fig. 1.

This also occurs on the coast, but not so exclusively as the

last species. Dr. Lees reported it as "not uncommon in the valleys" in Upper Teesdale. Mr. Ross found it commonly at Bishop Auckland, and Darlington is one of the Manual localities. Mr. Hedworth took one at Dunston and met with it occasionally at Swalwell. Mr. Backhouse's notes have "Gardens, Newcastle." It is given in the Twizell list. Both Mr. Maling and Mr. Eales reported it as generally common on the coast. It occurs regularly on the Hartlepool sandhills, and may be taken at sugar or Ragwort flowers. It is a variable insect, and is said to approximate closely to some forms of the next species, from which some think it is not distinct. I can only say I never saw a dubious form here, and Mr. Gardner has pointed out to me that the larvæ of the two are distinctly different.

23. *A. Tritici*, Linn. WHITE-LINE DART.

- Agrotis Tritici*. Staint. Man., vol. i., p. 226.
 " " Newm. Brit. Moths, p. 331.
 " " Barr. Lep. Brit. Isles., vol. iii., p. 336.
 " " Meyr. Hdbk. Brit. Lep., p. 96.

LARVA. Buck., vol. v., pl. lxxii., fig. 2.

Another coast species, and very abundant from Seaton Carew at the Tees mouth all along the shores wherever there are loose sandhills. It is one of the most variable species we have and distinctive names were formerly given to many of the forms. Thus in the Twizell list we find *Sagittifera*, *Vitta*, and *Hor-torum*. Many large and well-marked examples occur, and it has a golden-brown tinge in this district, very different from the cold grey-brown of specimens from the south coast.

24. *A. agathina*, Dup. HEATH RUSTIC.

- Agrotis agathina*. Staint. Man., vol. i., p. 227.
 " " Newm. Brit. Moths, p. 333.
 " " Barr. Lep. Brit. Is., vol. iii., p. 357.
 " " Meyr. Hdbk. Brit. Lep., p. 95.

LARVA. Buck., vol. v., pl. lxxii., fig. 5; O.Wils., pl. xxxiv., fig. 16a.

A moorland insect reported by Dr. Lees to be common in the larval state in Upper Teesdale. I have no other record, and would have expected Mr. Sang and Mr. Gardner to find the larva as they have collected so much there, Mr. Gardner being an exceptionally skilful larva hunter. Nor did Mr. Finlay find it on the Northumberland moors. It occurs in all the adjacent counties and is certain to occur with us. The larva is very distinct and feeds up in the spring, but it appears almost impossible to bring it to maturity in confinement.

25. *A. porphyrea*, W. V. TRUE LOVER'S KNOT.

- Agrotis porphyrea*. Staint. Man., vol. i., p. 227.
 „ „ Newm. Brit. Moths, p. 334.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 362.
 „ *strigula*. Meyr. Hdbk. Brit. Lep., p. 95.
 LARVA. Buck., vol. v., pl. lxxiii., fig. 1; O. Wils., pl. xxxiv.,
 fig. 17.

Another moorland species, but much commoner than the last, apparently occurring wherever there is any heather. It is abundant on the moors of both counties. "Generally distributed on the moors," J. Finlay; "heaths near Bearpark," Ornsby's Durham; "Shull and on the moors, etc.," W. Backhouse; "common on the Upper Teesdale moors," F. A. Lees. It is also fairly plentiful in heathery places on the coast. Mr. Barrett says it "appears to regard sugar with contempt," but both Mr. Gardner and I have taken it at that bait, and I have also taken it at Honey-dew on a Privet hedge. Though its natural flight is at dusk, when it may be seen flying freely over the heather, it is often on the wing in the day time. I have seen it at mid-day on Greenleighton Moor, and in 1894 I took one flying in the morning sun in Hartlepool streets.

26. *A. præcox*, Linn. PORTLAND MOTH.

- Agrotis præcox*. Staint. Man., vol. i., p. 227.
 „ „ Newm. Brit. Moths, p. 334.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 368.
 „ „ Meyr. Hdbk. Brit. Lep., p. 93.
 LARVA. Buck., vol. v., pl. lxxiii., fig. 2; O. Wils., pl. xxxiv.,
 fig. 18.

A coast insect which appears to reach the limit of its northward range on the Yorkshire coast. Two only have been captured in Durham, to my knowledge,—one by the late Mr. Tellman and another by the late Mr. Wasserman, both on the sandbanks south of the river Tyne.

27. *A. saucia*, Hub. PEARLY UNDERWING.

- Agrotis saucia*. Staint. Man., vol. i., p. 224.
 „ „ Newm. Brit. Moths, p. 319.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 369.
 „ „ Meyr. Hdbk. Brit. Lep., p. 93.

LARVA. Buck., vol. v., pl. lxx., fig. 5; O.Wils., pl. xxxiv., fig. 2.

Saucia has only twice been recorded in our district. It is in the Twizell list under the name of *aqua*, but the specimens were not in the collection. Mr. G. Ross, of Bishop Auckland, has taken two specimens there. These are the only notices of its occurrence that have reached me. It is an insect that, though generally rare, occasionally appears in large numbers. It has been taken in many parts of Yorkshire, from Scarbro' on the east coast, where it is often plentiful, to Leeds in the west. It is also found in Scotland, both east and west, extending even to the Shetlands. It is often double brooded.

28. *A. pyrophila*, Fab. DOTTED RUSTIC.

- Agrotis pyrophila*. Staint. Man., vol. i., p. 228.
 „ „ Newm. Brit. Moths, p. 336.
 „ „ Barr. Lep. Brit. Is., vol. iii., p. 376.
 „ *simulans*. Meyr. Hdbk. Brit. Lep., p. 98.

LARVA.

Very rare in this district, only two records having come under my notice. The first is that of the Twizell list, but the specimen was not in the collection when I had it examined. The other was taken in 1874 at sugar in Loutan Fall Wood, Upper Teesdale, by F. A. Lees. I see no reason why it should not occur regularly.

29. *A. ravid*a, Hub. STOUT DART.*Agrotis ravid*a. Staint. Man., vol. i., p. 227.

" " Newm. Brit. Moths, p. 335.

" " Barr. Lep. Brit. Is., vol. iii., p. 384.

" *obscura*. Meyr. Hdbk. Brit. Lep., p. 98.

LARVA. Buck., vol. v., pl. lxxiii., fig. 3.

The only Northumberland record for this species is that Miss Rossie met with it at Kenton; Mr. Eales took several at sugar at South Shields, and also found specimens hiding behind window shutters; Mr. Brady took it at Sunderland in September, 1891; Mr. Sang met with it at Castle Eden in August, 1855. At Hartlepool a specimen or two comes to sugar nearly every autumn, but it is never numerous. I once took a specimen with a distinct purple tinge. Mr. Sang met with it also at Seaton, and Darlington is given as a locality in the Manual, but this probably referred to the Seaton or Castle Eden captures. Mr. Lofthouse has also taken it at Greatham.

30. *A. lucernea*, Linn. NORTHERN RUSTIC.*Agrotis lucernea*. Staint. Man., vol. i., p. 228.

" " Newm. Brit. Moths, p. 336.

" " Barr. Lep. Brit. Is., vol. iii., p. 338.

" " Meyr. Hdbk. Brit. Lep., p. 97.

LARVA. Buck., vol. v., pl. lxxiii., fig. 4.

"I found this Moth flying in the sunshine in considerable numbers, at Kyloe Craggs, on 1st August, 1895, attracted to the flowers of the Wood Sage, along with another good species, *Plusia interrogationis*," G. Bolam, Trans. Ber. F. Club, vol. xv., p. 305). I have no knowledge of its occurrence elsewhere.

AXYLIA, Hub.

31. *Axylia putris*, (Linn.). THE FLAME.*Axylia putris*. Staint. Man., vol. i., p. 198.

" " Newm. Brit. Moths, p. 282.

" " Barr. Lep. Brit. Is., vol. iv., p. 1.

Agrotis " Meyr. Hdbk. Brit. Lep., p. 98.

LARVA. Buck., vol. iv., pl. lxii., fig. 5.

This species is widely distributed throughout England, and is not uncommon in many parts of Scotland, but in our counties it is of very rare occurrence, and I have but two records for each. Mr. Patterson has taken it in the neighbourhood of Newcastle. Mr. Maling found it once flying over Nettles at dusk at Newbiggin-by-the-Sea. In Durham Mr. Ross took it at Bishop Auckland, and Dr. Lees got two at sugar near Middleton-in-Teesdale. It is given in the Manual as occurring commonly at Darlington, but I have reason to think the specimens referred to were taken at Redcar on the Yorkshire coast. It appears to be tolerably common in Yorkshire, as well as in Lancashire and Cheshire, and should occur much more frequently with us than it appears to do.

TRIPHÆNA, Ochs.

32. *Triphæna fimbria*. BROAD-BORDERED YELLOW UNDER-WING.

<i>Triphæna fimbria</i>	Staint. Man., vol. i., p. 229.
„ „	Newm. Brit. Moths, p. 339.
„ „	Barr. Lep. Brit. Is., vol. iv., p. 5.
„ „	Meyr. Hdbk. Brit. Lep., p. 105.

LARVA. Buck., vol. v., pl. lxxiv., fig. 2.

Decidedly a scarce insect, though occurring in most parts of both counties. We do not appear to know enough of its habits to obtain the imago, most of our cabinet specimens being reared from larvæ. It is in the Twizell list; Mr. Finlay took one in Coal Law Wood; both Mr. Maling and Mr. Henderson met with it in Jesmond Dene; Mr. Rhagg met with it in the same neighbourhood and at Swalwell. It is recorded in Ornsby's Durham for Maiden Castle Wood; Mr. Maddison took two at sugar at Burney Wood, both near Durham; Mr. Hedworth met with it at sugar (5/8/76) at Thornley and found larvæ at Gibside; Mr. Greenwell took one at Bishop Auckland; Darlington is a Manual locality. In the Hartlepool district it is decidedly uncommon. Mr. Harrison took it at sugar in 1864 near the "new winning," Castle Eden, and we never saw it again till 1896 when Mr. Gardner bred it from larvæ found near Hezleden

Dene. This larvæ should be looked for in spring on the outside of woods; they feed on various low plants in autumn, but appear to prefer the buds and young leaves of Willow, Birch, etc., in spring.

33. *T. janthina*, Esp. LESSER BROAD-BORDER.

- Triphæna ianthina*. Staint. Man., vol. i., p. 229.
 " " Newm. Brit. Moths, p. 338.
 " *janthina*. Barr. Lep. Brit. Is., vol. iv., p. 9.
 " *ianthina*. Meyr. Hdbk. Brit. Lep., p. 105.

LARVA. Buck., vol. v., pl. lxxiv., fig. 1; O.Wils., pl. xxxv., fig. 1.

Apparently somewhat of a garden insect in our district, certainly not particularly attached to the coast. It is in the Twizell list; Mr. Finlay notes that he has bred it plentifully, but does not say where the larvæ were obtained. As he was a gardener it is probable he got them about the gardens at Meldon. Messrs. Maling, Henderson, Patterson, and Rhagg have all met with it at Jesmond, the latter at Swalwell also. Mr. Brady writes, "a few in gardens at Sunderland." Mr. Corder (Sunderland) says, "I get them most years in our town gardens, or sitting on the window. They come to light a good deal. I once took a larva on Polyanthus and bred a very dark Moth. They are certainly not on the cliffs, though our garden is not a mile from the sea." Mr. Eales took one at Campion flowers at South Shields; Mr. Hedworth one at Thornley; Mr. Backhouse met with it at Toot-hill. I took it at Staindrop in a small garden, but I never met with it at Hartlepool.

34. *T. interjecta*, Hub. LEAST YELLOW UNDERWING.

- Triphæna interjecta*. Staint. Man., vol. i., p. 230.
 " " Newm. Brit. Moths, p. 340.
 " " Barr. Lep. Brit. Is., vol. iv., p. 12.
 " " Meyr. Hdbk. Brit. Lep., p. 106.

LARVA. Buck., vol. v., pl. lxxiv., fig. 3.

I have no record of the occurrence of this pretty little species

except at Hartlepool. Both Mr. Gardner and I have frequently taken it at Ragwort flowers on the sandhills. In August, 1876, it was comparatively common, and I took a good number. A year or two later it disappeared and I thought it had left us altogether, but in 1894 I went about a mile further north than my usual collecting ground, and found it sparingly on Ragwort flowers as before. Mr. Barrett thinks Yorkshire the limit of its northward range, and the Hartlepool sandhills are but a few miles beyond. The insect is too regular in its appearance to be a visitor, but its scarcity, and the fact that the Sunderland collectors have not met with it, seem to fix our sandhills as its last northward stage.

35. *T. orbona*, Fab. COMMON YELLOW UNDERWING.

- Triphæna orbona*. Staint. Man., vol. i., p. 230.
 „ „ Newm. Brit Moths, p. 341.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 14.
Agrotis comes. Meyr. Hdbk. Brit. Lep., p. 100.

LARVA. Buck., vol. v., pl. lxxiv., fig. 5; O. Wils., pl. xxxv., fig. 3.

A common species in many parts of our district, but nowhere so abundant as *pronuba*. It is in the Twizell list; Mr. Finlay took it all over the Morpeth district but not commonly; all the Newcastle collectors found it at Jesmond and elsewhere about Newcastle. Mr. Hedworth met with it in all parts of his district; it is in the list in Ornsby's Durham; Dr. Lees took it in Upper Teesdale, but not abundantly; Mr. Backhouse at Barnard Castle and Darlington; Mr. Ross took two at Bishop Auckland. At Hartlepool it occurs regularly but never in large numbers. It is a very variable species and sometimes grandly marked, but the best forms, known as *Curtisii*, occur chiefly in the north of Scotland. With us the ground colour of the fore-wings is the most variable portion. Very pale forms are sometimes met with here, and occasionally they are rather reddish, but the stigmata and lines are seldom well marked.

36. *T. subsequa*, Hub. LUNAR YELLOW UNDERWING.*Triphæna subsequa*. Staint. Man., vol. i., p. 230.

" " Newm. Brit. Moths, p. 341.

" " Barr. Lep. Brit. Is., vol. iv., p. 19.

Agrotis orbona. Meyr. Hdbk. Brit. Lep., p. 101.

LARVA. Buck., vol. v., pl. lxxiv., fig. 4.

Decidedly a rare insect in these counties, though it is probably often passed over as *orbona*, from which it is best distinguished by having a distinct black spot on the costa at the commencement of the subterminal line, which is wanting in the commoner species. *Subsequa* is in the Twizell list, but the specimens have been removed from the collection. Mr. Finlay found it occasionally in Coal Law Wood; Mr. Maling took one at Newbiggin-by-the-Sea in July, 1868, and Mr. Gardner took one at Hezleden Dene at sugar in 1896.

37. *T. pronuba*, (Linn.). LARGE YELLOW UNDERWING.*Triphæna pronuba*. Staint. Man., vol. i., p. 231.

" " Newm. Brit. Moths, p. 343.

" " Barr. Lep. Brit. Is., vol. v., p. 23.

Agrotis " Meyr. Hdbk. Brit. Lep., p. 101.

LARVA. Buck., vol. v., pl. lxxv., fig. 1; O. Wils., pl. xxxv., fig. 4.

Among the commonest of our Noctuæ, occurring everywhere and in considerable abundance. It haunts the sugared patches till quite the end of summer, and on unfavourable nights is often the only insect to appear, coming freely when even *Polyodon* fails. It is very variable, but all the forms occur everywhere. It is in all the lists, I therefore omit localities.

NOCTUA, Gn.

38. *Noctua glareosa*, Esp. AUTUMNAL RUSTIC.*Noctua glareosa*. Staint. Man., vol. i., p. 233.

" " Newm. Brit. Moths, p. 343.

" " Barr. Lep. Brit. Is., vol. iv., p. 30.

Agrotis " Meyr. Hdbk. Brit. Lep., p. 104.

LARVA. Buck., vol. v., pl. lxxv., fig. 2.

An autumn species, well distributed and not uncommon. It is in the Twizell list; Mr. Finlay took it at Coal Law Wood and at Throphill Moor, generally most abundant at Heather Blossom. Mr. Rhagg met with it at Allendale; Mr. Hedworth got it at sugar at Thornley and Dunston; Mr. Backhouse at Shull; Mr. Maddison at Durham; Dr. Lees found it common in Upper Teesdale; at Bishop Auckland Mr. Ross took a single specimen; Mr. Sang took it at Ragwort flowers in August, 1858. I took two or three at Ragwort in September, 1874, on our sand-hills, and again in 1876, but I have not seen it there since. It is not very rare, however, about Hezleden Dene, where I took several at sugar in 1897. Only the type occurs with us.

39. *N. augur*, Fab. DOUBLE DART.

- Noctua augur*. Staint. Man. vol. i., p. 234.
 „ „ Newm. Brit. Moths, p. 344.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 34.
Agrotis „ Meyr. Hdbk. Brit. Lep., p. 96.

LARVA. Buck., vol. v., pl. lxxv., fig. 4; O.Wils., pl. xxxv., fig. 5.

An abundant species every where, plentiful on the coast sand-hills, as well as on some, at least, of the moors, and marked as plentiful in all the lists. Though a very constant species, some curious aberrations of the insect have been met with, but not in our district.

40. *N. plecta*, (Linn). FLAME SHOULDER.

- Noctua plecta*. Staint. Man., vol. i., p. 234.
 „ „ Newm. Brit. Moths, p. 343.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 38.
Agrotis „ Meyr. Hdbk. Brit. Lep., p. 95.

LARVA. Buck., vol. v., pl. lxxv., fig. 5; O.Wils., pl. xxxv., fig. 6.

One of the commonest species, occurring abundantly every where. I have occasionally taken at Hartlepool examples in which the pale costal streak was suffused and obscured with

brown scales. Mr. Barrett speaks of this variety as being peculiar to the North of England and more particularly to the county of Durham.

41. *N. depuncta*, Linn. PLAIN CLAY.

- Noctua depuncta*. Staint. Man., vol. i., p. 233.
 „ „ Newm. Brit. Moths, p. 344.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 41.
Agrotis „ Meyr. Hdbk. Brit. Lep., p. 104.

LARVA. Buck., vol. v., pl. lxxv., fig. 3.

This is a rare species in England. I have no record for Northumberland, and but two for Durham. Mr. Ross took a single specimen at Bishop Auckland, and Mr. Gardner took another at Hezleden Dene on 21st August, 1896, and has taken one or two there subsequently. It occurs at several places in Yorkshire and is sometimes abundant at Scarborough (Porritt, List of Yorkshire Lep., p. 82). It has also been met with at Barron Wood in Cumberland.

42. *N. triangulum*, Tr. DOUBLE-SPOTTED SQUARE SPOT.

- Noctua triangulum*. Staint. Man., vol. i, p. 235.
 „ „ Newm. Brit. Moths, p. 347.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 41.
Agrotis „ Meyr. Hdbk. Brit. Lep., p. 100.

LARVA. Buck., vol. v., pl. lxxvi., fig. 4; O.Wils., pl. xxxv.,
 fig. 8.

Not by any means a common species in either county, though it is widely distributed. It appears to be more of an inland or wood insect than of the coast, the only coast record I have being that I took a specimen myself on Ragwort flowers on Hartlepool sandhills on 26th July, 1874. It is not in the Twizell list, but Mr. Finlay found it occasionally in many parts of his district; Mr. Henderson took it at Jesmond; and Mr. Rhagg at Swalwell. Mr. Maling met with it at Chopwell; Mr. Hedworth at Thornley,

Axwell and Dunston; he also found the larvæ in spring feeding upon dock. Mr. Maddison reports that it comes to sugar in Burney Wood, near Durham, "sometimes in fair numbers." Mr. Sang took it at Darlington, which is a locality given in the Manual.

43. *N. C-nigrum*, Linn. SETACEOUS HEBREW CHARACTER.

<i>Noctua C-nigrum</i> .	Staint. Man., vol. i., p. 234.
" "	Newm. Brit. Moths, p. 346.
" "	Barr. Lep. Brit. Is., vol. iv., p. 51.
<i>Agrotis</i> "	Meyr. Hdbk. Brit. Lep., p. 99.

LARVA. Buck., vol. v., pl. lxxvi., fig. 1.

A very widely-distributed species and common in most parts of both counties. I would have considered it unnecessary to give localities, but that Mr Barrett does not mention its occurrence in Northumberland. It is in the Twizell list; Mr. Finlay found it generally distributed in his district; Mr. Maling found it in Jesmond Dene and at Hexham; Mr. V. R. C. Perkins records it (Ent. W. I., vol. vi., p. 14) as under loose stones at Newcastle. Mr. Rhagg also found it at Newcastle and Miss Rosie at Kenton; I have taken it at Wideopen and near Gosforth. It is in all the Durham lists, which I therefore omit. Though tolerably constant in its markings, it varies much in the ground colour, and I have taken specimens at Hartlepool of a very light grey. It also varies greatly in size. I have taken specimens which were barely an inch in expanse, while others were quite one and three-quarter inches. I have specimens from Batoum on the Black Sea, quite undistinguishable from British examples. Mr. Barrett says it extends eastward to Japan. It is also abundant in North America, where it attains its maximum size. I have specimens from New York and from Canada which expand over two inches.

(*N. rhomboidea* is given in Stainton's Manual as occurring at Darlington, but Mr. Sang assured me it was a mistake and that the insect so named was only *triangulum*).

44. *N. brunnea*, Fab. PURPLE CLAY.

- Noctua brunnea*. Staint. Man., vol. i., p. 235.
 " " Newm. Brit. Moths, p. 348.
 " " Barr. Lep. Brit. Is., vol. iv., p. 61.
Agrotis " Meyr. Hdbk., Brit., p. 107.

LARVA. Buck., vol. v., pl. lxvii., fig. 5; O.Wils., pl. xxxv.,
 fig. 9.

Noctua brunnea, though the larva feeds on low plants, appears to occur chiefly in or near woods. It is not recorded by many collectors in our district, but will probably be found in all well-wooded parts. It flies at dusk, and I have taken it freely in open places in Hezleden Dene, and also at the edge of a small plantation near Castle Eden. It is said to come freely to sugar, but I always took it on the wing, flying strongly and often in some numbers around the lower branches of trees. It is given in the Twizell list; Mr. Finlay found it generally among the woods near Meldon. Mr. Maling took it occasionally at Hexham and also at Jesmond, where Mr. Rhagg also met with it. Mr. Brady got one or two near Ryhope. It is given in the Manual as occurring at Darlington. Mr. Sang also met with it in Castle Eden Dene.

45. *N. Dahlii*, Hub. BARRED CHESTNUT.

- Noctua Dahlii*. Staint. Man., vol. i., p. 36.
 " " Newm. Brit. Moths, p. 350.
 " " Barr. Lep. Brit. Is., vol. iv., p. 64.
Agrotis. " Meyr. Hdbk. Brit. Lep., p. 102.

LARVA. Buck., vol. v., pl. lxxvii., fig. 3.

A scarce species in our counties, and, as yet, only recorded by Mr. Finlay, who found the imago occasionally in Coal Law Wood. It was recorded in the Newcastle Weekly Chronicle as having occurred at Bishop Auckland. This was a mistake, the specimens were sent to me for examination and proved to be *Noctua baja*.

46. *N. festiva*, Hubn. INGRAILED CLAY.

- Noctua festiva*. Staint. Man., vol. i., p. 236.
 „ „ Newm. Brit. Moths, p. 348.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 69.
Agrotis „ Meyr. Hdbk. Brit. Lep., p. 103.

LARVA. Buck., vol. v., pl. lxxvii., fig. 1; O. Wils., pl. xxxv.,
 fig. 10.

No doubt an abundant species, and probably common every where, but it is not recorded in many of the lists I have received. It is given in the Twizell list; Mr. Finlay found it common and generally distributed; Miss Rosie took it at Kenton; Mr. Henderson and Mr. Maling at Jesmond. Mr. Hedworth found it abundant at Dunston and Thornley; Mr. Greenwell met with it plentifully at Bishop Auckland, and at Hartlepool it is very abundant and always exceedingly variable. A small hill-form of this species exists, known as var. *Conflua*, which Mr. Finlay met with on the Northumberland moors; Dr. Lees took a few at Sugar at Lowton Fall Wood, Upper Teesdale; and which Mr. Gardner has bred in some numbers from larva found on the Durham moors. Both type and variety vary much, not only in markings but in the shape, and more particularly in the width of the forewings. I have taken the type here with wings as narrow as those of an *Agrotis*.

47. *N. baja*, Fab. DOTTED CLAY.

- Noctua baja*. Staint. Man., vol. i., p. 237.
 „ „ Newm. Brit. Moths, p. 352.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 85.
Triphaena „ Meyr. Hdbk. Brit. Lep., p. 106.

LARVA. Buck., vol. v., pl. lxviii., fig. 3; O. Wils., pl. xxxv.,
 fig. 12.

Though generally distributed and of tolerably regular occurrence, this is not by any means an abundant species. It is in the Twizell list; Mr. Finlay found it in most parts of the district, but seldom in any numbers; Miss Rosie took it at Kenton and Mr. Henderson at Jesmond; Mr. Rhagg about Newcastle

and at Thornley; Mr. Hedworth also took it at Thornley and Gibside at sugar, and at Dunston at flowers; Messrs. Ross and Greenwell found it fairly common at Bishop Auckland; Dr. Lees met with it in Upper Teesdale. It comes to sugar in small numbers at Hartlepool on the sand banks, and I have found it rather more plentiful at Hutton Henry, near Castle Eden.

48. *N. Rubi*, View. SMALL SQUARE SPOT.

Noctua bella. Staint. Man., vol. i., p. 236.

„ *Rubi*. Newm. Brit. Moths, p. 351.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 88.

Agrotis „ Meyr. Hdbk. Brit. Lep., p. 102.

LARVA. Buck., vol. v., p. lxxviii., fig. 1; O.Wils., pl. xxxv.,
fig. 1.

Though generally common throughout England and Scotland, this is not by any means an abundant species in these counties, nor generally distributed. Mr. Finlay met with it in Coal Law Wood, but never commonly; Mr. Hedworth took it “sparingly at sugar at Thornley;” Mr. Greenwell at Bishop Auckland; and Dr. Lees in Upper Teesdale. In the Hartlepool district I have only taken it on two occasions, at sugar at Hutton Henry near Castle Eden, on 7th July, 1876, and another also at sugar on the Hartlepool sandhills in 1884. Mr. Gardner has taken it more plentifully at Greatham, which is in accordance with its known partiality for damp localities. It should be looked for in such places.

49. *N. umbrosa*, Hub. SIX-STRIPED RUSTIC.

Noctua umbrosa. Staint. Man., vol. i., p. 257.

„ „ Newm. Brit. Moths, p. 352.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 91.

Agrotis „ Meyr. Hdbk. Brit. Lep., p. 102.

LARVA. Buck., vol. v., pl. lxxviii., fig. 2.

Common in many places in both counties, but does not appear to be generally distributed, though I think it will be found all along the coast. As *Lytea umbrosa*, it appears in the Twizell

list; Mr. Finlay found it plentifully in Meldon Park; Mr. Maling took it at Newbiggin-by-the-Sea; Mr. Hedworth found it at Thornley, but it was not very common, he also took one at Dunston in 1869; Mr. Sang took it at Seaton Carew; it is given in the Manual as occurring at Darlington; Mr. Ross reports it as very common at Bishop Auckland; but Mr. Greenwell has not met with it there at all. At Hartlepool it is always to be found at Ragwort flowers, but is never numerous enough to be called very common.

50. *N. xanthographa*, Fab. SQUARE-SPOT RUSTIC.

Noctua xanthographa. Staint. Man., vol. i., p. 238.

„ „ Newm. Brit. Moths, p. 354.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 94.

Agrotis „ Meyr. Hdbk. Brit. Lep., p. 101.

LARVA. Buck., vol. v., pl. lxxix., fig. 3; O. Wils., pl. xxxv., fig. 3.

A perfect pest everywhere, coming to sugar by hundreds, and equally abundant on most flowers. The larva is remarkably like that of *Noctua umbrosa*, and Mr. Barrett says they are undistinguishable when full grown. It is also very like those of some of the *Leucanias* in markings.

51. *N. neglecta*, Hub. GREY RUSTIC.

Noctua neglecta. Staint. Man., vol. i., p. 237.

„ „ Newm. Brit. Moths, p. 353.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 98.

Agrotis castanea. Meyr. Hdbk. Brit. Lep., p. 102.

LARVA. Buck., vol. v., pl. lxxix., fig. 2; O. Wils., pl. xxxv., fig. 13.

A moorland species, and apparently not very common. It is in the Twizell list. Mr. Finlay took the imago on Heather blossom at Coal Law Wood, but did not find it very abundant. Dr. Lees found the larvæ plentiful on the moors of Upper Teesdale, but the perfect insect was rare on sugar. It will be found, no doubt, on all the Northumberland moors, as well as on those in the west of Durham.

EURIOS, Hübn.

52. *Eurios herbida*, Hub. GREEN ARCHES.

- Aplecta herbida*. Staint. Man., vol. i., p. 271.
 " " Newm. Brit. Moths, p. 405.
Eurios " Barr. Lep. Brit. Is., vol. iv., p. 102.
Triphæna " Meyr. Hdbk. Brit. Lep., p. 108.

LARVA. Buck., vol. vi., pl. xcii., fig. 1; O. Wils., pl. xxxviii.,
 fig. 3.

Not by any means a common species, though occurring in several places widely apart. It is in the Twizell list, and Mr. Finlay reported it as generally distributed in the district where he collected, and in some years appearing in considerable numbers. In the Hartlepool district it is always rare, and very uncertain. Mr. Sang took it 1853 in Castle Eden Dene; Mr. Gardner took one in 1874 on a tree trunk in Hezleden Dene. I have met with it there occasionally in subsequent years, my last capture being in 1888. Mr. Gardner also bred it in 1874 from pupæ dug at Eggleston in Upper Teesdale.

53. *E. occulta*, (Linn.). GREAT BROCADE.

- Aplecta occulta*. Staint. Man., vol. i., p. 271.
 " " Newm. Brit. Moths, p. 406.
Eurios " Barr. Lep. Brit. Is., vol. iv., p. 106.
Agrotis " Meyr. Hdbk. Brit. Lep., p. 96.

LARVA. Buck., vol. vi., pl. xcii., fig. 2.

The earliest records of this species in our counties are those of the Twizell list and of the late Mr. Backhouse, who took a specimen on the trunk of an Ash tree at Hoffal. Since then solitary specimens have been met with occasionally. Mr. Henderson took one at Jesmond; Mr. Hedworth another at Axwell on 14th August, 1870, which passed into the collection of Mr. Maling. My own acquaintance with it dates back to 1860, when I beat a worn specimen out of a clump of dead Whin in Hezleden Dene. I took another at sugar on our sandhills in 1864. In 1880 I found one at rest under the coping of the wall

at West Hartlepool Cemetery. I got another at sugar on the sandhills the same year, but have not seen it since; Mr. C. Trechmann, Junr., however, found one on the trunk of a Fir tree at Castle Eden in 1897; Mr. Gardner got one the same year at Hezleden Dene, from which he obtained eggs and has reared a fine brood. Mr. Gardner writes, "very erratic in time of appearance. I have taken it in July, August, September, and October, and Mr. Blatch picked up a specimen, I believe, at Easter."

54. *E. satura*, Hub. BEAUTIFUL BROCADE.

Hadena satura. Staint. Man., vol. i., p. 274.

" " Newm. Brit. Moths, p. 409.

Eurois " Barr. Lep. Brit. Is., vol. iv., p. 111.

Hadena porphyrea. Meyr. Hdbk. Brit. Lep., p. 132.

One of the rarest of the British Noctuæ, not a dozen authentic specimens being known. Mr. Meyrick suggests that it is only an occasional immigrant. It is named in the Twizell list, but it is more than probable that these were but well marked forms of the next species. In the Entomologist (vol. x., p. 99) is the following:—"A single specimen in my collection was taken by Mr. John Hancock, while it was at rest on the fencing of Brandling Place, Newcastle-on-Tyne, in the month of April, 1845. August is stated to be the usual time of appearance of this Moth. This exceptional instance has, I believe, never been recorded. V. R. Perkins, Wootton-under-Edge, Jan., 1877." Mr. Barrett (vol. iv., p. 114) speaks of this as "a supposed capture at Newcastle-upon-Tyne," and suggests that this also was a variety of *Adusta*. Mr. Perkins, however, was a good observer, and not likely to make any record where there was room for doubt. As for the date of capture, Mr. Barrett himself gives June, July, and August for this species, and June, July, and in forward seasons the end of May for *Adusta*. But all these species are very uncertain, and after an open winter might occur in April. As an illustration I might refer to the dates of Mr. Gardner's captures of *Occulta*. Since the above was in type, Mr. Perkins

has written me to say that he still has the specimen, and that neither he nor the late Mr. Hancock had any doubt but it was correctly named.

55. *E. adusta*, Esq. DARK BROCADE.

- Hadena adusta*. Staint. Man., vol. i., p. 174
 „ „ Newm. Brit. Moths, p. 412.
Eurois „ Barr. Lep. Brit. Is., vol. iv., p. 114.
Hadena „ Meyr. Hdbk. Brit. Lep., p. 130.

LARVA. Buck., vol. iv., pl. xciii., fig. 1; O. Wils., pl. xxxviii.,
 fig. 5.

Apparently not at all a common or generally distributed species, though it may yet be recorded from other parts of both counties. It is in the Twizell list; Mr. Finlay found it at Coal Law Wood, but never plentiful; Mr. Maling met with it at Jesmond, where other Newcastle collectors do not appear to have seen it. Few of the Durham collectors have taken it. I have captured it on the railway banks at Campion flowers, and on the sand banks once or twice at sugar; Mr. Gardner has also met with it in Hezleden Dene and in Upper Teesdale. Mr. Lofthouse of Middlesbro' has taken it on Greatham salt marsh. Both Mr. Gardner and I have occasionally reared it from larvæ. One variety of the larva is green with a dull crimson patch on the back. On one occasion I was watching one of this form changing to the pupal state, and I noticed that when the larval skin was cast, this crimson patch appeared on the pupa, but of course disappeared as the pupa skin hardened and assumed its usual colour.

CHARÆAS, Steph.

56. *Charæas graminis*, (Linn.). ANTLER.

- Charæas graminis*. Staint. Man., vol. i. p. 204.
 „ „ Newm. Brit. Moths, p. 292.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 127.
 „ „ Meyr. Hdbk. Brit. Lep., p. 75.

LARVA. Buck., vol. iv., pl., lxvi., fig. 4; O. Wils., pl. xxxiv.,
 fig. 4.

Common and generally distributed, occurring freely on heaths and moors, as well as in cultivated districts, and near the sea. It is given in all the lists, I therefore omit localities. The perfect insect flies freely in the morning sun from eight o'clock, retiring before midday. It sometimes appears in enormous numbers, and the larvæ then entirely destroy the grass by devouring the roots. Such a swarm appeared in Yorkshire and North Lancashire in 1881, but the species was not unusually numerous here that year. A specimen without the trifurcate mark, from which it derives its trivial name, was taken here some years ago. The imago does not come much to sugar, but frequents flowers at night and is much attracted by light.

HELIOPHOBUS, Boid.

57. *Heliophobus popularis*, Fab. FEATHERED GOTHIC.

<i>Heliophobus popularis</i> .	Staint. Man., vol. i., p. 203.
" "	Newm. Brit. Moths, p. 291.
" "	Barr. Lep. Brit. Is., vol. iv., p. 133.
<i>Neuronia</i>	" Meyr. Hdbk. Brit. Lep., p. 76.

LARVA. Buck., vol. iv., pl. lxiv., fig. 2.

Generally distributed over both counties, but not very common, perhaps more abundant than appears, as we scarcely know how to take it except at light, for it does not frequent flowers and never comes to sugar. It is in the Twizell list; Mr. Bolam took a single specimen at light on 4th September, 1882; Mr. Finlay found it in all the cultivated parts of his district; Mr. Henderson met with it at Jesmond; Mr. Maling, Mr. Rhagg, and my son, Mr. Thomas Robson, got it at light near Newcastle. It is given in Ornsby's Durham; Mr. Backhouse took it at Polam, Darlington; Mr. Sang found it on Blackwell Bridge and on lamps within the town, Darlington being also a Manual locality; Mr. Ross found it at Bishop Auckland. In 1865 I was lodging in a cottage overlooking Hezleden Dene, and *Popularis* came freely to a window in which I placed a lamp. Since then I have only once met with it—7th September, 1886—but there is no reason to suppose it is less numerous.

58. *H. cespitis*, Fab. HEDGE RUSTIC.*Luperina cespitis*. Staint. Man., vol. i., p. 206.

" " Newm. Brit Moths, p. 297.

Heliphobus ,, Barr. Lep. Brit. Is., vol. iv., p. 137.*Melanchra* ,, Meyr. Hdbk. Brit. Lep., p. 81.

LARVA. Buck., vol. iv., pl. lxx., fig. 4.

This species is recorded by the late W. Backhouse from Shotley, by the late C. Eales "on the ballast heaps, South Shields," and by Dr. Lees as "not uncommon in Upper Teesdale." A single specimen was also taken at Hartlepool by Mr. A. Wood, which is now in my possession. The Shotley and Teesdale records may be considered as places where the insect may have a natural habitat. The South Shields and Hartlepool specimens were but chance visitors. That taken here was at rest on a railway truck, but it is difficult to believe that the insect would sit there during a long journey.

APLECTA, Gn.

59. *Aplecta advena*, Fab. PALE SHINING BROWN.*Aplecta advena*. Staint. Man., vol. i., p. 272.

" " Newm. Brit. Moths, p. 409.

" " Barr. Lep. Brit. Is., vol. iv., p. 154.

Melanchra ,, Meyr. Hdbk. Brit. Lep., p. 85.LARVA. Buck., vol. vi., pl. xcii., fig. 5; O. Wils., pl. xxxviii.,
fig. 4.

A very rare species in our district. Mr. Sang took it at sugar in Houghton Lane, near Darlington, on 5th July, 1853, 9th July, 1856, and on the same day in 1857, but does not record it subsequently. The late R. W. Merryweather took a solitary specimen at Elwick, near Hartlepool, about the same time. No one else appears to have met with it, nor has it been recorded from Northumberland.

60. *A. nebulosa*, Huffn. GREY ARCHES.

- Aplecta nebulosa*. Staint. Man., vol. i., p. 272.
 „ „ Newm. Brit. Moths, p. 407.
 „ „ Barr. Lep. Brit. Is., vol. v., p. 162.
Melanchra „ Meyr. Hdbk. Brit. Lep., p. 86.

LARVA. Buck, vol. vi., pl. xcii., fig. 3.

A wood insect, and probably occurring in all the larger woods in both counties, though as yet recorded from few. It is in the Twizell list under the old name of *Plebeiera*; Miss Rosie found it at Kenton; Mr. Rhagg at Lintz Green; Mr. Hedworth found it in the woods about Thornley and took it at sugar; Dr. Lees took one at sugar at Linton Fall Wood in 1875. We find it in Hezleden Dene, near Hartlepool, as well as in Castle Eden Dene. It sits on tree trunks and is sometimes not uncommon. Mr. Finlay does not record it, which appears as if it did not occur there, unless it is an accidental omission.

HADENA, Och.

61. *Hadena thalassina*, Rott. THE SHOULDERED BROCADE.

- Hadena thalassina*. Staint. Man., vol. i., p. 277.
 „ „ Newm. Brit. Moths, p. 420.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 171.
Melanchra „ Meyr. Hdbk. Brit. Lep., p. 84.

LARVA. Buck., vol. vi., pl. xcvi., fig. 5; O. Wils., pl. xxxviii., fig. 10.

Said to be a wood insect, but not uncommon elsewhere. It is particularly partial to palings or tree trunks as a resting place, but Mr. Barrett says it will not remain when the sun is hot. It is in the Twizell list; Mr. Finlay found it in Coal Law Wood, but not common; Mr. Henderson met with it at Jesmond; Mr. Maling on the coast about Newbiggin-by-the-Sea; Mr. Hedworth found it in woods at Dunston and Thornley; Mr. Sang took it at sugar at Darlington, where Mr. Backhouse met with

it on palings. About Hartlepool we get it on palings by the railway side, and on tree trunks in Hezleden Dene; it also comes to sugar, but it is by no means a common species.

62. *H. suasa*, Bkh. DOG'S TOOTH.

- Hadena suasa*. Staint. Man., vol. i., p. 276.
 " " Newm. Brit. Moths, p. 418.
 " " Barr. Lep. Brit. Is., vol. iv., p. 175.
Melanchra dissimilis. Meyr. Hdbk. Brit. Lep., p. 84.

LARVA. Buck., vol. vi., pl. xciv., fig. 2.

A scarce and local species. It is in the Twizell list, and Mr. Rhagg has more recently found it at Fawdon near Newcastle. These are all the Northumbrian records I have met with. In Durham it appears to be confined to Greatham salt marshes, where it comes to sugar. Mr. Gardner has reared a considerable number from larvæ found there on *Plantago maritima* and *Statice limonium*, much preferring the latter. I have taken an odd specimen or two at sugar on the sand-banks at Hartlepool at long intervals, but these were doubtless stray specimens from its habitat at Greatham swamp.

63. *H. Pisi*, Linn. BROOM MOTH.

- Hadena Pisi*. Staint. Man., vol. i., p. 277.
 " " Newm. Brit. Moths, p. 419.
 " " Barr. Lep. Brit. Is., vol. v., p. 181.
Melanchra Pisi. Meyr. Hdbk. Brit. Lep., 85.

LARVA. Buck., vol. vi., pl. xciv., fig. 4; O. Wils., pl. xxxviii.,
 fig. 9.

Generally distributed throughout the district, and fairly common everywhere, but most numerous on the coast, where the very beautiful larvæ may be collected in large numbers in August. The imago, in this part of the country, is dark, cold brown in hue, very different from the warm reddish-brown of southern examples. It comes freely to sugar, but I have not often taken it at flowers.

64. *H. oleracea*, (Linn.). BRIGHTLINE BROWN-EYE.*Hadena oleracea*. Staint. Man., vol. i., p. 277.

,, ,, Newm. Brit. Moths, p. 419.

,, ,, Barr. Lep. Brit. Is., vol. iv., p. 185,

Melanchra ,, Meyr. Hdbk. Brit. Lep., p. 84.LARVA. Buck., vol. vi., pl. xciv., fig. 3; O. Wils., pl. xxxviii.,
fig. 8.

A most abundant species, occurring freely everywhere, except perhaps on the wetter moors.

65. *H. Genistæ*, Bkh. LIGHT BROCADE.*Hadena W-latinum*. Staint. Man., vol. i., p. 278.,, *Genistæ*. Newm. Brit. Moths, p. 422.

,, ,, Barr. Lep. Brit. Is., vol. iv., p. 188.

Melanchra ,, Meyr. Hdbk. Brit. Lep., p. 83.

LARVA. Buck., vol. vi., pl. xcv., fig. 2.

The only record for this species in our counties is that of the Twizell list. As it has not been recorded since, the opinion has been expressed that Mr. Selby had made a mistake, but I see no reason to exclude the insect. *Genistæ* is certainly more of a southern, or perhaps I should say a midland species, than northern, but it has been taken both in Yorkshire and in Cheshire, and in several places in Scotland. Mr. Bolam of Berwick, who has collected in North Northumberland, has confidence in the record, and believes he has taken it in the neighbourhood himself, but could not find his notes so as to speak with certainty.

66. *H. dentina*, Esp. THE SHEARS.*Hadena dentina*. Staint. Man., vol. i., p. 275.

,, ,, Newm. Brit. Moths, p. 415.

,, ,, Barr. Lep. Brit. Is., vol. iv., p. 195.

Melanchra ,, Meyr. Hdbk., Brit. Lep., p. 182.

LARVA. Buck., vol. vi., pl. xciii., fig. 4.

Probably more generally distributed than the records imply. Mr. Finlay found it in most parts of his district, and common in

certain seasons; Mr. Maling and Mr. Henderson met with it in Jesmond Dene; Mr. Hedworth at Dunston and Thornley; Mr. Greenwell, "not uncommon" at Bishop Auckland; Dr. Lees and Mr. Gardner in Upper Teesdale. About Hartlepool it is tolerably plentiful, sits on palings and tree trunks, and comes to Campion and other flowers and to sugar. It varies a little both in colour and markings.

67. *H. Chenopodii*, Fab. THE NUTMEG.

Hadena Chenopodii. Staint. Man., vol. i., p. 275.

" " Newm. Brit. Moths, p. 416.

" " Barr. Lep. Brit. Is., vol. iv., p. 199.

Melanchra Trifolii. Meyr. Hdbk. Brit. Lep., p. 82,

LARVA. Buck., vol. vi., pl. xciii., fig. 5; O.Wils., pl. xxxviii.,
fig. 6.

A rare insect in these counties, and the few that have been met with are probably stray specimens only, as it has only occurred singly. It is in the Twizell list. Mr. Wasserman took it at sugar (Ento., vol. viii., p. 224). Mr. Backhouse met with it at Darlington. I took a specimen at sugar at Hutton Henry near Castle Eden in 1875, another at sugar and one at Ragwort on the sand-banks here in subsequent years. It does not appear to be common anywhere.

MAMESTRA, Och.

68. *Mamestra albicolon*, Hub. THE WHITE COLON.

Mamestra albicolon. Staint. Man., vol. i., p. 208.

" " Newm. Brit. Moths, p. 299.

" " Lep. Brit. Is., vol. iv., p. 205.

Melanchra " Meyr. Hdbk. Brit. Lep., p. 87.

LARVA. Buck., vol. iv., pl. lxvi., fig. 1.

Not very common and apparently confined to the mouth of the Tyne and to Hartlepool sandhills, but I expect it will be found elsewhere on the coast when the dunes are more fully explored. Mr. Maling and Mr. Eales both took it at South Shields, but

the Sunderland collectors do not appear to have met with it. At Hartlepool it occurs regularly, but is rarely plentiful. It was more abundant in 1887 than I ever knew it before or since. On the night of the Queen's Jubilee I took over thirty at one patch of Campion flowers on the railway side. It also comes freely to sugar. I have taken some very fine varieties of this species with a pale grey ground and the markings much more distinct than usual. Mr. Barrett speaks of these as being peculiar to this district.

69. *M. Brassicæ*, (Linn.). CABBAGE MOTH.

Mamestra Brassicæ. Staint. Man., vol. i., p. 208.

„ „ Newm. Brit. Moths, p. 300.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 208.

Melanchra „ Meyr. Hdbk. Brit. Lep., p. 86.

LARVA. Buck., vol. iv., pl. lxvi., fig. 3; O. Wils., pl. xxxiv., fig. 5.

Very abundant—too abundant everywhere. Mr. Allison, a beginner, took two specimens at Hartlepool of an intense black, with very little trace of the usual mottlings, unfortunately they were spoiled in setting. I have taken a few with a very pale ground colour, showing the markings more clearly.

70. *M. Persicariæ*, (Linn.). THE DOT.

Mamestra Persicariæ. Staint. Man., vol. i., p. 201.

„ „ Newm. Brit. Moths, p. 301.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 212.

Melanchra „ Meyr. Hdbk. Brit. Lep., p. 86.

LARVA. Buck., vol. iv., pl. lxvi., fig. 4; O. Wils., pl. xxxiv., fig. 6.

This species is commoner in the south than in the north of England, and in our counties is very rare, occurring but in few places and in small numbers. Mr. Finlay does not record it from his district, nor have we met with it around Hartlepool. Mr. Rhagg records it from Newcastle; Mr. Brady took a few

at sugar at Ryhope; Mr. Maddison found it "very rare at Durham, near Maiden Castle Wood;" and Mr. Greenwell "occasionally met with it at Bishop Auckland." It is generally a garden insect, but not exclusively so.

(*Hecatera serena*, Fab., is a species that might occur with us. It has been taken at Beverley in Yorkshire, in Cheshire, and Lancashire, and in more than one district in Scotland. The larva feeds on Hawkweeds and kindred plants).

DIANTHÆCIA, Bdv.

71. *Dianthæcia carpophaga*. THE TAWNY SHEARS.

- Dianthæcia carpophaga*: Staint. Man., vol. i., p. 261.
 " " Newm. Brit. Moths, p. 385.
 " " Barr. Lep. Brit. Is., vol. iv., p. 228.
Harmodia " Meyr. Hdbk. Brit. Lep., p. 78.

LARVA. Buck., vol. vi., pl. lxxxvii., fig. 2.

Chiefly a coast insect in our counties, and perhaps most abundant on ballast heaps where the Bladder Campion (*Silene inflata*) grows freely. Mr. Eales found it plentifully in such places at South Shields, and it is equally abundant at Hartlepool on the ballast hills and the railway embankment. It flies freely to Campion flowers both to feed and for the ♀ to deposit her eggs. I have never known it come to sugar and only once found a specimen on palings, but it was close to a patch of the food-plant, and might have gone up the paling when it left the pupa case. Besides these two localities Mr. Maling took the species elsewhere on the Northumberland coast, and Mr. Rhagg took it at Rowland's Gill. The specimens taken at Hartlepool are generally darker than southern examples, but are ochreous brown, a much warmer tint than *Capsophila*. Occasionally, however, pale forms occur (var. *ochracea*), and these are sometimes larger than any of the dark ones. Mr. James Dixon took a specimen nearly white on the railway side at Hartlepool. It is now in Mr. Gardner's cabinet.

72. *D. capsophila*. THE POD LOVER.

Dianthæcia capsophila. Newm. Brit. Moths, p. 386.

Mr. Barrett considers this to be a variety or local form of the preceding species. Mr. Meyrick also includes it with *Carpophaga*. I give it separately for convenience, and not as expressing any opinion of my own. It has only occurred in Meldon Park, where Mr. Finlay took a few. I have seen the specimens and they are unquestionably what is called *Capsophila*. I believe this is the only place in the East of England where it has been taken. The species is darker brown than dark *Carpophaga* and has none of the warm ochreous shades of that insect, but is a cold, dark grey-brown. It is also very much more constant in hue and markings.

73. *D. Cucubali*, Fuesl. THE CAMPION.

Dianthæcia Cucubali. Staint. Man., vol. i., p. 262.

„ „ Newm. Brit. Moths, p. 388.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 236.

Harmodia „ Meyr. Hdbk. Brit. Lep., p. 78.

LARVA. Buck., vol. vi., pl. lxxxvii., fig. 7; O. Wils., pl. xxxvii., fig. 5.

Rather a common species, but apparently almost as much of a coast species as *Carpophaga*. Mr. Finlay took it at Meldon Park, but it was always scarce there; Mr. Maling took it at Newbiggin-by-the-Sea; Mr. Henderson at Tynemouth; Mr. Rhagg at Wylam and Lintz Green; Mr. Eales found it on the ballast heaps at South Shields; Mr. Sang took it at Castle Eden Dene; and Mr. Backhouse at Seaton Carew. It is common at Hartlepool at Campion flowers, and is the only one of the genus I ever took at sugar.

74. *D. capsincola*, Hub. THE LYCHNIS.

Dianthæcia capsincola. Staint. Man., vol. i., p. 961.

„ „ Newm. Brit. Moths, p. 387.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 229.

Harmodia „ Meyr. Hdbk. Brit. Lep., p. 79.

LARVA. Buck., vol. vi., pl. lxxxvii., fig. 6; O. Wils., pl. xxxvii., fig. 5.

The commonest of the genus and occurring in woods as well as open ground. It flies to Campion and other flowers, but may be best taken in the larval stage. They feed *inside* the capsules of *Lychnis diurna*, *vespertina*, etc., and sometimes pupate therein. It is in the Twizell list; Mr. Patterson found it at Alnmouth; Mr. Maling generally on the Northumberland coast; Mr. Finlay "scarce at Meldon Park;" Miss Rosie at Kenton; Mr. Henderson at Jesmond; Mr. Hedworth found the larvæ abundant on seed pods on the railway slope at Derwent Station; Mr. Eales took it at South Shields on the ballast heaps; Mr. Brady found larvæ on the Bladder Campion at Whitburn; Mr. Sang took it in Coniscliffe Lane, Darlington; Dr. Lees says "one at Cotherstone banks, a rare insect in the Western dales I suspect." At Hartlepool it comes freely to Campion flowers (*Silene inflata*), and the larva is abundant on *Silene* and *Lychnis*.

75. *D. conspersa*, Esp. MARBLED CORONET.

<i>Dianthæcia conspersa.</i>	Staint. Man., vol. i., p. 262.
" "	Newm. Brit. Moths, p. 389.
" "	Barr. Lep. Brit. Is., vol. iv., p. 249.
<i>Harmodia nana.</i>	Meyr. Hdbk. Brit. Lep., p. 77.

Very rare in our counties, and, as yet, only taken in three places. It is in the Twizell list under Stephen's name of *Miselia compta*. The next record is that of our Hartlepool captures. In 1865 I took a specimen at Campion flowers behind the ropery. The next year I got one or two more, and most of the collectors took specimens; for a year or so longer an odd specimen turned up, but we have seen none now for more than twenty-five years. The last record is that of Mr. Maddison of Durham, who wrote in 1895, "bred from larvæ got here sparingly. I bred two very fine yellow varieties this year,—one was unfortunately crippled, but the other is a beautiful specimen." The Hartlepool specimens were very fine, large insects, with the black and white of the wings very distinctly contrasted. I have seen none so

fine elsewhere. The dark unicolorous form that is taken in Scotland does not appear to have occurred with us.

APOROPHYLA, Gn.

76. *Aporophyla lutulenta*, Bkh. DEEP-BROWN DART.

Epunda lutulenta. Staint. Man., vol. i., p. 266.

„ „ Newm. Brit. Moths, p. 396.

Aporophyla „ Barr. Lep. Brit. Is., vol. iv., p. 271.

„ „ Meyr. Hdbk. Brit. Lep., p. 58.

LARVA. Buck., vol. vi., pl. xc., fig. 1; O.Wils., pl. xxxvii.,
fig. 13.

Apparently a rare species in the district. It is recorded in the Twizell list under Haworth's name of *fusca*. Mr. Finlay found it plentifully at Heather blossom at Coal Law Wood. I have no other Northumberland records, and none for Durham except at Hartlepool. Mr. Gardner says, "Hezleden Dene, a few at sugar every autumn." I have more frequently taken it at Ragwort flowers. It also comes to light. I have had it from the Heugh lighthouse, from railway signal cabins, and on a house window at Benridge near Hezleden. I once took a specimen as it emerged from pupa on a Marram stem on the sandhills.

77. *A. nigra*, Haw. BLACK RUSTIC.

Epunda nigra. Staint. Man., vol. i., p. 266.

„ „ Newm. Brit. Moths, p. 397.

Aporophyla „ Barr. Lep. Brit. Is., vol. iv., p. 476.

„ „ Meyr. Hdbk. Brit. Lep., p. 58.

LARVA. Buck., vol. vi., pl. xc., fig. 2; O.Wils., pl. xxxvii.,
fig. 14.

Recorded as *Charæas nigra* in the Twizell list, and Mr. Ross tells me he has taken two at Bishop Auckland. It is very much of a western insect, occurring on that coast from Devon to the north of Scotland; it is also abundant in the Lake district, and collectors in the west of either county may possibly meet with the species. Mr. Gardner, however, has examined some so called *Nigra* and found them to be varieties of *Lutulenta*.

DASYPOLIA.

78. *Dasypolia Templi*, Thunb. BRINDLED OCHRE.*Dasypolia Templi*. Staint. Man., vol. i., p. 265.

,, ,, Newm. Brit. Moths, p. 277.

,, ,, Barr. Lep. Brit. Is., vol. iv., p. 289.

,, ,, Meyr. Hdbk. Brit. Lep., p. 55.

LARVA. Buck., vol. vi., pl. lxxxix., figs. 1-5; O. Wils., pl. xxxvii., fig. 12.

Probably much commoner and more widely distributed than is generally supposed. The imago does not emerge till the end of October or November, a period when only very enthusiastic Entomologists are looking for insects. It hides itself, under stones by preference, till spring, but it is rarely seen. The larva feeds inside the stem or root of Cow Parsnip, and is consequently never observed but when purposely looked for. Probably no other species is so retiring and of so quiet a disposition. A hibernating female will sit all the winter in a chip box, without even damaging the tips of her wings. Records in our counties are—Meldon Park, scarce, J. Finlay; Kenton, Miss Rosie; Jesmond, W. Patterson; on a lamp at Old Elvet, Durham, T. Maddison; "on a lamp, Darlington, Oct., 1862," John Sang. Mr. Wade finds it at Barnard Castle, and Mr. Gardner has found the larva about Hartlepool and bred the imago. I never took it but at Huddersfield, Yorkshire, where large piles of flat stones lie about. It hides in these and will be found by any one who will turn over the stones. It will certainly hide in the loose stone walls of the west of the county.

POLIA, Ochs.

79. *Polia flavicineta*, Fab. LARGE RANUNCULUS.*Polia flavicineta*. Staint. Man., vol. i., p. 264.

,, ,, Newm. Brit. Moths, p. 294.

,, *flavicincta*. Barr. Lep. Brit. Is., vol. iv., p. 294.

,, ,, Meyr. Hdbk. Brit. Lep., p. 54.

LARVA. Buck., vol. vi., pl. lxxxviii., fig. 4; O. Wils., pl. xxxvii., fig. 11.

Nat a very common species, and apparently not yet found in Northumberland. It is given in Ornsby's Durham, from which city Mr. Maling had larvæ sent him by Mr. Raine, and where Mr. Maddison still finds it. Mr. Backhouse took it at Darlington and Seaton Carew. It is reported as rare at Bishop Auckland by Mr. Greenwell, and where Mr. Ross had taken but one. I have taken it myself at Darlington, and have found larvæ at Stockton feeding on London Pride in a small garden in the town. About Hartlepool it occurs pretty regularly, and in fair numbers. At one time there was a row of palings at the edge of the sand-banks behind the Cemetery. On these I could find half a dozen any night when the species was on the wing, if the wind was from the west. I have also got it at sugar and light, but it appears rather late in the year, which, perhaps, as in other cases, explains the paucity of records.

80. *P. Chi*, Linn. THE GREY CHI.

Polia Chi. Staint. Man., vol. i., p. 246.

„ „ Newm. Brit. Moths, p. 394.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 303.

„ „ Meyr. Hdbk. Brit. Lep., p. 54.

LARVA. Buck., vol. vi. pl., lxxxviii., fig. 3; O. Wils., pl. xxxvii., fig. 9.

Generally distributed throughout the district, and appears to be most numerous about Newcastle and Sunderland. Mr. Hewitson recorded it as very common at Newcastle as far back as 1829 (see Steph. Illust. Brit. Ent., vol. iii., p. 34). It is in the Twizell list; Mr. Finlay took it on Ash tree trunks, "generally distributed and not scarce;" Mr. Maling wrote, "an abundant species in this district. The beautiful var. *olivacea* occurs in considerable numbers in August and September." Mr. Brady wrote, "common at sugar, the var. *Olivacea* seems much more plentiful than the type about Sunderland." Miss Rosie took both forms at Kenton; Mr. Backhouse both forms at Sunderland and Newcastle; Mr. Hedworth, Mr. Rhagg, Mr. Patterson, and other Newcastle collectors report both as generally distributed.

In contrast to these notes on *olivacea*, Mr. Ross reports the "type common on walls at Bishop Auckland," but does not name the variety; from the same place Mr. Greenwell wrote, "type common, variety only sometimes." Further west, in Upper Teesdale, Dr. Lees wrote, "type common, *olivacea* now and then, one among a thousand." Mr. Gardner also reports the type as common in Teesdale but rare at Hartlepool. Both forms were not unfrequent forty years ago. I have seen neither for a long time, but Mr. C. Trechmann, Jun., took the variety at Castle Eden in 1897, and Mr. Gardner has taken both type and variety at Hezleden this year (1898).

A word or two as to *Olivacea* will not be out of place here. It was described as a new species, in the part of Stephens' Illustrations, published 31st July, 1831 (vol. iii., p. 325), from a single specimen taken at Cramond near Edinburgh. Mr. Barrett says (vol. iv., p. 305), "Stephens in his *Illustrations* describes as a new species, under the name of *Olivacea*, a specimen of this species of an olive-green colour with the usual white lines conspicuous. . . . Apparently it is a rare form, and I cannot say I have seen in any collection a specimen fully agreeing with Stephens' description. A faint olivaceous tinge is sometimes observed, but the name *Olivacea* has often been used for the slate-grey varieties." I have bred many specimens from ova sent me from Newcastle by the late Mr. Maling, which corresponded exactly with Stephens' description when fresh, but green is always a very fugitive colour on the wings of the *Heterocera*, and when *Olivacea* has been out a few days, it loses much of the green tinge. Even then it does not at all resemble the slate-grey specimens so common on stone walls on the Yorkshire moors. The white lines, which are so conspicuous in *Olivacea*, share in the general suffusion of the Yorkshire form, which I have elsewhere named *Suffusa*. If our local collectors will rear the insect from eggs deposited by *Olivacea*, they will find how well they agree with Stephens' description, and what a beautiful variety it is.

DRYOBOTA, Ld.

81. *Dryobota protea*, Bork. BRINDLED GREEN.

Hadena protea. Staint. Man., vol. i., p. 275.

„ *proteus*. Newm. Brit. Moths, p. 413.

Dryobota protea. Barr. Lep. Brit. Is., vol. iv., p. 309.

Polia „ Meyr. Hdbk. Brit. Lep., p. 53.

LARVA. Buck., vol. vi., pl. xciii., fig. 2.

The only Northumberland record I have for this species is that Mr. Patterson took it at Alnmouth. In Durham it has been taken in the west of the county only; Mr. Maling found it "numerous at Witton-le-Wear on trunks of Elm;" and Mr. Gardner found it "common in Teesdale at rest in chinks of Oak bark." It is a species generally distributed throughout England, and should be found in all open woods where there is plenty of Oak. Collectors will do well to take Mr. Gardner's hint and look carefully in the chinks of the bark.

CLEOCERIS, Bdv.

82. *Cleoceris viminalis*, Fab. MINOR SHOULDER KNOT.

Epunda viminalis. Staint. Man., vol. i., p. 266.

„ „ Newm. Brit. Moths, p. 398.

Cleoceris „ Barr. Lep. Brit. Is., vol. iv., p. 314.

Polia „ Meyr. Hdbk. Brit. Lep., p. 52.

LARVA. Buck., vol. vi., pl. xc., fig. 3; O. Wils., pl. xxxvii., fig. 15.

Not by any means common in either county. It is in the Twizell list. Mr. Bolam says, "the pale glaucous green caterpillars of this species are not at all uncommon on Sallows, in June, on the moors at Kylvoe, and I have taken the Moth at Newham Bog. It is probably well distributed over the district, as Mr. Boyd had it from Cherry trees. A single example occurred at Berwick in 1889" (Trans. Ber. Field Club, vol. xv., p. 306). Mr. Finlay found it at Coal Law Wood. "Larvæ more abundant

than Moths." Mr. Maddison took it at Durham; Mr. Gardner says, "common in the larval stage in Teesdale." I have bred it at Hartlepool from larvæ found on Sallow, the usual food plant, but a solitary pupa, which produced this species, I found in the middle of a barren pasture near Benridge, Hezleden, when there was neither Sallow nor Willow near.

CHARIPTERA, Gn.

83. *Chariptera aprilina*, (Linn.). MARVEL-DU-JOUR.

Agriopis aprilina. Staint. Man., vol. i., 268.

" " Newm. Brit. Moths, p. 402.

Chariptera ,, Barr. Lep. Brit. Is., vol. iv., p. 318.

Polia ,, Meyr. Hdbk. Brit. Lep., p. 53.

LARVA. Buck., vol. vi., pl. xci., fig. 2; O.Wils., pl. xxxvii., fig. 19.

Common amongst Oaks, but rarely approaching the coast. It is in the Twizell list; Mr. Finlay found it generally distributed and common around Meldon Park. Mr. Rhagg took it at Staward Peel and at Brenkley; Mr. Hedworth obtained it at sugar at Thornley-on-the-Derwent; Mr. Backhouse at Shotley; Mr. Maddison found "pupæ common at Oaks, Great Highwood, near Durham. Fine dark forms occur occasionally." "Upper Teesdale among the Lichens on Oaks," J. Gardner. Mr. Gardner also took two in 1874 on the Cemetery palings at Hartlepool. This is the only instance within my knowledge of its occurrence on the coast, and these had probably been blown down by the strong westerly winds that had prevailed for some little time when these were obtained. It should be found wherever there are plenty of well-grown Oaks.

MISELIA, Steph.

84. *Miselia Oxyacanthæ*, (L.). GREEN BRINDLED CRESCENT.

Miselia Oxyacanthæ. Staint. Man., vol. i., p. 268.

" " Newm. Brit. Moths, p. 402.

" " Barr. Lep. Brit. Is., vol. iv., p. 323.

" " Meyr. Hdbk. Brit. Lep., p. 56.

LARVA. Buck., vol. vi., pl. xci., fig. 1; O.Wils., pl. xxxvii., fig. 18.

A very common species, abundant wherever there is plenty of Hawthorn, but appearing in September or October, and often overlooked by those who cease to collect at the end of summer. The larva feeds on Hawthorn, and closely resembles a twig of that tree. None of the lists mention the occurrence of the curious unicolorous variety *Capucina*, which certainly ought to occur.

LUPERINA, Bois.

85. *Luperina testacea*, Hub. FLOUNCED RUSTIC.

Luperina testacea. Staint. Man., vol. i., p. 206.

" " Newm. Brit. Moths, p. 296.

" " Barr. Lep. Brit. Is., vol. iv., p. 332.

" " Meyr. Hdbk. Brit. Lep., p. 115.

LARVA. Buck., vol. iv., pl. lxxv., fig. 3.

A very common species, on all the lists, and no doubt occurring in all grassy places in both counties. The larva feeds on the grass roots, below the surface, and is therefore not affected by smoky or other deposits on the blades. It is thus enabled to survive where others cannot exist. I have known it abound in the grassy tufts at the foot of palings around a large rolling mill. The imagines, as they emerged, which they do about 9 p.m., crawled up the palings till their wings were dry. At any place like this they can easily be examined, and as it is a very variable species, fine forms can be selected at leisure. I have taken pale specimens thus, scarcely differing from what has been called *Gueneei*, and others exceedingly dark, which might possibly represent *Nickerlii*, as Mr. Barrett supposes the British record of the capture of this insect to refer to a dark form of *Testacea*. The shape of the wings varies much as well as the colouring, and the paler forms often have the fore-wings very narrow, especially in the female. Mr. Barrett states that this tendency to variation is confined to specimens occurring on the coast. I have no experience with it inland. It is an insect that comes freely to light.

CERIGO, Steph.

86. *Cerigo cytherea*, Fab. STRAW UNDERWING.

- Cerigo cytherea*. Staint. Man., vol. i., p. 205.
 „ „ Newm. Brit. Moths, p. 295.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 340.
Caradrina matura. Meyr. Hdbk. Brit. Lep., p. 124.

LARVA. Buck., vol. iv., pl. lxx., fig. 2.

Generally distributed and not rare in grassy places. It is in the Twizell list as *Texta*, but is omitted from Mr. Finlay's, though I feel sure it will occur in many places where he collected. Mr. Maling met with it at Newbiggin-by-the-Sea, and Mr. Rhagg at Earsdon. Mr. Hedworth found it abundant at the high end of Thornley Wood; Mr. Sang records it from Seaton Carew, Houghton-le-Skerne, and the Manual locality, Darlington; Dr. Lees found it in Upper Teesdale; and Mr. Gardner says, "not uncommon in some years at Hartlepool, Hezleden Dene, and Greatham." It is a species that comes freely to sugar and sits there quietly. I have also taken it occasionally at Ragwort, and on the flower head of "Marram," *Psamma arenaria*.

HAMA, Steph.

87. *Hama abjecta*, Hub. CRESCENT STRIPED.

- Mamestra abjecta*. Staint. Man., vol. i., p. 207.
 „ „ Newm. Brit. Moths, p. 298.
Hama „ Barr. Lep. Brit. Is., vol. iv., p. 343.
Hadena „ Meyr. Hdbk. Brit. Lep., p. 133.

LARVA. Buck., vol. iv., pl. lxx., fig. 5.

A species that appears to occur near the sea, or by streams up which the tide flows, and is especially fond of grassy places from which the sea has been shut out, but where the soil is yet saturated with its salts. It occurs regularly at Greatham Salt Marsh, and is sometimes not uncommon to the north of Hartlepool, where the low land on the west of the railway was formerly covered by the sea, but the extension of the town is quickly

exterminating *Abjecta* there. It is an insect that comes to sugar, but is exceedingly shy, and slips off at the glare of the collector's lantern. I have also taken it at Ragwort and *Hera-cleum sphondylium*. It does not appear to have been taken elsewhere in our counties, but there are several places on the coast of both counties where it is sure to be found if looked for at the proper time.

88. *H. anceps*, Hub. LARGE NUTMEG.

- Mamestra anceps*. Staint. Man., vol. i., p. 208.
 „ „ Newm. Brit. Moths, p. 299.
Hama „ Barr. Lep. Brit. Is., vol. iv., p. 347.
Hadena sordida. Meyr. Hdbk. Brit. Lep., p. 133.

Rather local and not very common, apparently preferring, but not confined to the coast. It is in the Twizell list as *Hama aliena*. Mr. Maling took it at Newbiggin-by-the-Sea; Mr. Hedworth at Dunston and Thornley; Mr. Eales at South Shields; and Mr. Sang at Darlington. At Hartlepool we take it regularly at Campion flowers, and occasionally at sugar, but it is never very numerous. No British figure of the larva of this species appears to be in existence. I once obtained eggs from a Hartlepool ♀, and Mr. Buckler reared some of the larvæ to maturity, but no insect emerged, and the figures he took of them have been lost.

89. *H. furva*, Hub. THE CONFUSED.

- Mamestra furva*. Staint. Man., vol. i., p. 208.
 „ „ Newm. Brit. Moths, p. 300.
Hama „ Barr. Lep. Brit. Is., vol. iv., p. 351.
Hadena „ Meyr. Hdbk. Brit. Lep., p. 132.

LARVA. Buck., vol. iv., pl. lxvi., fig. 2.

A very rare species, and has only occurred on or near the coast. Mr. Bolam appears to be the only collector who has met with it freely. He writes, "this dull-coloured Moth has probably been confounded with some of the closely allied species, or it seems

likely that it would have been more often recorded. I have taken it at sugar in several localities around Berwick, as well as at a considerable elevation upon the hill ridges at Langleyford in August and September. The larvæ are of a lightish drab colour, thickly covered with warty spots, each of which carries a hair, and there is a broad, glossy-brown plate, of nearly the same colour as the head, upon the second segment. I have found them in plenty at the roots of tufts of grass, growing from the sides of the old town walls in May and June. They are full fed towards the end of the latter month." (Trans. Ber. F. C., vol. xv., p. 305). Other records are but few. I took a single specimen at sugar at Hutton Henry on 1st July, 1876. Mr. Gardner took another at Hartlepool about the same time. Mr. Corder took four on 20th July, 1895, near Sunderland, and another on 22nd. He has sugared several times since at the same place, but got no more. Mr. T. A. Lofthouse took one on the Great-ham Salt Marsh in 1894 and another in 1896. I know of no others.

XYLOPHASIA, Steph.

90. *Xylophasia lithoxylea*, W. V. LIGHT ARCHES.

Xylophasia lithoxylea. Staint. Man., vol. i., p. 199.

" " Newm. Brit. Moths, p. 284.

" " Barr. Lep. Brit. Is., vol. iv., p. 356.

Hadena " Meyr. Hdbk. Brit. Lep., p. 131.

LARVA. Buck., vol. iv., pl. lxiii., fig. 1.

In nearly all the lists, and recorded as "sometimes common" in most of them. It comes to sugar,—in fact I never took it except at sugar,—but it is more uncertain and peculiar at that bait than any other species I have noticed; one season they may be abundant for a single night, but never appear again. Another night they will sit on the sugared patches, and allow themselves to be taken off at leisure, or not appear disturbed while you are taking their neighbours. Then, suddenly, as if some signal had been given, they will cease feeding, look alert for a moment, and then fly away. You pass on to the next

patch, and the next—they are all gone. Whatever the cause, they have all been affected alike. After such a dispersal I have never noticed them at sugar again that season. Stephens says the larvæ feed on Thorn, but that is an error. I have bred the species, and the larvæ feed at the roots of grass exactly as does the next species. The larvæ of these two are so nearly alike that Mr. Buckler had great difficulty in distinguishing them.

(*H. sublustris* is in the Twizell list, but it is probably an error for *lithoxylea*. *Sublustris* does not appear to extend beyond Yorkshire, where it is very rare).

91. *X. polyodon*, (Linn.). DARK ARCHES.

Xylophasia polyodon. Staint. Man., vol. i., p. 200.

„ „ Newm. Brit. Moths, p. 285.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 362.

Hadena „ Meyr. Hdbk. Brit. Lep., p. 130.

LARVA. Buck., vol. i., pl. lxiii., fig. 2; O.Wils., pl. xxxiii., fig. 10.

One of our commonest species, occurring everywhere in great abundance, and in considerable variety. The extreme black form (*infuscata*, White), also occurs in all parts of the district, but is not nearly so numerous as the type. Intermediate forms in every possible degree are of constant occurrence. The darker specimens appear to be affected by the same (? meteorological) conditions as *Lithoxylea*, and the same peculiarities may be noticed at sugar. *Infuscata* is at any time more alert than the type, and must be taken quickly off the sugar if you want it; nor does it appear to remain on the wing so late in the season as does the ordinary form.

92. *X. rurea*, Fab. CLOUD-BORDERED BRINDLE.

Xylophasia rurea. Staint. Man., vol. i., p. 199.

„ „ Newm. Brit. Moths, p. 283.

„ „ Barr. Lep. Brit. Is., vol. iv., p. 368.

Hadena „ Meyr. Hdbk. Brit. Lep., p. 131.

LARVA. Buck., vol. iv., pl. lxii., fig. 6.

A common species everywhere. The variety *Combusta* appears to be equally well distributed with the type, though not so abundant. Intermediate forms are very rare.

93. *X. hepatica*, Hub. CLOUDED BRINDLE.

Xylophasia hepatica. Staint. Man., vol. i., p. 200.

" " Newm. Brit. Moths, p. 285.

" " Barr. Lep. Brit. Is., vol. iv., p. 372.

Hadena " Meyr. Hdbk. Brit. Lep., p. 132.

LARVA. Buck., vol. iv., pl. lxxiii., fig. 3.

Far from a common species, though widely distributed in both counties. It is not in the Twizell list; but Mr. Finlay found it in Meldon Park, though not commonly; Mr. Maling took it at Hexham and at Jesmond, where Mr. Henderson also met with it; Mr. Hedworth found it at Gibside and more abundantly at Thornley; Mr. Ross found it fairly common at Bishop Auckland; and it is given in the Manual as occurring at Darlington. I never met with it myself, but Mr. Gardner bred three or four in 1875 from larvæ found in Hezleden Dene.

APAMEA, Och.

94. *Apamea basilinea*, Fab. RUSTIC SHOULDER KNOT.

Apamea basilinea. Staint. Man., vol. i., p. 210.

" " Newm. Brit. Moths, p. 302.

" " Barr. Lep. Brit. Is., vol. iv., p. 380.

Hadena " Meyr. Hdbk. Brit. Lep., p. 133.

LARVA. Buck., vol. iv., pl. lxxvii., fig. 1.

A very abundant species everywhere. I have several times taken very dark, slaty-grey specimens of this insect. These have occurred when we have had a sudden spell of very cold weather during or just before its time of emergence, as though the cold had darkened those nearly ready to emerge, in accordance with Mr. Merrifield's theory and experiments. I noticed this particularly one year when we had several days of intense cold after the earlier specimens were on the wing. Before the

cold spell they were quite normal, then dark ones appeared, while after the cold was over the last to emerge were nearly of the ordinary hue. I have observed the same with one or two other species, which will be referred to in their places.

95. *A. gemina*, Hub. DUSKY BROCADE.

- Apamea gemina*. Staint. Man., vol. i., p. 210.
 „ „ Newm. Brit. Moths, p. 304.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 383.
Hadena „ Meyr. Hdbk. Brit. Lep., p. 130.
 LARVA. Buck., vol. iv., pl. lxvii., fig. 2.

An abundant species everywhere; the variety *Remissa* appears to occur everywhere with the type, and to be equally abundant.

96. *A. unanimis*, Tr. SMALL CLOUDED BRINDLE.

- Apamea unanimis*. Staint. Man., vol. i., p. 210.
 „ „ Newm. Brit. Moths, p. 305.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 387.
Hadena „ Meyr. Hdbk. Brit. Lep., p. 135.
 LARVA. Buck., vol. iv., pl. lxvii., fig. 3.

Generally distributed over both counties but not common, and only recorded by a few collectors. The species is on the Twizell list as *Secalina*; Mr. Maling found larvæ in Jesmond Dene in April, and bred the imago. Mr. Hedworth took it at Thornley, and rather freely at Dunston; and it is on the Manual list for Darlington. At Hartlepool it occurs occasionally at sugar, sometimes in considerable numbers. Mr. Gardner has also taken it at Greatham and in Hezleden Dene.

97. *A. oculea*, Gn. COMMON RUSTIC.

- Apamea oculea*. Staint. Man., vol. i., p. 211.
 „ „ Newm. Brit. Moths, p. 306.
 „ „ Barr. Lep. Brit. Is., vol. iv., p. 391.
Hadena didyma. Meyr. Hdbk., Brit. Lep., p. 135.
 LARVA. Buck., vol. iv., pl. lxvii., fig. 5; O. Wils., pl. xxxiv., fig. 7.

A very common species everywhere. *Oculea* is one of the most variable of the Noctuæ, but all the forms occur everywhere and shade into each other by imperceptible gradations. A marked change has taken place, however, since 1855, when I commenced to collect. Very light variations were then common, and the darkest was far from the most abundant. Now, the lighter forms are never seen at Hartlepool, and the darker ones are much the more numerous. The same remark applies to *Miana strigilis*.

98. *A. ophiogramma*, Esp. DOUBLE LOBED.

- Apamea ophiogramma*. Staint. Man., vol. i., p. 211.
 " " Newm. Brit. Moths, p. 305.
 " " Barr. Lep. Brit. Is., vol. iv., p. 399.
Hadena " Meyr. Hdbk. Brit. Lep., p. 134.
 LARVA. Buck., vol. iv., p. 93.

A strictly southern species, of which one record exists for each county. It is in the Twizell list, but there being no trace of the specimen in the collection, I always assumed it had been wrongly named, but in 1875 Mr. Gardner took a specimen at sugar at Hartlepool, which makes Mr. Selby's record more probable. Mr. Barrett says the species is mainly confined to marshy places and the banks of rivers. The larva feeds on *Phalaris arundinacea*, the variegated form of which is commonly grown in gardens as "Ribbon Grass." It is possible that a larva or pupa might be transferred with a clump of the grass from a southern garden. It must be added, however, that 1875, the year of Mr. Gardner's capture, was an unprecedented year for sugar. Species came in large numbers that season, that we never took previously except singly, and others occurred that we never saw before or since.

CELÆNA, Steph.

99. *Celæna Haworthi*, Curt. HAWORTH'S MINOR.

- Celæna Haworthii*. Staint. Man., vol. i., p. 214.
 " " Newm. Brit. Moths, p. 310.
 " *Haworthi*. Barr. Lep. Brit. Is., vol. v., p. 1.
Hadena Haworthii. Meyr. Hdbk. Brit. Lep., p. 135.
 LARVA. Buck., vol. iv., pl. lxviii., fig. 7; O. Wils., pl. xxxiv.,
 fig. 7.

This interesting species is common on the moors of both counties. The male flies in the bright sunshine, coming out about noon, like *Captiuncula*. Later in the day, but before dark, it flies again, this time in search of the female, which sits on a grass stem, and evidently diffuses a faint odour to attract her partner, as do some of the genus *Hepialus*. "Generally distributed on the moors north of Greenleighton," J. Finlay. Mr. Finlay says *north* of Greenleighton, but I took a couple of males *on* Greenleighton Moor myself, when collecting there with Mr. Finlay, flying rather slowly just as rain was beginning to fall. "Common on moors in Teesdale in August to beginning of September. Will not come to sugar," F. A. Lees. "Not uncommon on Teesdale moors," J. Gardner. In 1894 my son sent me a number of insects alive, which he had taken on gas lamps near Jesmond; among them were two examples of *Haworthi*, which I certainly was surprised to receive from Newcastle. The species is marked "Da" in the Manual, but the specimens referred to were taken in Teesdale.

MIANA, Steph.

100. *Miana literosa*, Haw. ROSY MINOR.

- Miana literosa*, Staint. Man., vol. i., p. 212,
 " " Newm. Brit. Moths, p. 308.
 " " Barr. Lep. Brit. Is., vol. v., p. 7.
Hadena " Meyr. Hdbk. Brit. Lep., p. 136.

LARVA. Buck., vol. iv., pl. lxviii., fig. 3; O. Wils., pl. xxxiv.,
 fig. 8.

An abundant species everywhere. It comes freely to sugar, and is common at Ragwort and other flowers.

101. *M. strigilis*, Clerck. MARBLED MINOR

- Miana strigilis*, Staint. Man., vol. i., p. 212.
 " " Newm. Brit. Moths, p. 307.
 " " Barr. Lep. Brit. Is., vol. v., p. 10.
Hadena " Meyr. Hdbk. Brit. Lep., p. 137.

LARVA. Buck., vol. iv., pl. lxviii., fig. 1.

Very common everywhere. An exceedingly variable species. The trivial name implies that the paler specimens were once the prevailing form of the insect, but the darker ones have steadily increased in numbers and the marbled varieties decreased until the var. *Æthiops* constitutes the bulk of those now taken. Several of the more recent lists record no other.

102. *M. fasciuncula*, Haw. MIDDLE-BARRED MINOR.

- Miana fasciuncula*. Staint. Man., vol. i., p. 212.
 „ „ Newm. Brit. Moths, p. 308.
 „ „ Barr. Lep. Brit. Is., vol. v., p. 13.
Hadena „ Meyr. Hdbk. Brit. Lep., p. 137.

LARVA. Buck., vol. iv., pl. lxviii., fig. 2.

Generally distributed and very common everywhere.

103. *M. furuncula*, Tr. CLOAKED MINOR.

- Miana furuncula*. Staint. Man., vol. i., p. 213.
 „ „ Newm. Brit. Moths, p. 309.
 „ „ Barr. Lep. Brit. Is., vol. v., p. 18.
Hadena bicoloria. Meyr. Hdbk. Brit. Lep., p. 136.

LARVA. Buck., vol. iv., pl. lxviii., fig. 4.

Not so common as the last, and apparently most numerous near the sea. It is in the Twizell list; Mr. Maling met with it in great abundance at Newbiggin-by-the-Sea; Mr. Henderson took it at Jesmond; Mr. Rhagg also took it about Newcastle; Mr. Brady got a few at sugar at Ryhope; and Mr. Ross a few at Bishop Auckland. At Hartlepool it is very common on the railway side and on the sandhills. It flies very wildly about sunset, then more quietly, and settles down to feed on Ragwort and other flowers by the time it is dark. Later still it may be taken sitting on palings, often paired, disappearing finally about midnight.

104. *M. captiuncula*, Tr. LESSER MINOR.

- Miana exopolita*. Staint. Man., vol. i., p. 213.
Photedes captiuncula. Newm. Brit. Moths, p. 309.
Miana „ Barr. Lep. Brit. Is., vol. v., p. 22.
Hadena „ Meyr. Hdbk. Brit. Lep., p. 136.
 LARVA. Buck., vol. iv., pl. lxviii., fig. 5.

This species was introduced to the British fauna by the late John Sang, who captured it in Neasham Lane, near Darlington, in 1834. Mr. Gardner and I were the next to take it near Black Hall Rocks, and it has since been met with in many parts of both counties. Mr. Patterson took it at Alnmouth; Mr. Finlay, "west of Netherwitton;" Mr. Corder at Roker, Mr. Eales near Marsden; and the Hartlepool collectors get it abundantly between Hezleden and Castle Eden Denes. I have also taken it near Thornley Colliery, and believe it is much more generally distributed than the records would lead one to believe. It should be looked for in an afternoon, a time of day when little collecting is done. It comes out about noon and flies quickly for a few minutes, then goes down among the herbage. In a little time it is off again, perhaps flying a few minutes, perhaps a quarter of an hour, and so on, never long on the wing, but appearing at brief intervals, perhaps singly, or in small numbers, or sometimes many flying at once. I have looked in vain for some meteorological change affecting its flight. It will not fly at all on a cold, dull day, and certainly prefers bright sunshine, but it will fly freely during a passing shower if the day suits it otherwise. Probably these are males flying in search of their mates, for I once saw them "assemble" in considerable numbers around a female, evidently newly emerged. After pairing she deposited some eggs, from which Mr. Buckler reared the larvæ to maturity but did not obtain the imago. Mr. Gardner subsequently found the full-grown larva and enabled Mr. Buckler to complete its life history.

EUPLEXIA, Steph.

105. *Euplexia lucipara*, (Linn.). SMALL ANGLE SHADES.

Euplexia lucipara. Staint. Man., vol. i., p. 270.

" " Newn. Brit. Moths, p. 405.

" " Barr. Lep. Brit. Is., vol. v., p. 49.

Hadena " Meyr. Hdbk. Brit. Lep., p. 128.

LARVA. Buck., vol. vi., pl. xci., fig. 5; O. Wils., pl. xxxviii.,
fig 2.

Not by any means a common species in any part of our district, though it occurs occasionally in most places. It is given in the Twizell list; Mr. Finlay found it "generally distributed but not common" about the Morpeth district; Mr. Henderson and Mr. Maling both met with it at Jesmond; Miss Rosie took it at Kenton; Mr. Rhagg at Winlaton Mill. In Durham Mr. Hedworth took it at sugar both at Dunston and Thornley, more abundantly than it appears to occur elsewhere; Mr. Greenwell found it "not uncommon" at Bishop Auckland; Dr. Lees took "one or two at light in Upper Teesdale." I have taken one or two at Castle Eden; Mr. Gardner got several at Hezleden Dene, and one came to my sugar on the Hartlepool sandhills in 1875 and another in 1886.

PHLOGOPHORA, Och.

106. *Phlogophora meticulosa*, (Linn.). ANGLE SHADES.

Phlogophora meticulosa. Staint. Man., vol. i., p. 269.

" " Newm. Brit. Moths, p. 403.

" " Barr. Lep. Brit. Is., vol. v., p. 52.

Hadena " Meyr. Hdbk. Brit. Lep., p. 127.

LARVA. Buck., vol. vi., pl. xci., fig. 3; O. Wils., pl. xxxviii.,
fig. 1.

An abundant species everywhere and occurring almost all the year. I have taken it in the perfect state as early as March, and my latest was taken on 9th December, 1877. There are two broods, in a general way, but Mr. Barrett suggests that the larvæ feed up at different rates and emerge accordingly. I have reared the species from eggs deposited in spring, and they fed up together, and all emerged about the same time in autumn. I have never reared it from autumn ova.

HELOTROPHA, Ld.

107. *Helotropha fibrosa*, Esq. THE CRESCENT.

Apamea fibrosa. Staint. Man., vol. i., p. 211.

" " Newm. Brit. Moths, p. 306.

Helotropha " Barr. Lep. Brit. Is., vol. v., p. 57.

Hadena leucostigma. Meyr. Hdbk. Brit. Lep., p. 134.

LARVA. Buck., vol. iv., pl. lxvii., fig. 4.

Only a chance visitor to our counties. Mr. Finlay took one in Meldon Park; Mr. Henderson took another at Jesmond. In 1875 I took one at Hartlepool and Mr. Gardner took several. Probably the Northumberland specimens occurred in 1875 also. I have never heard of the species since.

HYDRÆCIA, Gn.

108. *Hydræci nictitans*, Bkh. EAR MOTH.

Hydræcia nictitans. Staint. Man., vol. i., p. 197.

„ „ Newm. Brit. Moths, p. 280.

„ „ Barr. Lep. Brit. Is., vol. v., p. 62.

Hadena „ Meyr. Hdbk. Brit. Lep., p. 135.

LARVA. Buck., vol. iv., pl. lxii., fig. 2.

A well-distributed species, occurring freely in many places, perhaps more abundantly on the higher land and near the moors. It is very partial to Ragwort, and sits also on the flowers of Thistle, Scabious, Tansy, etc., etc., and may often be found long before nightfall imbibing their sweets. My opportunities for observation have not been very numerous, but I am inclined to think that this day-flying tendency is confined to the higher land. I have seen it as early as 3 p.m. near Cotherston and at High Force, but I never saw it before dark around Hartlepool. There is a named variety, *Erithrostigma*, in which the ear-shaped mark is white instead of orange. This appears to occur everywhere with the type. Another much slighter variety, which Mr. Tutt has elevated to specific rank, also occurs here with the normal form.

109. *H. micacea*, Esp. ROSE RUSTIC.

Hydræcia micacea. Staint. Man., vol. i., p. 198.

„ „ Newm. Brit. Moths, p. 282.

„ „ Barr. Lep. Brit. Is., vol. v., p. 56.

Caradrina „ Meyr. Hdbk. Brit. Lep., p. 119.

LARVA. Buck., vol. iv., pl. lxii., fig. 4.

A tolerably common species, occurring in most parts of both counties. The larvæ feed on the roots of Dock and other low

plants, and are thus not affected by smoky or other deposits on the leaves; hence it occurs in many places near towns and in the neighbourhood of works, where larvæ, feeding on the leaves, could not survive. It is decidedly the commonest of the genus. A darker variety sometimes occurs, without the rosy hue which gives the trivial name. This might easily be mistaken for the next species.

110. *H. Petasitis*, Dbld. BUTTER BUR.

Hydracia Petasitis. Staint. Man., vol. i., p. 198.

„ „ Newm. Brit. Moths, p. 281.

„ „ Barr. Lep. Brit. Is., vol. v., p. 68.

Caradrina „ Meyr. Hdbk. Brit. Lep., p. 119.

LARVA. Buck., vol. iv., pl. lxii., fig. 3.

This species probably occurs wherever there is an abundance of the food plant, *Petasites vulgaris* (Butter-bur). I have no records for Northumberland, but the insect is certain to occur by stream sides and in places where the food grows freely. Mr. Sang took the insect at "Nag's Head" on the Teeside near Darlington, on 27th July, 1857. Mr. Gardner found the pupæ on the banks of a small stream near Greatham in 1881, and has subsequently found it in Upper Teesdale. After Mr. Gardner had shown me how to find the pupa at Greatham, I found it in a similar locality at Dalton-le-Dale, near Seaham Harbour, on the stream side to the east of the turnpike. The larva feeds under the surface of the ground on the stems and roots of the plant, and the pupa must be carefully dug for about the second or third week in July.

GORTYNA, Och.

111. *Gortyna flavago*, Esp. FROSTED ORANGE.

Gortyna flavago. Staint. Man., vol. i., p. 196.

„ „ Newm. Brit. Moths, p. 279.

„ „ Barr. Lep. Brit. Is., vol. v., p. 73.

Ochria ochracea. Meyr. Hdbk. Brit. Lep., p. 110.

LARVA. Buck., vol. iv., pl. lxii., fig. 1; O. Wils., pl. xxxiii.,
fig. 8.

This insect has scarcely been recorded from Northumberland, but I can only assume that it has been overlooked, for the larva feeds inside the stems of Thistle, Ragwort, Artemisia, Eupatorium, and many other common plants, and the species is so well distributed in Durham, that I feel sure it will be found to occur in the more northern county. It is not in the Twizell list, nor does Mr. Finlay record it, but Mr. Henderson met with it at Jesmond, the only locality I have north of the Tyne. Mr. Hedworth found the pupa at Lockhaugh, Thornley, and Dunston; Mr. Maling at South Shields; Mr. Rhagg at Chopwell; Mr. Brady at Sunderland; Mr. Backhouse at Shull and Darlington, the latter being a Manual locality; and Mr. Loft-house found it at Greatham. About Hartlepool it is tolerably common, and most easily obtained by splitting the stem of the food plant, as it changes to pupa within the stem where the larva has fed. Those I have bred or taken here are paler and less rich in colour than specimens from the South of England.

NONAGRIA, Och.

112. *Nonagria Typhæ*, Esp. BULL RUSH.

<i>Nonagria Typhæ</i> .	Staint. Man., vol. i., p. 194.
„ „	Newm. Brit. Moths, p. 270.
„ „	Barr. Lep. Brit. Is., vol. v., p. 83.
„ <i>arundinis</i> .	Meyr. Hdbk. Brit. Lep., p. 111.

LARVA. Buck., vol. iv., pl. lxi., fig. 4; O. Wils., pl. xxxiii., fig. 7.

Mr. Barrett thinks this species does not occur north of Yorkshire, but Mr. Bolam appears to have found it in several places in North Northumberland and the Scottish borders. He writes, "In addition to the Scremerston and Ancroft stations for this fine species, which I previously recorded, there is a flourishing colony among the Bull-rushes, *Typha latifolia*, in the old pond at Whitedam Head, within the Borough of Berwick." Trans. Ber. Field Club., vol. xv., p. 304. I know of no other record.

TAPINOSTOLA, Ld.

113. *Tapinostola fulva*, Hub. SMALL WAINSCOT.*Nonagria fulva*. Staint. Man., vol. i., p. 192.*Tapinostola* ,, Newm. Brit. Moths, p. 274.

,, ,, Barr. Lep. Brit. Is., vol. v., p. 102.

Caradrina ,, Meyr. Hdbk. Brit. Lep., p. 120.

LARVA. Buck., vol. iv., pl. lx., fig. 4.

Occurring in most places where there is rough ground and plenty of carices and grass. It is very fond of damp places, but not by any means confined to them, being common enough on sandhills and dry railway embankments. It is in the Twizell list as *Leucania pygmina*. Mr. Bolam found it well distributed in North Northumberland; Mr. Maling found it flying at Sweethope by day, but this is unusual so far as I have seen, for it does not generally appear till early dusk. It has been taken at the Old Park, Netherwitton, by Mr. Finlay; at Kenton by Miss Rosie; and at Jesmond by Mr. Henderson. Mr. Hedworth took it at Axwell, Dunston, and Thornley, etc.; Mr. Rhagg also met with it at Thornley Wood; Mr. Eales took it at South Shields "in marshy places." Dr. Lees found it common in a swamp at the mouth of Lunedale, Upper Teesdale; Darlington is a Manual locality; Mr. Sang took it at Hell Kettles near that town, and found the larva there, which had long eluded the best larva-hunters. He discovered it feeding in the stem of *Carex paludosa* (see E. M. M., xvi., 110). There is no doubt the larva is not confined to this food, but probably devours the inside stems of many allied plants. About Hartlepool it seems almost ubiquitous, occurring on the dry sand banks, the railway embankments and cuttings, all rough pastures, and it is abundant on Great-ham Salt Marsh.

114. *T. Elymi*, Tr. LYME GRASS.**Tapinostola Elymi*. Newm. Brit. Moths, p. 275.

,, ,, Barr. Lep. Brit. Is., vol. v., p. 112.

Caradrina ,, Meyr. Hdbk. Brit. Lep., p. 120.

LARVA. Buck., vol. iv., pl. lx., fig. 5.

* *Elymi* was not known as British when Stainton's Manual was published.

This insect was introduced to the British Fauna in 1861, specimens having been taken on the Norfolk coast by the late Mr. Crotch. It was soon turned up on the Yorkshire coast, and I always understood that Mr. Eales was the first to take it in Durham, but Mr. Hedworth says "Mr. Thomas Richardson of Mount Pleasant was the first to discover this species in its present habitat, South Shields." It was then found at Hartlepool, Dr. Lees being, I believe, the first to take it. Mr. Gardner subsequently found the larva and pupa and bred the insect. The food plant, *Elymus arenarius* (Sand Reed or Lyme Grass), occurs in patches on the coast, and *Elymi* should be looked for wherever it grows. It flies in early dusk, and is very easily distinguished on the wing. Later on it settles on the stems of the food plant, from which it may easily be boxed. The most productive patches of the plant near Hartlepool are now destroyed, but the larvæ, living inside the stem, are not injured by deposits of smoke, etc., on the leaves.

CALAMIA, Hb.

115. *Calamia lutos*a, Hub. LARGE WAINSCOT.

Nonagria crassicornis. Staint. Man., vol. i., p. 194.

*Calamia lutos*a. Newm. Brit. Moths, p. 272.

" " Barr. Lep. Brit. Is., vol. v., p. 116.

Caradrina ,, Meyr. Hdbk. Brit. Lep., p. 119.

LARVA. Buck., vol. iv., pl. lxi., fig. 5.

Mr. Gardner was the first to take the insect in our district on Reeds in the "Stells" at Greatham, up which the tide flows. He obligingly showed me the locality and I found it in some seasons not at all scarce. Mr. Gardner also took two specimens at the brick ponds near Hartlepool, but these are now filled up. Mr. A. Wood took two on palings in a narrow foot road in West Hartlepool. These had doubtless flown from one or other of the above-named habitats. Mr. J. W. Corder subsequently found it "on the cliffs between Ryhope and Seaham on a large Reed bed, and in October, 1894, I took a considerable number (twenty-five) in one night. They struck me as being very small in size."

The species doubtless occurs elsewhere, and should be looked for among Reed (*Arundo Phragmites*, L.) at night in October, when it may be found sitting on the stems or on other herbage. The pupa may be found by digging on the banks where the Reed grows, as the larva comes out of the stem to pupate, and only penetrates two or three inches below the surface of the soil. To find the larva is more difficult. Mr. Gardner found them quite at the bottom of the stem, far below the surface of the water at high tide. I have felt puzzled how many of them got to dryer land for pupation.

(*Calamia Phragmitidis* is a very likely species to be found in either county. Mr. Bolam of Berwick found larvæ in Newham Bog, which Mr. J. T. Carrington thought were those of *Phragmitidis*. Mr. Bolam thinks they are more probably the larvæ of *Chilo Phragmitellus*, but he has not succeeded in rearing the insect).

LEUCANIA, Och.

116. *Leucania impura*, Hub. SMOKY WAINSCOT.

- Leucania impura*. Staint. Man., vol. i., p. 189.
 " " Newm. Brit. Moths, p. 266.
 " " Barr. Lep. Brit. Is., vol. v., p. 135.
 " " Meyr. Hdbk. Brit. Lep., p. 71.

LARVA. Buck., vol. iv., pl. lix., fig. 5.

One of the commonest of our *Noctuæ*, occurring everywhere and always in abundance. It comes freely to sugar; goes to Ragwort, Marram, Rush and other flowers. It is in all the lists.

117. *L. pallens*, (L.). COMMON WAINSCOT.

- Leucania pallens*. Staint. Man., vol. i., p. 190.
 " " Newm. Brit. Moths, p. 267.
 " " Barr. Lep. Brit. Is., vol. v., p. 139.
 " " Meyr. Hdbk. Brit. Lep., p. 71.

LARVA. Buck., vol. iv., pl. lx., fig. 1.

Equally common with the last species and of precisely similar habits.

118. *L. comma*, (L.). SHOULDER-STRIPED WAINSCOT.

Leucania comma. Staint. Man., vol. i., p. 189.

" " Newm. Brit. Moths, p. 264.

" " Barr. Lep. Brit. Is., vol. v., p. 152.

" " Meyr. Hdbk. Brit. Lep., p. 69.

LARVA. Buck., vol. iv., pl. lix., fig. 3.

A widely-distributed species, but not nearly so abundant as the last two. It is given in all the lists, but appears to be more frequent near the coast. It generally but not always comes to sugar, and I have seen it at Thistle and other flowers.

119. *L. littoralis*, Curt. SHORE WAINSCOT.

Leucania littoralis. Staint. Man., vol. i., p. 188.

" " Newm. Brit. Moths, p. 263.

" " Barr. Lep. Brit. Is., vol. v., p. 155.

" " Meyr. Hdbk. Brit. Lep., p. 69.

LARVA. Buck., vol. iv., pl. lix., fig. 1; O. Wils., pl. xxxiii., fig. 6.

A coast species, occurring only on sandhills among Marram, (*Ammophila arundinacea*). Mr. Maling took two specimens at Newbiggin-by-the-Sea, which are the only captures I know of in either county. Though it is not a generally distributed species, there are many fine stretches of sandhills on our coasts, especially in Northumberland, where a careful search would probably be rewarded by the discovery of this species. When newly emerged it has a peculiar greenish hue closely resembling the colour of the bent grass; this fades to a yellowish-drab, like the dried leaves of the plant. But the educated eye of an Entomologist should detect it notwithstanding its protective colour. It may also be beaten out of the roots, etc., overhanging the edges of sand-banks. The larva hides by day in the sand, but feeds openly after dark.

120. *L. conigera*, W. V. BROWNLIN BRIGHTEYE.

- Leucania conigera*. Staint. Man., vol. i., p. 187.
 „ „ Newm. Brit. Moths, p. 259.
 „ „ Barr. Lep. Brit. Is., vol. v., p. 169.
 „ „ Meyr. Hdbk. Brit. Lep., p. 69.
 LARVA. Buck., vol. iv., pl. lviii., fig. 1.

A tolerably well-distributed species, but not occurring everywhere. The larva feeds on various grasses, preferring, according to Newman, *Triticum repens*, which farmers will consider is much too abundant. The insect is given in the Twizell list, but not in that in Ornsby's Durham, nor has Mr. Maddison found it in collecting round the city. Mr. Finlay met with it at Meldon Park, but never plentifully; Mr. Maling took it at Bramble flowers near Lucker; Mr. Rhagg found it at Brinkley near Blaydon, and near Newcastle; Mr. Brady at Ryhope; Mr. Hedworth at Thornley and Dunston, but not common; Mr. Ross at Bishop Auckland; it is in the Manual list for Darlington, where Mr. Backhouse and Mr. Sang took it, the latter at sugar in 1853 and at Rush flowers in 1871. At Hartlepool it is often abundant at sugar, and it goes freely to many flowers.

121. *L. lithargyria*, Esp. THE CLAY.

- Leucania lithargyria*. Staint. Man., vol. i., p. 188.
 „ „ Newm. Brit. Moths, p. 261.
 „ „ Barr. Lep. Brit. Is., vol. v., p. 178.
 „ „ Meyr. Hdbk. Brit. Lep., p. 68.
 LARVA. Buck., vol. iv., pl. lviii., fig. 3; O. Wils., pl. xxxiii.,
 fig. 2.

Widely-distributed in both counties, but not recorded everywhere as one would have anticipated. It is not given in any of the older lists, but Mr. Finlay found it plentifully in Meldon Park, and Mr. Maling found it at Jesmond, the only Northumberland records I have. In Durham Mr. Hedworth took it at Dunston and Thornley, Mr. Brady found it common at Ryhope, Mr. Eales at South Shields, Mr. Maddison at Durham, and Dr. Lees in Upper Teesdale. At Hartlepool it is always tolerably common. It comes freely to sugar.

PANOLIS, Hub.

122. *Panolis piniperda*, Esp. PINE BEAUTY.*Trachea piniperda*. Staint. Man., vol. i., p. 240.

" " Newm. Brit. Moths, p. 355.

Panolis " Barr. Lep. Brit. Is., vol. v., p. 181.

" " Meyr. Hdbk. Brit. Lep., p. 76.

LARVA. Buck., vol. v., pl. lxxx., fig. 1.

Though this insect has been recorded by so few, I have little doubt but it occurs in all places where there is plenty of Scotch Fir. The Moth emerges early in the year before collectors are really on the alert, and sits very high up the tree, where its protective coloration makes it exceedingly difficult to see it. The larvæ, however, are not uncommon in August, and the pupæ may be found later among the fallen needles. Mr. Finlay says "generally distributed and not uncommon among Scotch Fir." Mr. Gardner says "larvæ not uncommon on Scotch Fir but the insect seldom seen. Hezleden Dene, Edder Acres, Wolsingham, and Stanhope." The larvæ also is a good instance of protective coloration, being striped with green and white longitudinally, and its resemblance to a tuft of the Fir needles is very close. I have often seen it going up the tree trunks on a windy day, after having been dislodged by the wind.

TÆNIOCAMPA, Gn.

123. *Tæniocampa gothica*, (L.), HEBREW CHARACTERS.*Tæniocampa gothica*. Staint. Man., vol. i., p. 242.

" " Newm. Brit. Moths, p. 356.

" " Barr. Lep. Brit. Is., vol. v., p. 186.

Monima " Meyr. Hdbk. Brit. Lep., p. 75.

LARVA. Buck., vol. v., pl. lxxx., fig. 3; O. Wils., pl. xxxvi., fig. 1.

A common insect everywhere, and remaining a long time on the wing. In a forward season I have taken it at Sallow blossom at the beginning of April, and I have met with it at Campion flowers late in June. A variety without the black mark on the

fore-wing, and known as *Gothicina*, occurs in Meldon Park with the type (Finlay) but not commonly. It is a variable insect, and I have taken this as well as other curious forms here, but it appears to have a tendency to eliminate the "Hebrew character," and become redder in hue as it occurs further north.

124. *T. cruda*, W. V. SMALL QUAKER.

Taniocampa cruda. Staint. Man., vol. i., p. 245.

" " Newm. Brit. Moths, p. 363.

" " Barr. Lep. Brit. Is., vol. v., p. 196.

Monima pulverulenta. Meyr. Hdbk. Brit. Lep., p. 74.

LARVA. Buck., vol. v., pl. lxxxii, fig. 2; O.Wils., pl. xxxvi.,
fig. 9.

Commoner inland than on the coast, but not rare anywhere. It is in all or nearly all the lists, and marked common or abundant at all places away from the sea side.

125. *T. stabilis*, W. V. COMMON QUAKER.

Taniocampa stabilis. Staint. Man., vol. i., p. 243.

" " Newm. Brit. Moths, p. 360.

" " Barr. Lep. Brit. Is., vol. v., p. 200.

Monima " Meyr. Hdbk. Brit. Lep., p. 73.

LARVA. Buck., vol. v., pl. lxxxii, fig. 4; O.Wils., pl. xxxvi.,
fig. 6.

Occurs everywhere and always very common. It is a very variable species, but does not produce distinct forms as does *Instabilis*.

126. *T. populeti*, Fab. LEAD-COLOURED DRAB.

Taniocampa populeti. Staint. Man., vol. i., p. 243.

" " Newm. Brit. Moths, p. 360.

" " Barr. Lep. Brit. Is., vol. v., p. 203.

Monima " Meyr. Hdbk. Brit. Lep., p. 73.

LARVA. Buck., vol. v., pl. lxxxii, fig. 3.

Far from a common insect here or elsewhere. Mr. Finlay

met with it about Morpeth but never plentifully; Mr. Sang took it at lamps at Darlington; I took a single specimen at West Hartlepool Cemetery, and Mr. Gardner has met with it once or twice about Hezleden Dene.

127. *T. opima*, Haw. NORTHERN DRAB.

Taniocampa opima. Staint. Man., vol. i., p. 243.

„ „ Newm. Brit. Moths, p. 359.

„ „ Barr. Lep. Brit. Is., vol. v., p. 206.

Monima „ Meyr. Hdbk. Brit. Lep., p. 73.

LARVA. Buck., vol. v., pl. lxxxii., fig. 2; O. Wils., pl. xxxvi.,
fig. 5.

One of the scarce species in this genus, and far from generally distributed in our counties. Mr. Finlay found it in several places in the Morpeth district but never common. Mr. Sang took it at lamps in Darlington, "6th April, 1859." These are all the records I have received. At Hartlepool we take it occasionally at Sallow blossom in Hezleden Dene and on the railway side above Hart Station. I once found a batch of eggs on the sand-banks between Hezleden Dene mouth and the volunteers' target, close to where there was an abundance of the Burnet Rose (*Rosa spinosissima*). They were neatly deposited in rows round a dried stem, and from them I reared a fine and varied series of this insect.

128. *T. instabilis*, W. V. CLOUDED DRAB.

Taniocampa instabilis. Staint. Man., vol. i., p. 243.

„ „ Newm. Brit. Moths, p. 358.

„ „ Barr. Lep. Brit. Is., vol. v., p. 209.

Monima incerta. Meyr. Hdbk. Brit. Lep., p. 72.

LARVA. Buck., vol. v., pl. lxxxii., fig. 1; O. Wils., pl. xxxvi.,
fig. 4.

Generally common throughout the district. A very variable species, producing several very distinct forms, most of which occur with us.

129. *T. munda*, Esp. TWIN-SPOTTED QUAKER.*Teniocampa munda*. Staint. Man., vol. i., p. 244.

,, ,, Newm. Brit. Moths, p. 363.

,, ,, Barr. Lep. Brit. Is., vol. v., p. 216.

Monima ,, Meyr. Hdbk. Brit. Lep., p. 74.LARVA. Buck., vol. v., pl. lxxxii., fig. 1; O. Wils., pl. xxxvi.,
fig. 8.

Mr. Barrett says that he has no record of the occurrence of *Munda* in Northumberland or Durham, nor have any of the collectors who have supplied me with lists met with the species, except Mr. Gardner, who records "not common at Sallows." I never met with the insect myself.

130. *T. gracilis*, Fab. POWDERED QUAKER.*Teniocampa gracilis*. Staint. Man., vol. i., p. 244.

,, ,, Newm. Brit. Moths, p. 361.

,, ,, Barr. Lep. Brit. Is., vol. v., p. 218.

Monima ,, Meyr. Hdbk. Brit. Lep., p. 73.

LARVA. Buck., vol. v., pl. lxxxii., fig. 5.

This species is not generally common and the records are very few indeed. It is in the Twizell list as *Sparsa*, but I have no other notice of its occurrence in Northumberland. Mr. Hedworth met with it at Sallows at Dam Head near Axwell. Mr. Sang also took it at Darlington, which is a "Manual" locality. About Hartlepool it is rather common. I have taken a good many at times on the Cemetery palings, and at Sallows it is sometimes the commonest species. We also get the dark variety. A number of food plants are given for this species, but I never found the larva except in the heads of Meadow Sweet, where it conceals itself in a shelter lined with silk.

PACHNOBIA, Gn.

131. *Pachnobia leucographa*, Hub. WHITE MARKED.*Teniocampa leucographa*. Staint. Man., vol. i., p. 242.

,, ,, Newm. Brit. Moths, p. 357.

Pachnobia ,, Barr. Lep. Brit. Is., vol. v.,
p. 223.*Triphæna* ,, Meyr. Hdbk. Brit. Lep., p. 107.LARVA. Buck., vol. v., pl. lxxx., fig. 4; O. Wils., pl. xxxvi.,
fig. 2.

Respecting this species Mr. Gardner writes, "a few specimens at Sallows, but it is decidedly scarce." I never met with it myself, nor does any other collector appear to have done so in either county. It should be looked for in well wooded parts, and is said to prefer "large bushes growing outside woods."

132. *P. rubricosa*, Fab. RED CHESTNUT.

Teniocampa rubricosa. Staint. Man., vol. i., p. 243.

" " Newm. Brit. Moths, p. 357.

Pachnobia " Barr. Lep. Brit. Is., vol. v., p. 226.

Triphæna " Meyr. Hdbk. Brit. Lep., p. 107.

LARVA. Buck., vol. v, pl. lxxx., fig. 5; O. Wils., pl. xxxvi., fig. 3.

Not uncommon at Sallow blossom. It is recorded in the Twizzell list; and "as generally distributed and common" in the Morpeth district by Mr. Finlay; at Jesmond by Mr. Henderson; and at Newcastle by Mr. Rhagg. Mr. Hedworth has taken it at Thornley, Dunston, Axwell, Gibside, etc.; both Mr. Ross and Mr. Greenwell took it commonly at Bishop Auckland; Darlington is a "Manual" locality. About Hartlepool it is plentiful in the denes and elsewhere.

RUSINA, Steph.

133. *Rusina tenebrosa*, Hub. BROWN RUSTIC.

Rusina tenebrosa. Staint. Man., vol. i., p. 220.

" " Newm. Brit. Moths, p. 315.

" " Barr. Lep. Brit. Is., vol. v., p. 236.

" " Meyr. Hdbk. Brit. Lep., p. 113.

LARVA. Buck., vol. v., pl. lxx., fig. 1.

Not an uncommon species in many parts of the district, though apparently far from being generally distributed. Mr. Finlay reports it from Coal Law Wood; Mr. Maling found it plentiful near Hexham; Miss Rosie took it at Kenton. Mr. Hedworth found it common at Thornley; Mr. Sang took it at Darlington "by Haughton Lane;" Darlington is also a Manual locality. It comes freely to sugar at Hartlepool, males being most numerous. Mr. Gardner has bred it from larvæ found under stones in

grassy places. Mr. Hedworth notes that it is generally worn when captured. This arises from its habit of hiding in rather dense tufts of grass.

MANIA. Tr.

134. *Mania maura*, (L.). OLD LADY.

Mania maura. Staint. Man., vol. i., p. 312.

„ „ Newm. Brit. Moths, p. 460.

„ „ Barr. Lep. Brit. Is., vol. v., p. 240.

Hadena „ Meyr. Hdbk. Brit. Lep., p. 129.

LARVA. Buck., vol. vi., pl. ciii., fig. 5; O. Wils., pl. xl.,
fig. 10.

This large species is well distributed over both counties, but not generally abundant. It is in the Twizell list; Mr. Finlay records it "always near the river side, fairly common some seasons." The river I expect will be the Wansbeck. Mr. Henderson met with it at Jesmond; Mr. Rhagg at Corbridge and Wylam; Mr. Hedworth at Dam Head Wood near Axwell; it is in the list in Ornsby's Durham, but Mr. Maddison does not record it more recently; Mr. Maling found it at Witton-le-Wear in June, 1868; Messrs. Ross and Greenwell both took it at Bishop Auckland; Mr. Sang took it at Haughton Bridge, Darlington; and Mr. Backhouse also took it in houses and out-houses. Mr. Gardner records it as "not very common at Hezleden Dene and Greatham, but much more plentiful in Teesdale." I met with one at Tow Law on a door; and I once or twice took it at sugar on the sand-hills at Hartlepool.

NÆNIA, Steph.

135. *Nænia typica*, (L.). GOTHIC.

Mania typica. Staint. Man., vol. i., p. 312.

Nænia „ Newm. Brit. Moths, p. 458.

„ „ Barr. Lep. Brit. Is., vol. v., p. 244.

Agrotis „ Meyr. Hdbk. Brit. Lep., p. 104.

LARVA. Buck., vol. vi., pl. ciii., fig. 4; O. Wils., pl. xl.,
fig. 9.

Generally common in all parts of both counties.

AMPHIPYRA, Och.

136. *Amphipyra pyramidea*, (L.). COPPER UNDERWING.

- Amphipyra pyramidea*. Staint. Man., vol. i., p. 311.
 „ „ Newm. Brit. Moths, p. 457.
 „ „ Barr. Lep. Brit. Is., vol. v., p. 252.
 „ „ Meyr. Hdbk. Brit. Lep., p. 114.
 LARVA. Buck., vol. vi., pl. ciii., fig. 2; O. Wils., pl. xl.,
 fig. 7.

A single specimen of this species was taken in Meldon Park in August, 18—, by Mr. Finlay. Mr. Porritt says in his "List of Yorkshire Lepidoptera," p. 100, "one would expect this species to be plentiful in our larger Oak or Birch woods, but it seems to be not only local but seldom very common where it does occur." The nearest locality to us that he gives is York. I am afraid, therefore, we can hardly expect it to be found regularly in our counties.

137. *A. Tragopogonis*, (L.). THE MOUSE.

- Amphipyra Tragopogonis*. Staint. Man., vol. i., p. 311.
 „ „ Newm. Brit. Moths, p. 458.
 „ „ Barr. Lep. Brit. Is., vol. v.,
 p. 257.
 „ „ Meyr. Hdbk. Brit. Lep., p. 114.
 LARVA. Buck., vol. vi., pl. ciii., fig. 3; O. Wils., pl. xl.,
 fig. 8.

A common species all over the district. Mr. Barrett says it does not come abundantly to sugar. I have occasionally found it very much the reverse. One night in September, this year (1898), when nothing else would come, it was swarming on every patch.

(*Toxocampa pastinum* is a species that might possibly occur. I have had it sent to name from the Yorkshire coast on the opposite side of Hartlepool Bay).

HYDRILLA, Boisd.

138. *Hydrilla arcuosa*, W. V. SMALL DOTTED BUFF.

Miana arcuosa. Staint. Man., vol. i., p. 213.

Chortodes ,, Newm. Brit. Moths, p. 276.

Hydrilla ,, Barr. Lep. Brit. Is., vol. v., 268.

Caradrina ,, Meyr. Hdbk. Brit. Lep., p. 121.

LARVA. Buck., vol. iv. pl. lxviii., fig. 6.

Not recorded everywhere, but all those who have taken it report it as common and generally distributed, and I have no doubt it occurs in all grassy places especially if rather damp. The sexes differ considerably in size and were considered distinct species by Haworth. The female is considerably the smaller of the two and was called *Minima*, under which name it appears in the Twizell list. Mr. Finlay records it as common and generally distributed; Mr. Hedworth as "generally common, abundant at Thornley." Dr. Lees found it common in Upper Teesdale, Mr. Sang at Seaton and Castle Eden, Mr. Backhouse at Darlington, Mr. Lofthouse at Greatham Salt Marsh. It is not very common on the Hartlepool sand-hills, but is plentiful about the denes, etc.

STILBIA, Steph.

139. *Stilbia anomala*, Haw. THE ANOMALOUS.

Stilbia anomala. Staint. Man., vol. i., p. 314.

,, ,, Newm. Brit. Moths, p. 462.

,, ,, Barr. Lep. Brit. Is., vol. v., p. 276.

,, ,, Meyr. Hdbk. Brit. Lep., p. 125.

LARVA. Buck., vol. vi., pl. civ., fig. 3; O. Wils., pl. xl.,
fig. 12.

Mr. Gardner took a single specimen of this rare species at Black Hall Rocks. It was flying in the bright sunlight in July.

CARADRINA, Och.

140. *Caradrina Morpheus*, Hufn. MOTTLED RUSTIC.*Caradrina Morpheus*. Staint. Man., vol. i., p. 217.

,, ,, Newm. Brit. Moths, p. 312.

,, ,, Barr. Lep. Brit. Is., vol. v., p. 280.

,, ,, Meyr. Hdbk. Brit. Lep., p. 122.

LARVA. Buck., vol. iv., pl. lxix., fig. 2.

This insect has been seldom recorded, but ought to be found elsewhere. It is in the Twizell list under Stephens' name of *Sepii*. Mr. Brady took a few at sugar at Ryhope. We find it at Hartlepool, not very abundant, but to be had every year. It comes to Campion flowers, to sugar, and sits on the flower heads of *Heraclium*. Mr. Lofthouse also reports it from Greatham Salt Marsh "flying about the grasses."

141. *C. blanda*, W. V. THE RUSTIC.*Caradrina blanda*. Staint. Man., vol. i., p. 217.

,, ,, Newm. Brit. Moths, p. 314.

,, ,, Barr. Lep. Brit. Is., vol. v., p. 289.

,, *Taraxaci*. Meyr. Hdbk. Brit. Lep., p. 123.

LARVA. Buck., vol. iv., pl. lxix., fig. 4; O. Wils., pl. xxxiv., fig. 10.

Alsines is recorded in the Twizell list, but *Blanda* was not then recognised as British, and I have no doubt they were what is now known by that name, but the specimens had been taken out of the collections when it was examined for me. The difficulty of separating the two species is considerable, especially with captured insects. Very few collectors record either in our district, those who do, however, are reliable Entomologists, and they agree in calling their captures *Blanda*. Mr. Finlay says it is generally distributed but not common; Mr. Hedworth has taken it at Dunston; Mr. Sang took it at Darlington, both at sugar and at Rush flowers. At Hartlepool we occasionally meet with it, sometimes at Campion flowers. Mr. Gardner has also

reared it from larvæ. At one time we thought we had taken *Alsines*, but upon careful consideration and comparison we are agreed that they are all *Blanda* and that *Alsines* does not occur.

142. *C. cubicularis*, W. V. PALE MOTTLED WILLOW.

Caradrina cubicularis. Staint. Man., vol. i., p. 218.

" " Newm. Brit. Moths, p. 314.

" " Barr. Lep. Brit. Is., vol. v., p. 292.

" *quadripunctata*. Meyr. Hdbk. Brit. Lep., p. 122.

LARVA. Buck., vol. iv., pl. lxix., fig. 5.

A very common and abundant species, apparently occurring everywhere. Being in all the lists I need not give localities. The larva does not appear to be at all particular in its food. Mr. Gardner found one hiding between piled deals in his wood yard, where it could only have wood splinters to eat. He has also fed it through the winter on apple skin, and told me they went down into the soil and came up again when he put in a fresh supply. It is very common in the rubbish at the bottom of stacks, and there appears to be no special time for the emergence of the imago, which may be met with from May to September or October.

GRAMMESIA, Steph.

143. *Grammesina trilinea*, Bkh. TREEBLE LINES.

Grammesia trilinea. Staint. Man., vol. i., p. 215.

" " Newm. Brit. Moths, p. 310.

" " Barr. Lep. Brit. Is., vol. v., p. 295.

Caradrina trigrammica. Meyr. Hdbk. Brit. Lep., p. 123.

LARVA. Buck., vol. iv., pl. lxix., fig. 1.

This species, though common and generally distributed throughout England, is very rare with us. It is in the Twizell list, and the dark variety *Bilinea* also. Mr. Hedworth met with it once or twice at Thornley. At Hartlepool Mr. Gardner took a single specimen at sugar on the railway side in 1873. These are all the records.

DYSCHORISTA, Ld.

144. *Dyschorista Upsilon*, W. V. THE DISMAL.

Orthosia Upsilon. Staint. Man., vol. i., p. 246.

" " Newm. Brit. Moths, p. 364.

Dyschorista ,, Barr. Lep. Brit. Is., vol. v., p. 299.

Orthosia Upsilon. Meyr. Hdbk. Brit. Lep., p. 64.

LARVA. Buck., vol. v., pl. lxxxii., fig. 4; O. Wils., pl. xxxvi.,
fig. 10.

Apparently a rare species, but probably only so because its habits are little known; where they have been found they were numerous enough. *Upsilon* is in the Twizell list, but I have no other Northumberland record till we reach Newcastle, where all the collectors have taken it. Mr. Maling "bred a quantity from larvæ found under the bark of Willows in Jesmond Dene." So in Durham there are no records except that Dr. Lees took it at Lenton Fall Wood, Upper Teesdale, and that we met with odd specimens around Hartlepool occasionally; Mr. Gardner also found the larvæ not uncommon at Greatham.

145. *D. suspecta*, Hub. THE SUSPECTED.

Orthosia suspecta. Staint. Man., vol. i., p. 245.

" " Newm. Brit. Moths, p. 364.

Dyschorista ,, Barr. Lep. Brit. Is., vol. v., p. 302.

Orthosia ,, Meyr. Hdbk. Brit. Lep., p. 64.

LARVA. Buck., vol. v., pl. lxxxii., fig. 3.

Exceedingly scarce and very local. Mr. Finlay took it at Heather blossom at Coal Law Wood; Mr. Ross has taken one at Bishop Auckland; we get it occasionally at Hartlepool, but I doubt if I have taken half a dozen in forty years; Mr. Gardner has met with it at Hezleden Dene also.

CALYMNIA, Hub.

146. *Calymnia trapezina*, (Linn.). THE DUN BAR.*Cosmia trapezina*. Staint. Man., vol. i., p. 258.

" " Newm. Brit. Moths, p. 381.

Calymnia " Barr. Lep. Brit. Is., vol. v., p. 314.*Caradrina* " Meyr. Hdbk. Brit. Lep., p. 117.

LARVA. Buck., vol. v., pl. lxxxvi., fig. 3; O. Wils., pl. lxxxvi.

fig. 2.

Common and generally distributed through both counties.

147. *C. diffinis*, (Linn.). WHITE-SPOTTED PINION.*Cosmia diffinis*. Staint. Man., vol. i., p. 258.

" " Newm. Brit. Moths, p. 383.

Calymnia " Barr. Lep. Brit. Is., vol. v., p. 321.*Caradrina* " Meyr. Hdbk. Brit. Lep., p. 117.

LARVA. Buck., vol. v., pl. lxxxvi., fig. 4.

A single specimen of this insect was taken by Mr. Gardner this autumn (1898) at sugar near Hezleden Dene. It is a common species in the south of England, but rarely reaches Yorkshire. We cannot look for more than stray examples of it here.

TETHEA, Och.

148. *Tethea subtusa*, W. V. THE OLIVE.*Tethea subtusa*. Staint. Man., vol. i., p. 256.

" " Newm. Brit. Moths, p. 379.

" " Barr. Lep. Brit. Is., vol. v., p. 327.

Caradrina " Meyr. Hdbk. Brit. Lep., p. 118.

LARVA. Buck., vol. v., pl. lxxxv., fig. 4; O. Wils., pl. xxxvii.,

fig. 1.

Apparently a rare species, but it will probably be found in many places where there is an abundance of Poplar. The larva conceals itself by spinning two leaves together, and is not easily seen nor beaten out. At present there are but two localities—Darlington, where Mr. Backhouse met with it, and a Poplar wood near Hezleden, where Mr. Gardner and I found larvæ. I got only one and failed to rear it; he found two and reared one of them. We have never taken the imago.

ORTHOSIA, Och.

149. *Orthosia rufina*, (Linn.). FLOUNCED CHESTNUT.

- Anchocelis rufina*. Staint. Man., vol i., p. 247.
 „ „ Newm. Brit. Moths, p. 366.
Orthosia „ Barr. Lep. Brit. Is., vol. v., p. 333.
 „ *helvola*. Meyr. Hdbk. Brit. Lep., p. 62.

LARVA. Buck., vol. v., pl. lxxxiii., fig. 1.; O. Wils., pl. xxxvi, fig. 12

This does not appear to be either common or generally distributed. It is in none of the older lists, and the only Northumberland records are that Mr. Finlay found it in "Coal Law Wood, in some seasons common," and that Miss Rosie took it at Kenton. Mr. Hedworth reported it as common in his district and Mr. Rhagg also found it in Thornley Wood. Mr. D. P. Morison recorded it as coming to sugar at Chester-le-Street (Ent. W. Int., vol. vii., p. 11). We get it occasionally in and around Hezleden Dene, but it is never abundant. I have no other records, but see no reason why it should not occur in all well-wooded districts in both counties.

150. *O. ferruginea*, W. V. THE BRICK.

- Xanthia ferruginea*. Staint. Man., vol. i., p. 253.
 „ „ Newm. Brit. Moths, p. 376.
Orthosia „ Barr. Lep. Brit. Is., vol. v., p. 336.
 „ *circellaris*. Meyr. Hdbk. Brit. Lep., p. 62.

LARVA. Buck., vol. v., pl. lxxxv., fig. 2.

Widely distributed and generally common, probably occurring in all suitable localities in both districts, though I have not received many records. It is not in the Twizell list, but Mr. Finlay found it common all over his district; Mr. Henderson took it at Jesmond; Mr. Rhagg at Newcastle and Thornley; Mr. Hedworth also found it at Thornley and at Dunston; Mr. Greenwell took it at Bishop Auckland; Dr. Lees, "common in Upper Teesdale." About Hartlepool it is always common. I

took it regularly for many years at Ragwort flowers behind the Ropery, quite a mile away from any trees on which the larvæ could have fed. Mr. Gardner gets it abundantly at sugar at Hezleden Dene, where I have also obtained it freely.

151. *O. pistacina*, Fab. BEADED CHESTNUT.

Anchocelis pistacina. Staint. Man., vol. i., p. 247.

" " Newm. Brit. Moths, p. 366.

Orthosia " Barr. Lep. Brit. Is., vol. v., p. 239.

" " Meyr. Hdbk. Brit. Lep., p. 63.

LARVA. Buck., vol. v., pl. lxxxiii., fig. 2.

This species probably reaches the northern limit of its range within our counties. Mr. Meyrick states that it does not occur north of York, but it certainly reaches the Tyne valley, though I have no record beyond Kenton, where Miss Rosie met with it. Mr. Henderson and Mr. Maling also took it north of the Tyne at Jesmond, the latter obtaining his specimens at light. South of the Tyne Mr. Hedworth took it sparingly at Dunston and Axwell; Mr. Morison obtained it at sugar at Chester-le-Street (E. W. I., vol. vii., p. 11); and Mr. Backhouse met with it at Darlington. About Hartlepool it is always scarce, and we have only taken it near Hezleden Dene.

152. *O. litura*, (Linn.). BROWN-SPOT PINION.

Anchocelis litura. Staint. Man., vol. i., p. 248.

" " Newm. Brit. Moths, p. 369.

Orthosia " Barr. Lep. Brit. Is., vol. v., p. 343.

" " Meyr. Hdbk. Brit. Lep., p. 63.

LARVA. Buck., vol. v., pl. lxxxiii., fig. 4.

One of the commonest of the autumn Noctuæ, occurring everywhere and generally abundant.

153. *O. lunosa*, Haw. LUNAR UNDERWING.

Anchocelis lunosa. Staint. Man., vol. i., p. 248.

" " Newm. Brit. Moths, p. 368.

Orthosia " Barr. Lep. Brit. Is., vol. v., p. 346.

Aporaphyla " Meyr. Hdbk. Brit. Lep., p. 58.

LARVA. Buck., vol. v., pl. lxxxiii., fig. 3.

Certainly a scarce species. It is in the Twizell list as *Orthosia lunosa*, but I have no other Northumbrian records. Mr. Eales took it at sugar at South Shields; Mr. Sang got it at lamps at Darlington (9th Sep., 1855); and Mr. Gardner writes "scarce; I know of only one capture many years ago." I took one myself on the sandbanks just beyond the Cemetery at Hartlepool on 1st Sept., 1874, and another on 28th August, 1876, both on Ragwort flowers. I know of no others.

154. *O. Iota*, Cl. RED-LINE QUAKER.

Orthosia Iota. Staint. Man., vol. i., p. 246.

" " Newm. Brit. Moths, p. 365.

" " Barr. Lep. Brit. Is., vol. v., p. 349.

" " Meyr. Hdbk. Brit. Lep., p. 63.

LARVA. Buck., vol. v., pl. lxxxii., fig. 5; O. Wils., pl. xxxvi., fig. 11.

A well distributed species, but never very abundant. It is in the Twizell list; Mr. Finlay found it in Coal Law Wood; Mr. Henderson at Jesmond; Mr. Hedworth got both larvæ and imagines at Thornley and Dunston; Mr. Ross found it fairly common about Bishop Auckland. About Hartlepool we get it pretty nearly every year, and both Mr. Gardner and I have bred it from larvæ found in Hezleden Dene. I have generally beaten them from young oaks. It should be found in or about all the woods in both counties.

155. *O. macilenta*, Hub. YELLOW-LINE QUAKER.

Orthosia macilenta. Staint, Man., vol. i., p. 246.

" " Newm. Brit. Moths, p. 365.

" " Barr. Lep. Brit. Is., vol. v., p. 352.

" " Meyr. Hdbk. Brit. Lep., p. 63.

LARVA. Buck., vol. v., pl. lxxxii., fig. 6.

Well distributed but seldom common, and apparently rather local. It is in the Twizell list; Mr. Finlay took it at Coal Law Wood, but never plentifully; Mr. Rhagg got it near Newcastle-

on-Tyne, as did Mr. Henderson; Mr. Hedworth found it at Thornley; Mr. D. P. Morison at Chester-le-Street (E. W. I., vol. vii., p. 11); Mr. Ross at Bishop Auckland, "fairly common at sugar;" Mr. Gardner got it in Upper Teesdale; it is given in the Manual for Darlington. It is certainly not a coast species, there is no record above of any captures near the sea. We have never taken it on the sandhills at Hartlepool, though both Mr. Gardner and I have taken it at Hezleden Dene at sugar, singly in my experience, but Mr. Gardner, collecting on the south bank of the dene, not half a mile from where I sugar, got it pretty freely. I mention this to show how, in the same locality, a very short distance makes much difference in numbers.

CIRRHCEDIA, Gn.

156. *Cirrhœdia xerampelina*, Hub. CENTRE-BARRED
SALLOW.

<i>Cirrhœdia xerampelina</i> .	Staint. Man., vol. i., p. 254.
"	" Newm. Brit. Moths, p. 377.
"	" Barr. Lep. Brit. Is., vol. v., p. 355,
<i>Orthosia</i>	" Meyr. Hdbk. Brit. Lep., p. 60.

LARVA. Buck., vol. v., pl. lxxxv., fig. 3; O. Wils., pl. xxxvi., fig. 20.

A rare species but widely distributed, and will probably be found more plentifully when we know more of its habits. The imago is generally found at rest on the trunk of an Ash tree, and the late Mr. T. Meldrum, of Ripon, who was particularly successful in taking it, was of opinion that after emerging from pupa, it sat on the trunk of the tree till evening, but did not return there after the first flight. Mr. Finlay found imagines on Ash trunks in Meldon Park at the end of August and in September, but never commonly. Mr. Meling bred one from a larva found on the trunk of an Ash at Witton-le-Wear. Mr. Sang took one at a lamp in Darlington on 12th Sep., 1853, and another at sugar two days afterwards. Mr. Gardner found one in Upper Teesdale in 1877 and another at Greatham.

XANTHIA, Och.

157. *Xanthia citrago*, (Linn.). ORANGE SALLOW.

- Xanthia citrago*. Staint. Man., vol. i., 252.
 " " Newm. Brit. Moths, 374.
 " " Barr. Lep. Brit. Is., vol. v., p. 860.
Orthosia " Meyr. Hdbk. Brit. Lep., p. 60.

LARVA. Buck., vol. v., pl. lxxxiv., fig. 4; O. Wils., pl. xxxvi.,
 fig. 16.

The only locality where this species occurs in our counties is Maiden Castle Wood near Durham. This station is given in Ornsby's Durham on the authority of Mr. J. Bungay, and Mr. T. Maddison tells me he has found it there recently. The larva feeds on lime, which is by no means common with us.

158. *X. cerago*, W. V. THE SALLOW.

- Xanthia cerago*. Staint. Man., vol. i., p. 252.
 " " Newm. Brit. Moths, p. 374.
 " " Barr. Lep. Brit. Is., vol. v., p. 363.
Orthosia fulvago. Meyr. Hdbk. Brit. Lep., p. 61.

LARVA. Buck., vol. v., pl. lxxxiv., fig. 5; O. Wils., pl. xxxvi.,
 fig. 17.

Fairly common in most parts of both counties, probably only needing to be looked for to be found everywhere among Sallows, on the catkins of which the larvæ feed concealed. By collecting these the insect may be bred without any trouble. It is in the Twizell list and in that of Ornsby's Durham as *Xanthia fulvago*. The former also gives *Gilvago*, which I assume refers to the variety mentioned below, rather than to the species now known as *Gilvago*; the latter gives "var. *Cerago*," which probably refers to the same form. Mr. Finlay found the species at Coal Law Wood "at blossom of Heather, not scarce;" Mr. Henderson got it at Jesmond; Mr. Rhagg at Haydon Bridge and Thornley; Mr. Hedworth found the larvæ "abundant in catkins on the Derwent;" Dr. Lees and Mr. Gardner met with it in Upper Teesdale; Mr. Greenwell at Bishop Auckland; Mr. Sang took

the imago at Nag's Head near Darlington. We get the larvæ commonly about Hartlepool, but it is not so numerous as the next species. A very constant variety, referred to above, occurs regularly with the type, in which all the reddish markings are obsolete except the central spot.

159. *X. silago*, Hb. PINK BARRED SALLOW.

Xanthia flavago. Staint. Man., vol. i., p. 252.

„ *silago*. Newm. Brit. Moths, p. 375.

„ „ Barr. Lep. Brit. Is., vol. v., p. 366.

Orthosia flavago. Meyr. Hdbk. Brit. Lep., p. 61.

LARVA. Buck., vol. v., pl. lxxxiv., fig. 6; O. Wils., pl. xxxvi.,
fig. 18.

Commoner than the last and of precisely the same habits. It is in the Twizell list; and is recorded from "Coal Law Wood, plentiful at Heather blossom," by Mr. Finlay; Kenton, Miss Rosie; "larvæ generally abundant in catkins in spring, imago at sugar in autumn at Thornley," T. H. Hedworth; Thornley Wood, Mr. Rhagg; "common in Upper Teesdale," F. A. Lees. Plentiful in the woods and denes about Hartlepool.

CERASTIS, Och.

160. *Cerastis Vaccinii*, (Linn.). CHESTNUT.

Cerastis Vaccinii. Staint. Man., vol. i., p. 249.

„ „ Newm. Brit. Moths, p. 369.

„ „ Barr. Lep. Brit. Is., vol. vi., p. 12.

Conistra „ Meyr. Hdbk. Brit. Lep., p. 66.

LARVA. Buck., vol. v., pl. lxxxiii., fig. 5; O. Wils., pl. xxxvi.,
fig. 13.

This species appears late in autumn and hibernates, coming out again in spring with the *Tæniocamps*. It is tolerably common in both counties and generally marked abundant. Around Hartlepool, however, we find it far from plentiful. I never saw it in the spring, and only occasionally in the autumn. Mr. Gardner says, "Hezleden Dene, at sugar in autumn, but not common."

161. *C. ligula*, Esp. DARK CHESTNUT.

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| <i>Cerastis spadicea</i> . | Staint. Man., vol. i., p. 249. |
| „ „ | Newm. Brit. Moths, p. 370. |
| „ <i>ligula</i> . | Barr. Lep. Brit. Is., vol. vi., p. 15. |
| <i>Conistra</i> „ | Meyr. Hdbk. Brit. Lep., p. 65. |

LARVA. Buck., vol. v., pl. lxxxiii., fig. 6.

Much rarer than the last. In the Twizell list I find *Spadicea*, which name properly belongs to the dark variety of the preceding species, and it is more than probable that only the dark form of *Vaccinii* was met with at Twizell, for there is no other Northumberland record, and *Ligula* has not been taken in Scotland. If this suggestion be correct we may conclude that the Tyne is the limit of its range. Mr. Hedworth took it at Thornley on the Derwent at sugar; Mr. D. P. Morison met with it at Chester-le-Street, also at sugar (E. W. I., vol. vii., p. 11); Mr. Ross took it at Bishop Auckland; and Darlington is given in the Manual. It is generally a common species where it occurs, but it is rare around Hartlepool.

SCOPELOSOMA, Curt.

162. *Scopelosoma satellitia*, (Linn.). SATELLITE.

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| <i>Scopelosoma satellitia</i> . | Staint. Man., vol. i, p. 250. |
| „ „ | Newm. Brit. Moths, p. 371. |
| „ „ | Barr. Lep. Brit. Is., vol. vi., p. 19. |
| <i>Orthosia</i> „ | Meyr. Hdbk. Brit. Lep., p. 64. |

LARVA. Buck., vol. v., pl. lxxxiv., fig. 1; O. Wils., pl. xxxvi., fig. 14.

Very common everywhere in the autumn, when it comes freely to sugar. Less often seen in spring, though it comes to Sallow blossoms, at which I have taken it as fine as though newly emerged. It is in all the lists.

XYLINA, Och.

163. *Xylina petrificata*, W. V. PALE PINION.*Xylina petrificata*. Staint. Man, vol. i., p. 283.

,, ,, Newm. Brit. Moths, p. 430.

,, ,, Barr. Lep. Brit. Is., vol. vi., p. 26.

Polia socia. Meyr. Hdbk. Brit. Lep., p. 51.

LARVA. Buck., vol. vi., pl. xevi., fig. 5.

It is always the unexpected that happens. Whilst these sheets were passing through the press, and just in time for inclusion in its proper place, Mr. Gardner took a specimen of this insect at sugar near Hesleden Dene, 24th Oct., 1898. Had I been asked which *Xylina* was most likely to occur in Durham, I would have thought *Rhizolitha* the more probable, as it has been taken both in Yorkshire and Cumberland. The capture of this rare and interesting species should stimulate collectors to work late in the season. This insect is frequently taken at Ivy bloom, an attraction for *Noctua* that appears to be much, if not altogether, neglected in our district.

XYLOCAMPA, Gn.

164. *Xylocampa lithorhiza*, Bork. EARLY GRAY.*Xylocampa lithorhiza*. Staint. Man., vol. i., p. 280.

,, ,, Newm. Brit. Moths, p. 424.

,, ,, Barr. Lep. Brit. Is., vol. vi., p. 41.

Polia areola. Meyr. Hdbk. Brit. Lep., p. 52.

LARVA. Buck., vol. vi., pl. xcv., fig. 4; O. Wils., pl. xxxviii., fig. 12.

Apparently not a common species, but perhaps its early appearance may partly explain the want of records as it does not seem to frequent Sallows. The imago sits on palings, and where there is a railing round the outside of a wood it will sit on the posts close up to the rail. The larva feeds on Honeysuckle, which is not an easy plant to beat. Mr. Finlay is the only Northumberland collector who records the species, and he met with two only in Coal Law Wood. Mr. Maling found it on palings at Witton-le-Wear, and Mr. Backhouse took it at Darlington, where Mr.

Sang got it at a lamp. I have taken it on the Cemetery palings at Hartlepool, and also on the rail at the north bank of Hezleden Dene. Mr. Gardner has bred the insect from larvæ found there.

CALOCAMPA, Steph.

165. *Calocampa exoleta*, (Linn.). SWORD GRASS.

Calocampa exoleta. Staint. Man., vol. i., p. 282.

" " Newm. Brit. Moths, p. 427.

" " Barr. Lep. Brit. Is., vol. vi., p. 52.

Polia " Meyr. Hdbk. Brit. Lep., p. 50.

LARVA. Buck., vol. vi., pl. xevi., fig. 2; O. Wils., pl. xxxviii., fig. 13.

Very much commoner than the next species. It is recorded in the Twizell list; Mr. Finlay found it generally distributed in his district, but not abundant; Mr. Rhagg met with it at Fawdon and Newcastle; and Mr. Maling got it at sugar at Hexham. In Durham Mr. Hedworth found it at Thornley and Dunston; Mr. Eales recorded it as "common on the coast" at South Shields. The Bishop Auckland collectors have only taken it singly. At Hartlepool we occasionally meet with hybernated specimens in spring, but it is more plentiful in autumn. I have once or twice taken it on palings, but it is common at sugar though very irregular. Thus in 1896 Mr. Gardner took it in considerable numbers at sugar at Hezleden Dene, but never got a specimen at the same place the next year. I was sugaring on the opposite bank of the Dene and never saw the insect in 1896, but got a solitary example in 1897. The larva is one of the most beautiful I have ever seen, but it is seldom met with. My son took one on a hedge side at West Hartlepool in August, 1879, feeding exposed, early in the afternoon, but that was a very exceptional occurrence.

166. *C. vetusta*, Hub. RED SWORD GRASS.

Calocampa vetusta. Staint. Man., vol. i., p. 282.

" " Newm. Brit. Moths, p. 426.

" " Barr. Lep. Brit. Is., vol. vi., p. 56.

Polia " Meyr. Hdbk. Brit. Lep., p. 50.

LARVA. Buck., vol. vi., pl. xevi., fig. 1.

A scarce species, widely distributed, but occurring so sparingly, that they might almost be thought stray specimens. Mr. Finlay took single examples in several parts of his district; Mr. Hedworth took three in all at sugar at Thornley. Those he gave to Mr. Wasserman and they are now in the Museum. Mr. Ross took four in all at Bishop Auckland, and Mr. Gardner got one in 1896 at sugar near Hezleden Dene.

CUCULLIA, Schrk.

167. *Cucullia Chamomillæ*, W.V. CHAMOMILE SHARK.

Cucullia Chamomillæ. Staint. Man., vol. i., p. 287.

„ „ Newm. Brit. Moths, p. 435.

„ „ Barr. Lep. Brit. Is., vol. vi., p. 86.

„ „ Meyr. Hdbk. Brit. Lep., p. 48.

LARVA. Buck., vol. vi., pl. xcvi., fig. 4; O. Wils., pl. xxxix.,
fig. 6.

A scarce species and not met with recently. Mr. Henderson took one at Jesmond many years ago. At Hartlepool it came to Champion flowers regularly from 1873 to 1877, sometimes only singly. In 1876 I took two on 5th May, the earliest date here, and two on 13th June, the latest. It was most numerous in 1875, in which year Mr. Gardner found a brood of larva feeding on Wild Chamomile and reared them. Since 1877 I have not heard of its occurrence.

(*C. Absinthii* is in the Twizell list but it is an extremely unlikely species to occur there, and is probably an error for *Chamomillæ*).

168. *C. umbratica*, (Linn.). SHARK.

Cucullia umbratica. Staint. Man., vol. i., p. 287.

„ „ Newm. Brit. Moths, p. 436.

„ „ Barr. Lep. Brit. Is., vol. vi., p. 90.

„ „ Meyr. Hdbk. Brit. Lep., p. 48.

LARVA. Buck., vol. vi., pl. xcvi., fig. 5.

Generally distributed throughout the district, but not very regular in occurrence, and seldom very numerous. It is in the Twizell list as *Tanaceti* and *Lucifuga*, names used by Stephens when the sexes were considered different species. Mr. Finlay found it in most parts of his district; Mr. Maling took it at Jesmond; Mr. Rhagg says "Newcastle." Mr. Hedworth found it rare at Thornley; Mr. Eales says "at flowers of Ragwort," but this must be a slip of the pen, as the species is over, long before the Ragwort is in bloom; Mr. Ross writes that he has taken six at Bishop Auckland, and Mr. Greenwell two; Dr. Lees says "rare in western dales;" Mr. Backhouse took it at Darlington and at Seaton Carew. At Hartlepool we get it at Campion flowers in June, sometimes rather plentifully. I have only once taken it in July. It disappeared from its old haunts as the town extended, but it still occurs a mile further north.

PLUSIA, Och.

169. *Plusia chrysitis*, (Linn.). BURNISHED BRASS.

Plusia chrysitis. Staint. Man., vol. i., p. 306.

" " Newm. Brit. Moths, p. 451.

" " Barr. Lep. Brit. Is., vol. vi., p. 98.

" " Meyr. Hdbk. Brit. Lep., p. 156.

LARVA. Buck., vol. vi., pl. cii., fig. 1.

Generally distributed throughout the district, and occurring regularly in most places, but it does not appear to be anywhere abundant. It is in all the lists, old and recent, and I need not print localities. The larva may be found amongst Nettles, etc., and the perfect insect comes to flowers, but I have never seen it at sugar.

170. *P. bractea*, W. V. GOLD SPANGLE.

Plusia bractea. Staint. Man., vol. i., p. 306.

" " Newm. Brit. Moths, p. 452.

" " Barr. Lep. Brit. Is., vol. vi., p. 109.

" " Meyr. Hdbk. Brit. Lep., p. 157.

LARVA. Buck., vol. vi., pl. cii., fig. 4.

This beautiful insect is decidedly rare here, Mr. Finlay being the only collector who took it at all regularly. He got a few every year, and was occasionally successful in obtaining eggs from which he reared some grand specimens. The only other records are that the late Edw. Pearson took it at the Dovecote near Wallington; Mr. Backhouse took one many years ago at Darlington, and Mr. Maddison got one much more recently, in his garden at Durham, and still more recently Mr. Lofthouse took one in Mr. Finlay's locality near Morpeth.

171. *P. Festucæ*, (Linn.). GOLD SPOT.

- Plusia Festucæ*. Staint. Man., vol. i., p. 307.
 „ „ Newm. Brit. Moths, p. 453.
 „ „ Barr. Lep. Brit. Is., vol. vi., p. 112.
 „ „ Meyr. Hdbk. Brit. Lep., p. 157.

LARVA. Buck., vol. i., pl. cii., fig. 5.

A scarce insect with us, possibly because it has not been looked for in the right places. The larva feeds on various marsh plants, and the imago will be found where *Sparganium* and Carices abound. The only record I have from what may be called a natural habitat, is that Mr. Sang met with the insect at Hell Kettles near Darlington, in July, 1880. The species is given in the Twizell list, and Mr. Finlay, found it in Meldon Park in July and August, "not at all plentiful." About Hartlepool I have taken three—one in Crimdon Cut in 1864, another on the railway side on 17th July, 1883, and the last in July, 1887. This was flying in the evening sun to Campion flowers, and mistaking it for *L. conigera*, I watched it from tuft to tuft till I thought its flight peculiar and netted it.

172. *P. pulchrina*, Haw. BEAUTIFUL GOLDEN Y.

- Plusia pulchrina*. Staint. Man., vol. i., p. 307.
 „ „ Newm. Brit. Moths, p. 454.
 „ „ Barr. Lep. Brit. Is., vol. vi., p.
 „ „ Meyr. Hdbk. Brit. Lep., p. 158.

LARVA. Buck., vol. vi., pl. cii., fig. 7.

Except *Gamma* this appears to be the most numerous of the genus and the most widely distributed in our counties. It is in all the lists and marked common or abundant in most of them. Mr. Backhouse notes that it came to sugar. I have observed this twice myself, but it is a very exceptional occurrence. It flies very freely to Campion, Vipers' Bugloss, and other flowers.

173. *P. Iota*, (Linn.). PLAIN GOLDEN Y.

- Plusia Iota*. Staint. Man., vol. i., p. 307.
 " " Newm. Brit. Moths, p. 453.
 " " Barr. Lep. Brit. Is., vol. vi., p.
 " " Meyr. Hdbk. Brit. Lep., p. 157.

LARVA. Buck., vol. vii., pl. cii., fig. 6; O. Wils., pl. xl., fig. 6.

Generally distributed and fairly plentiful. In all the lists, being recorded by Mr. Hewitson for Newcastle as far back as 1829 (see Steph. Brit. Ent., vol. iii., p. 101), and it still occurs everywhere.

174. *P. Gamma*, (Linn.). SILVER Y.

- Plusia Gamma*. Staint. Man., vol. i., p. 308.
 " " Newm. Brit. Moths, p. 455.
 " " Barr. Lep. Brit. Is., vol. vi., p.
 " " Meyr. Hdbk. Brit. Lep., p. 158.

LARVA. Buck., vol. vii., pl. cii., fig. 8; O. Wils., pl. xl., fig. 5.

Very common everywhere.

175. *P. Interrogationis*, Hub. SCARCE SILVER Y.

- Plusia Interrogationis*. Staint. Man., vol. i., p. 308.
 " " Newm. Brit. Moths, p. 456.
 " " Barr. Lep. Brit. Is., vol. ii., p.
 " " Meyr. Hdbk. Brit. Lep., p. 159.

LARVA. Buck., vol. vi., pl. cii., fig. 9.

This pretty little *Plusia*, the smallest of our British species, is confined by its food to the moors, where it is not uncommon in the larva state. It is in the Twizell list as *Plusia circumflexa*; Mr. Finlay found larva freely at Rothley Craggs and a

stray specimen on the wing in his garden at Meldon. Mr. Sang took larva on Ling at Wolsingham (28th May, 1874), from which locality Mr. Pickard also records it. Mr. Gardner also writes "larvæ on Ling in Teesdale, but not common; they will eat Plum or Cherry in confinement." I was with Mr. J. P. Taylor in 1874 when he took a specimen of this species at rest on the Cemetery palings at Hartlepool—rather a curious place for a *Plusia*.

HABROSTOLA, Och.

176. *Habrostola Urticæ*, Hub. LIGHT SPECTACLE.

Abrostola Urticæ. Staint. Man., vol. i., p. 304.

" " Newm. Brit. Moths, p. 449.

Habrostola ,, Barr. Lep. Brit. Is., vol. vi., p.

Plusia tripartita. Meyr. Hdbk. Brit. Lep., p. 159.

LARVA. Buck., vol. v., pl. cii., fig. 1.

Not very uncommon in the Tyne valley and neighbourhood, but poorly represented elsewhere. Mr. Finlay found it "moderately common in Meldon Park;" Miss Rosie took it at Kenton; Mr. Henderson at Jesmond; Mr. Rhagg got it at Fawdon and various places around Newcastle, and Mr. Hedworth found it generally on the south of the Tyne above Newcastle; the larva among Nettles, and the imago, which was rarer than the larva, coming to flowers. Elsewhere it appears to be much rarer. Mr. Brady took one in a garden at Sunderland, and Mr. Ross has taken three at Bishop Auckland. These are all the records I have received. About Hartlepool we find it occasionally. Mr. Gardner says it is not uncommon in Hezleden Dene, but I have never taken it there or elsewhere except singly.

177. *H. triplasia*, (Linn.). DARK SPECTACLE.

Abrostola triplasia. Staint. Man., vol. i., p. 305.

" " Newm. Brit. Moths, p. 450.

Habrostola ,, Barr. Lep. Brit. Is., vol. vi., p.

Plusia ,, Meyr. Hdbk. Brit. Lep., p. 160.

LARVA. Buck., vol. vi., pl. cii., fig. 2; O. Wils., pl. xl., fig. 2, 3, 3a (text 2, 3a, 3b).

A very scarce insect here. Probably its range in the west, where it reaches the Clyde, extends further than on the east coast. Mr. Patterson is the only Northumberland collector who has taken it. Dr. Lees, in his list for Upper Teesdale, says "an odd specimen sometimes." I have only taken one at Hartlepool many years ago, and Mr. Gardner never met with it. It is tolerably well distributed in Yorkshire and Lancashire.

CHARICLEA.

178. *Chariclea marginata*, Fab. BORDERED SALLOW.

Heliothis marginata. Staint. Man., vol. i., p. 291.

„ *marginatus*. Newm. Brit. Moths, p. 437.

Chariclea marginata. Barr. Lep. Brit. Is., vol. vi., p.

Caradrina umbra. Meyr. Hdbk. Brit. Lep., p. 119.

LARVA. Buck., vol. vi., pl. xcix., fig. 1.

Probably common all along the coast wherever Rest Harrow grows freely. Mr. Bolam writes, "comes freely to sugar at Cheswick Links from about the end of June, and the larvæ are sometimes very abundant there in the autumn on Rest Harrow (*Ononis arvensis*); they vary in colour from almost black to a very pale grayish green and are all cannibals (Trans. Ber. Field Club, vol. xv., p. 306)." Mr. Rhagg took it at Warkworth; Mr. Eales found it on the coast at South Shields, taking it at Thistle flowers on 4th July. Sometimes it is very common at Hartlepool. In 1864 it swarmed, and was quite the commonest *Noctua* that year; later the larvæ might have been taken by hundreds. A few years after it almost disappeared, and a single specimen might be taken in a season, or more frequently, none at all. In 1897 it was almost as plentiful as ever. It flies in early dusk, or even before sunset; goes to Campion flowers freely, and is common at sugar. The larvæ are certainly the most persistent cannibals I know, and almost need to be reared separately, but bred specimens are seldom so richly coloured as those that have fed in the open air.

HELIOTHIS.

179. *Heliothis armigera*, Hub. SCARCE BORDERED STRAW.

- Heliothis armigera*. Staint. Man., vol. i., p. 291.
 „ *armiger*. Newm. Brit. Moths, p. 439.
 „ *armigera*. Barr. Lep. Brit. Is., vol. vi., p.
 „ „ Meyr. Hdbk. Brit. Lep., p. 108.

LARVA. Buck., vol. vi., p. 73.

This insect, which occurs in almost all parts of the world, is only a rare visitor to Britain, and its appearance in our counties has been few and far between. Mr. Burn, who was collecting for me, took a specimen on the sand hills beyond the Cemetery at Hartlepool on 5th Sept., 1897. It was flying around Ragwort flowers. I took a second myself, behind the Ropery in 1885, flying at sunset. A third was taken in a street in Sunderland about the same time, but Mr. Corder, who gives me the information, does not know the date. I have heard of no others.

180. *H. peltigera*, W. V. BORDERED STRAW.

- Heliothis peltigera*. Staint. Man., vol. i., p. 291.
 „ *peltiger*. Newm. Brit. Moths, p. 437.
 „ *peltigera*. Barr. Lep. Brit. Is., vol. vi., p.
 „ „ Meyr. Hdbk. Brit. Lep., p. 108.

LARVA. Buck., vol. vi., pl. xcix., fig. 2.

As rare as the preceding species. I have only heard of the occurrence of four specimens. "On July 25th (1875) a worn female of *Heliothis peltigera* came out of Rest Harrow, where I was kneeling to box *N. Elymi*, I took it in the hope of obtaining eggs, but in this I was disappointed, as it died without depositing eggs." C. Eales. (Ent. viii., p. 196). "At the flowers of Bladder Campion, 29th June" (no year). C. Eales, communicated by Mr. Hedworth. Mr. Hann of Byers Green gave me a fine specimen which he had taken there; and Mr. T. Tritschler gave me another which he took at Hartlepool in June, 1879."

HELIODES, Gn.

181. *Heliodes Arbuti*, Fab. SMALL YELLOW UNDERWING.*Heliodes Arbuti*. Staint. Man. vol. i., p. 294.

,, ,, Newm. Brit. Moths, p. 442.

,, ,, Barr. Lep. Brit. Is., vol. vi., p.

Panemeria tenebrata. Meyr. Hdbk. Brit. Lep., p. 167.

LARVA. Buck., vol. vi., pl. c., fig. 4.

This pretty little species appears to reach the limit of its range on the eastern side of the island, within the county of Durham. It has never been recorded for Northumberland, nor for the northern parts of Durham. It is in the list in Ornsby's Durham under the old name of *Heliaca*, as occurring in fields near Flass. Mr. Backhouse took it at Huffall Wood, and at Dam fields near Darlington; Mr. Sang also took it at Harrogate Gate, near Darlington; Mr. Gardner found it at Eggleston, and in grassy places near Greatham, and my brother, Mr. H. T. Robson, took it near Castle Eden, flying on a grassy patch by the road side. It should be looked for about the middle of June where *Cerastium arvense* grows freely. Records from a more northerly habitat than Durham city would be of interest.

BRYOPHILA, Tr.

182. *Bryophila perla*, W. V. MARBLED BEAUTY.*Bryophila perla*. Staint. Man., vol., i., p. 177.

,, ,, Newm. Brit. Moths, p. 246.

,, ,, Barr. Lep. Brit. Is., vol. vi., p.

Metachrostis ,, Meyr. Hdbk. Brit. Lep., p. 138.

LARVA. Buck., vol. iv., pl. lx., fig. 3; O. Wils., pl. xxxi., fig. 4.

This is another species which appears to reach the north-eastern limit of its range within our boundaries. Mr. Maling found it at Newbiggin-by-the-Sea, which is the only Northumberland record except around Newcastle-on-Tyne. It is not in the Twizell list, and Mr. Finlay never met with it in the extensive area over which he collected. In Durham on the other hand, it is in all the lists, old and recent, and generally marked

abundant. On the west of the island it extends to Scotland, but here the Tyne appears to be its boundary, except Mr. Maling's captures at Newbiggin. The larva feeds on Wall Lichens, and the insect should be looked for on old Lichen-covered walls. So far as my experience goes the larvæ are on Lichen on *Brick* walls only. It ought to be found at Hexham and in that neighbourhood.

PHYTOMETRA, Haw.

183. *Phytometra ænea*, W. V. SMALL PURPLE BARRED.

Phytometra ænea. Staint. Man., vol. i., p. 319.

„ „ Newm. Brit. Moths, p. 469.

„ „ Barr. Lep. Brit. Is., vol. vi., p.

Eustrotia viridaria. Meyr. Hdbk. Brit. Lep., p. 166.

LARVA. Buck., vol. vi., pl. cv, fig. 5.

Well distributed in both counties but never abundant. It no doubt occurs in all suitable localities. Mr. Finlay found it generally throughout his district, though not numerous anywhere. Mr. Maddison got it at Jesmond and Chopwell, Chopwell Woods and their environs, producing it for several collectors. Mr. Backhouse took it at Shull; Mr. Sang at Wolsingham. In Ornsby's Durham the sea banks at Castle Eden Dene are given as a locality, and we find it there yet, and it extends along the coast southward to Black Hall Rocks. It also occurs on banks at the Shotton end of the Dene, and no doubt northwards on the coast, at least as far as Seaham Harbour. It flies in the sun, taking only a short flight at a time, and never appears to congregate in numbers as so many day-flying species do.

ANARTA, Och.

184. *Anarta Myrtilli*, (Linn.). BEAUTIFUL YELLOW UNDER-

WING.

Anarta Myrtilli. Staint. Man., vol. i., p. 293.

„ „ Newm. Brit. Moths, p. 441.

„ „ Barr. Lep. Brit. Is., vol. vi., p.

Melanchra „ Mery. Hdbk. Brit. Lep., p. 87.

LARVA. Buck., vol. vi., pl. c., fig. 3; O. Wils., pl. xxxix.,
fig. 7.

Common on the moors, but occasionally straying far from its haunts there. "Muckle Moss." Trans., vol. v., p. 8. "On the moors, common on Greenleighton," J. Finlay; "on a heath near Bearpark," Ornsby's Durham; "Shull," W. Backhouse; "occurs on Hamsterley common," J. Greenwell; "Wolsingham, 6th June, 1872," J. Sang; "Widdy Bank, abundant," F. A. Lees; "common on the moors in Teesdale, the pretty little larva not uncommon upon Ling in August and September," T. Gardner. It flies freely in the hot sun, but I took one at sugar at night on Hartlepool sand banks in 1873, and another at Honey Dew on a Privet hedge in 1880. The larvæ are exceedingly difficult to confine, and will squeeze themselves to death in their efforts to escape, if there be the smallest opening.

SARROTHRIPA, Curt.

185. *Sarrothripa revayana*, W. V.

Sarrothripa revayana. Staint. Man., vol. ii., p. 190.

" " Barr. Lep. Brit. Is., vol. vi., p.

Sarrothripus undulana. Meyr. Hdbk. Brit. Lep., p. 35.

Many may think this Tortrix-looking insect out of place here, and systematists have differed widely as to its position. Stainton places it first among the Tortrices, Staudinger first among the Bombyces, Meyrick between the *Nolidæ* and *Earias chlorana*, and Mr. Barrett in this place. Its claim to be included in this list rests upon a single specimen which I took upon the Cemetery palings at Hartlepool in 1875. It had no doubt been blown from the land to the west and found shelter there. It probably only needs looking for elsewhere, as it is widely distributed, though generally rather local.

GONOPTERA, Lat.

186. *Gonoptera libatrix*, (Linn.). HERALD MOTH.

Gonoptera libatrix. Staint. Man., vol. i., p. 309.

" " Newm. Brit. Moths, p. 456.

" " Barr. Lep. Brit. Is., vol. vi., p.

Scoliopteryx " Meyr. Hdbk. Brit. Lep., p. 154.

LARVA. Buck., vol. vi., pl. ciii., fig. 1; O. Wils., pl. xl., fig. 6.

Not very abundant in either county, and I think, becoming scarcer. It is recorded as long ago as 1829 for Newcastle by Mr. Hewitson (Steph. Brit. Ent., vol. iii., p. 50). It is also in the Twizell list, in that for Ornsby's Durham, and in Mr. Backhouse's old list for Darlington. Recent records are much scarcer in comparison. Mr. Finlay took it about Meldon and remarks that he has taken it in June and on 24th August. The June specimen would be a hybernated example. A worn specimen came to my sugar on Hartlepool sand hills in June, and Stainton gives that month as the latest for those that have lived over the winter. Mr. Henderson took the species at Jesmond, Mr. Hedworth met with it at Thornley, but not commonly; Mr. Brady took one only at Ryhope; Dr. Lees a single specimen below the bridge at Middleton-in-Teesdale. Forty years ago it was abundant about Hartlepool, and I have found the pupa freely in the railway cutting above Hart Station. The larva twists the narrow willow leaves spirally, making it rather a conspicuous object, and forms a nest for the pupa within the coils. I have not seen any for many years now, and only meet with an odd imago occasionally.

EUCLIDIA, Och.

187. *Euclidia glyphica*, (Linn.). BURNET NOOTUA.

- Euclidia glyphica*. Staint. Man., vol. i., p. 318.
 „ „ Newm. Brit. Moths, p. 469.
 „ „ Barr. Lep. Brit. Is., vol. vi., p. 268.
 „ „ Meyr. Hdbk. Brit. Lep., p. 164.

LARVA. Buck., vol. vi., pl. cv., fig. 4.

Not very plentiful in either county. It is in the Twizell list. Mr. Finlay found it "generally distributed and not very uncommon." These are all the Northumberland records I have. It is in the list in Ornsby's Durham without locality; Mr. Hedworth took it at Chopwell; Mr. Backhouse at Shull and in damp fields at Darlington. Mr. Sang does not mention it in his diary,

but told me he found it on the railway slopes around Darlington, and advised me to look for it in similar places about Hartlepool, which I have done hitherto without success.

188. *Euclidia* Mi, (Linn.) MOTHER SHIPTON.

Euclidia Mi. Staint. Man., vol. i., p. 318.

„ „ Newm. Brit. Moths, p. 468.

„ „ Barr. Lep. Brit. Is., vol. vi., p. 272.

„ „ Meyr. Hdbk. Brit. Lep., p. 163.

LARVA. Buck., vol. vi., pl. cv., fig. 3.

Generally distributed in both counties. It is in the Twizell list; Mr. Finlay found it not uncommon in most parts of his district; Mr. Hendersen found it about Jesmond; Miss Rosie at Kenton; Mr. Henderson took it at Thornley and Chopwell; it is given in Ornsby's Durham; Mr. Backhouse got it in "damp fields at Shull;" and Mr. Maling found it at Witton-le-Wear. It is common all round Hartlepool, both on the sand banks, on railway slopes, and in rough pastures, flying in the sun. The larvæ, which resemble those of a Geometer, are not often seen. I once reared a brood from the egg, feeding them on Clover according to the Manual. Most of the books give one or other of the trefoils as the food plant, but Mr. Buckler speaks as though its proper food were grasses. He swept larvæ from Marram, and fed them on Ribbon-grass; others found on Thorny Rest-harrow, also ate grass (see vol. vi. as above). I am indebted to Mr. Gardner for calling my attention to this.

HYPENA, Sch.

189. *Hypena proboscidalis*, (Linn.) SNOUT.

Hypena proboscidalis. Staint. Man., vol. ii., p. 128.

„ „ Barr. Lep. Brit. Is., vol. ii., p. 319.

„ „ Meyr. Hdbk. Brit. Lep., p. 151.

A common species wherever there are Nettles,

BREPHOS, Och.

190. *Brephos Parthenias*, (Linn.). ORANGE UNDERWING.

Brephos Parthenias. Staint. Man., vol. i., p. 301.

" " Newm. Brit. Moths, p. 448.

" " Barr. Lep. Brit. Is., vol. vi., p. 327.

" " Meyr. Hdbk. Brit. Lep., p. 253.

LARVA. Buck., vol. vi., pl. ci., fig. 7.

Mr. Sang took this species at Wolsingham on 4th April, 1874, and he appears to be the only collector who has met with it in these counties. It occurs in many places in Yorkshire and in the Lake district, and is certain to occur in some of our Birch woods. It should be looked for in the early sunny days of April, flying in the morning sun.

With this species we conclude the Noctuina, and it will be seen that about two-thirds of the recognised British species have occurred in our counties.

ERRAT.—On page 123, for Eurios, read Eurois.

GROUP. GEOMETRINA.

FAMILY. URAPTERYDÆ, Gn.

OURAPTERYX, Leach.

1. *Ourapteryx sambucaria*, (Linn.). SWALLOW TAIL.*Ourapteryx sambucaria*. Staint. Man., vol. ii., p. 4.*Urapteryx sambucata*. Newm. Brit. Moths, p. 50.*Ourapteryx sambucaria*. Meyr. Hdbk. Brit. Lep., p. 279.

LARVA. Buck., vol. vii., pl. cvi., fig. 1; O. Wils., pl. xvi., fig. 1.

It seems somewhat puzzling, even to those who dwell in the district, to note that Dumfries in Scotland is no further north than Newcastle-on-Tyne, at the extreme south of the extensive county of Northumberland. These are both on the 55th parallel of north latitude, which appears to limit the range of the Swallow-tailed Moth. It was recorded for Newcastle-on-Tyne and Meldon Park as far back as 1829 (see Steph. Illust. Brit. Ent., vol. iii., p. 175). It does not appear to reach Meldon Park now. Mr. Finlay, who resided there, could never have over-looked so large and conspicuous an insect. More recently (1858) Mr. Wailes recorded it as not uncommon near Newcastle-on-Tyne (Ent. W. I., vol. iii., p. 147). Still more recently Mr. Woodcock tells me that he has heard of its occurrence at Gosforth Hall; Mr. Rhagg has taken it at Winlaton Mill; Mr. Hedworth at Gibside, Axwell, Thornley, Dunston, etc. Mr. Sticks, who has never taken the imago, has found the larvæ and small batches of ova at Winlaton Mill, Rowlands Gill, Lintz Green, etc. It is thus clear that the species is still well distributed in the Valley of the Tyne and its tributaries, though none of the most recent records locate it further north of that river than Gosforth. It is in the list in Ormsby's Durham; Mr. Greenwell found it at Bishop Auckland; Mr. Backhouse in gardens at Darlington; Dr. Lees commonly in Upper Teesdale; and Mr. Gardner says "not very common in Hezleden Dene." I have found it there in fair numbers myself, and the Rev. Robert

Taylor of Hezleden Vicarage, tells me it comes rather freely into the vicarage gardens, which stand on the north-east bank of the Dene. In the Dene itself the Swallow-tail flies very swiftly along the paths and open places, and is very difficult to capture, except as it flies towards you. I have also taken the species freely by hedge-sides at Dinsdale Wood near Darlington. I have no doubt it occurs in all the woods and denes in Durham.

ENNOMIDÆ, Gn.

EPIONE, Dup.

2. *Epione vespertaria*, (Linn.). DARK-BORDERED BEAUTY.

Epione vespertaria. Staint. Man., vol. ii., p. 8.

" " Newm. Brit. Moths, p. 51.

Euclaena parallelaria. Meyr. Hdbk. Brit. Lep., p. 282.

LARVA. Buck., vol. vii., pl. cvi., fig. 2.

For many years the only known British habitat of this pretty Moth was that at Sandown near York. It was recorded from Learmouth Bog, near Cornhill-on-Tweed, on 30th July, 1863, by Mr. Lamb, who had captured two specimens there. No more was heard of it for twenty-seven years until Mr. Bolam "took a rather worn female specimen of this Moth at Newham Bog on 29th August, 1890. It had probably been disturbed from some Sallow bushes as we pushed through them." Mr. Bolam adds, "the re-appearance of this species after a lapse of so many years, and in a locality so far removed as Newham is from Learmouth, seems to suggest a considerable distribution of this pretty Moth in our district; but it is curious that it should have been so long overlooked." (Trans. Ber. Nat. Club, vol. xv., p. 299). The insect is evidently widely distributed there, and occurs on both sides of the border. I have specimens from Hawick on the Scotch side, where it appears to be not uncommon. There is no difference between these and York examples, except that the Scotch are slightly smaller. These captures should encourage those who have the opportunity to search carefully in suitable localities for this beautiful insect.

3. *E. apiciaria*, W. V. BORDERED BEAUTY.*Epione apiciaria*. Staint. Man., vol. ii., p. 8.

" " Newm. Brit. Moths, p. 51.

Euclaena " Meyr. Hdbk. Brit. Lep., p. 282.

LARVA. Buck., vol. vii., pl. cvi., fig. 3.

Not a very common species in either county, but widely distributed in both. Mr. Bolam says "since I recorded this species in 1886 from near Scremerston, I have taken several examples in that locality, and on 22nd August, 1895, I took one among the Sallows in Newham Bog. No doubt it would be found in other suitable places in the district if carefully worked for." (Trans. Ber. Nat. Club, vol. xv., p. 299). The insect is not mentioned in the Twizell list, but Mr. Finlay found it in Coal Law Wood, "not common." Mr. Henderson took it at Jesmond; Mr. Sticks got the imago "sparingly" at Stocksfield-on-Tyne, and Mr. David Rosie got larva, pupa, and imago at the same time, "West of Newcastle-on-Tyne." In Durham Mr. Greenwell found it at Witton-le-Wear; Mr. Sang got it among Willows at the river side near Darlington, and at lamps in the town. Darlington is also a "Manual" locality, and Mr. Backhouse captured the species in his garden there. Dr. Lees reported it from "Upper Teesdale, not uncommon about the Fairy Knoll and the Sweet Bits." We took it at Throston Carrs near Hartlepool until the place was drained in 1874. Mr. Gardner found one on his house window in Groves Street, and he has also taken it near Hart Station.

RUMIA, Dup.

4. *Rumia cratægata*, (Linn.). BRIMSTONE.*Rumia cratægata*. Staint. Man., vol. ii., p. 9.

" " Newm. Brit. Moths, p. 52.

Opisthograptis luteolata. Meyr. Hdbk. Brit. Lep., p. 258.

LARVA. Buck., vol. vii., pl. cvi., fig. 5; O. Wils., pl. xvi., fig. 3.

A beautiful species wherever there is Hawthorn, appearing on the wing in May, and continuing during the summer.

VENILIA, Dup.

5. *Venilia maculata*, (Linn.). SPECKLED YELLOW.

- Venilia maculata*. Staint. Man., vol. ii., p. 9.
 " " Newm. Brit. Moths, p. 52.
Pseudopanthera macularia. Meyr. Hdbk. Brit. Moths, p. 270.

LARVA. Buck., vol. vii., pl. cvi., fig. 6; O. Wils.,

Mr. Sang took this pretty little species in some of the woods around Darlington, where, according to the Manual, it was of regular occurrence. No one else appears to have met with it in either county. Meyrick says its range extends to Ross and Moray in the north of Scotland, in which case it ought not to be so rare in the north of England. I cannot but think there is some mistake. It is a scarce and very local species in Yorkshire, has not been recorded for Cheshire, only for two localities in Lancashire, I have no knowledge of its occurrence in Westmorland, and it is not in a Cumberland list kindly supplied me by Mr. Thwaytes, of Carlisle. Its appearance at the extreme south of Durham only, is quite in harmony with these facts.

METROCAMPA, Lat.

6. *Metrocampa margaritata*, (Linn.). LIGHT EMERALD.

- Metrocampa margaritata*. Staint. Man., vol. ii., p. 10.
 " " Newm. Brit. Moths, p. 53.
 " *margaritaria*. Meyr. Hdbk. Brit. Lep., p. 280.

LARVA. Buck., vol. vii., pl. cvi., fig. 7; O. Wils., pl. xvi., fig. 6.

Common in all wooded districts. It is in all the lists, and no doubt occurs in every mixed wood in both counties. I have seen it plentiful where there was but a narrow belt of trees. Mr. D. Rosie has found larvæ on Blackthorn, which is not usually quoted as one of the food plants of the species.

ELLOPIA, Tr.

7. *Ellopia fasciaria*, (Linn.). BARRED RED.*Ellopia fasciaria*. Staint. Man., vol. ii., p. 11.

" " Newm. Brit. Moths, p. 53.

Metrocampa prosapiaria. Meyr. Hdbk. Brit. Lep., p. 280.

LARVA. Buck., vol. vii., pl. cvii., fig. 1; O. Wils., pl. xvi., fig. 7.

Far from a common insect, though the larva, which feeds on Fir and Larch, might find food almost anywhere. Mr. Bolam says "Seems to be nowhere very plentiful though widely distributed. I took one at Paxton House in July, 1885, and have seen it on several occasions at Langleyford, amongst the Cheviots in August. A few specimens have also been captured at Adderstone Hall, and near Berwick." (Trans. Ber. Nat. Club, vol. xv., p. 299). Mr. Finlay met with it rarely in Meldon Park, but took it more freely in Coal Law Wood; Mr. D. Rosie got one at rest on a tree in Dipton Wood near Hexham. Mr. Sticks took one at Stocksfield-on-Tyne and another at Ebchester on the Derwent; Mr. Backhouse got it at St. John's, Weardale, and Dr. Lees one in Shiers Wood, Upper Teesdale. The first I ever saw here was taken at the Lighthouse. We subsequently found it sparingly at Edder Acres near Wingate. Mr. Gardner has also met with it in Teesdale. A singular variety, known as *prasinaria* occurs, which is green instead of red. It has such a very different appearance that a beginner might readily mistake it for the preceding species. It has not often been noticed in Britain, but is well worth looking for.

EURYMENE, Dup.

8. *Eurymene dolobraria*, (Linn.). SCORCH-WING.*Eurymene dolobraria*. Staint. Man., vol. ii., p. 11.

" " Newm. Brit. Moths, p. 53.

Metrocampa " Meyr. Hdbk. Brit. Lep., p. 281.

LARVA. Buck., vol. vii., pl. cvii., fig. 2; O. Wils., pl. xvi., fig. 8.

One specimen is recorded from Northumberland, taken in

Meldon Park by Mr. Finlay. Mr. Backhouse took one at Little Polam, Darlington. "Da" is also given in the Manual, which may refer to the same capture. The species is not very uncommon in Yorkshire, and appears to be more numerous in Lancashire and Cheshire. It might be turned up in the Derwent or the Hexham district, though it does not appear to be very common in Cumberland.

PERICALLIA, Steph.

9. *Pericallia syringaria*, Steph. LILAC BEAUTY.

Pericallia syringaria. Staint. Man., vol. ii., p. 12.

" " Newm. Brit. Moths, p. 54.

Hygrochroa " Meyr. Hdbk. Brit. Lep., p. 284.

LARVA. Buck., vol. vii., pl. cvii., fig. 3; O. Wils., pl. xvi., fig. 9.

Like the last, two specimens only have been recorded, one from each county. One was taken in Meldon Park by Mr. Finlay; the other, a female, at Thornley on 15th July, 1876, by Mr. Hedworth. (See also Entom. x., p. 256). The chief food plant, *Ligustrum vulgare* (Privet), grows wild and in great abundance in Hezleden and Castle Eden Denes, and other places on the Durham coast as far as Seaham Harbour. The insect ought to occur in some of these well sheltered localities, if at all, but hitherto we have sought it in vain. Perhaps like *S. ligustri* it does not like the coast.

SELENIA, Hub.

10. *Selenia illunaria*, Hub. EARLY THORN.

Selenia illunaria. Staint. Man., vol. ii., p. 12.

" " Newm. Brit. Moths, p. 55.

" *bilunaria* Meyr. Hdbk. Brit. Lep., p. 282.

LARVA. Buck., vol. vii., pl. cvii., fig. 4; O. Wils., pl. xvi., fig. 10.

Generally a double-brooded species, occurring in April or May, and again in June or July; the second brood being always smaller and less distinctly marked. Its appearances in our

counties are not so regular. The species is given in the Twizell list, without reference to the date of its emergence, but Mr. Finlay, who found it freely in Meldon Park, never saw but the spring brood. Miss Rosie recorded it from Kenton, and Mr. D. Rosie at Brunton, Dinnington, and Prestwick, without saying whether he found more than one brood. He got larvæ from Oak, Birch, and Meadow-sweet, the latter being an unusual food. Mr. Hedworth appears to be the only collector who has taken both broods. He says, "At Dunston and Thornley in May and again in July." Mr. Sticks also found larvæ in Thornley Woods. Mr. Backhouse obtained the species at Shull, and also at Hoffall Wood; Mr. Sang took the early brood at lamps at Darlington; Mr. Ross met with it at Bishop Auckland, but not commonly. In reference to its occurrence in Upper Teesdale, Dr. Lees writes—"Common along hedges in July. I am doubtful if this is not the only brood up here. I never caught it in early spring; indeed there is little or no vegetation then in Teesdale, even *Pilosaria* scarcely appears till April." About Hartlepool on the other hand the early brood is common, and I have reared the summer form in confinement from eggs laid in spring, but I never took the second brood at large in the Hartlepool district. It would be very interesting if some of our younger collectors would work out the facts and study the different forms, especially where only one occurs.

11. *S. lunaria*, W. V. LUNAR THORN.

Selenia lunaria. Staint. Man., vol. vii., p. 12.

" " Newm. Brit. Moths, p. 55.

" " Meyr. Hdbk. Brit. Lep., p. 283.

LARVA. Buck., vol. vii., pl. cvii., fig. 5; O. Wils., pl. xvi., fig. 11.

Decidedly a scarce species here. Single specimens and but few of these, are all that are recorded. Yet it appears widely distributed, and more knowledge of its haunts and habits, and a more diligent search might produce it in greater abundance. Those that have occurred so far appear to have been met with

by accident. Mr. Finlay got one or two in Meldon Park, but did not find it elsewhere; Mr. Henderson found one at Jesmond. These are the only Northumberland records. Mr. Hedworth beat one from oak at Thornley, 14th June, 1870. (See also Entom. x., 256). Mr. D. Rosie found a pupa at Alston and bred the imago. Mr. Gardner got a pair in Hezleden Dene in 1876; my son found one on a hedge side near West Hartlepool in 1880, and my wife found another in the lower part of Hezleden Dene in 1891, and finally Mr. Lofthouse met with one at Middleton-in-Teesdale in 1897. Stephens, who gave the spring and summer broods of these insects as doubtfully distinct, calls attention to the curious fact that the size of the imago alternates with the generations. This obtains also with the genus *Tephrosia*, but not with double brooded noctuæ such as *P. meticulosa*, nor with all the Geometræ as *A. plagiaria*.

ODONTOPERA, Steph.

12. *Odontopera bidentata*, (Linn.). SCALLOPED HAZEL.

Odontopera bidentata. Staint. Man., vol. ii., p. 13.

" " Newm. Brit. Moths, p. 56.

Gonodontis " Meyr. Hdbk. Brit. Lep., p. 287.

LARVA. Buck., vol. vii., pl. cviii., fig. 1; O. Wils., pl. xvii., fig. 1.

Generally common in both counties, but least so on the coast. "Meldon Park, plentiful," J. Finlay; "Kenton," Miss Rosie; "Newcastle," G. Wailes (Step. Illust., vol. iii., p. 163). The species is still common there; Mr. Henderson reported it from Jesmond; Mr. Nicholson, "larvæ on Hawthorn at Newcastle"; Mr. D. Rosie, "Numerous at the outskirts of Newcastle, larvæ common on Oak and Ivy"; "Throughout the district," T. H. Hedworth; "Found sparingly in the lanes near South Shields Water Works. Hardly to be considered a real coast insect," J. C. Wasserman (Trans., vol. v., p. 287). Mr. Stephenson, of South Shields, on the other hand, reported the species as common there, and varying a little. Mr. Brady, of Sunderland, also reported it as generally common. "Abundant in Upper

Teesdale," F. A. Lees; "Bishop Auckland, not very common," Geo. Ross; "Rare in woods about Bishop Auckland," J. Greenwell; "Darlington, gardens, etc.," W. Backhouse. Darlington is also a "Manual" locality. About Hartlepool *Bidentata* is much less frequent than it was twenty or thirty years ago. A fine form, with the space between the lines, much darker than the other portions of the wings occurs occasionally, and I took one on 4th June, 1900, in Hezleden Dene, that is all dark brown, with only traces of the lines.

CROCALLIS, Gr.

13. *Crocallis elinguaris*, (Linn.). SCALLOPED OAK.

Crocallis elinguaris. Staint. Man., vol. ii., p. 14.

" " Newm. Brit. Moths, p. 56.

Gonodontis " Meyr. Hdbk. Brit. Lep., p. 287.

LARVA. Buck., vii., pl. cviii., fig. 2; O. Wils., pl. xvii, fig. 2.

The Scalloped Oak occurs in all parts of our district and it is common in many places, but appears to prefer the sheltered woods and dales inland, to the more exposed localities nearer the coast. It is not in the Twizell list, which is probably an accidental omission, as it is certain to occur there and thereabouts. Mr. Finlay found it very generally distributed and common; more than seventy years ago Mr. Hewitson reported it from Newcastle (Steph. Illust., vol. iii., p. 62), and it is still plentiful all round the city; Miss Rosie reported it from Kenton, her brother from Dinnington and Stocksfield; Mr. W. Patterson from Jesmond Dene, around where Mr. Sticks found it fairly common at light. He also found larva sparingly in the Derwent Valley, and Mr. Hedworth took the species commonly throughout that district. "A single specimen taken in a gas lamp at South Shields" was deemed important enough to be recorded in the Transactions of the Society (vol. v., p. 287), but more recently Mr. Stephenson reports it as fairly common there. At Sunderland both Mr. Brady and Mr. Corder found it a scarce insect. It is given in Ornsby's Durham as occurring near the

city, on Mr. Bungay's authority. Mr. Backhouse got it at Darlington; Mr. Ross found it "fairly common at Bishop Auckland;" Dr. Lees met with it commonly in Upper Teesdale. It was not scarce about Hartlepool when I commenced to collect, more particularly in the Denes, but it gradually became rarer. It still occurs occasionally in Hezleden Dene, but I have not seen it elsewhere for a long time.

ENNOMOS, Tr.

14. *Ennomos tiliaria*, Hub. CANARY-SHOULDERED THORN.

Ennomos tiliaria. Staint. Man., vol. ii., p. 15.

„ „ Newm. Brit. Moths, p. 57.

„ *alniaria*. Meyr. Hdbk. Brit. Lep., p. 286.

LARVA. Buck., vol. vii., pl. cviii., fig. 4; O. Wils., pl. xvii., fig. 3.

A rare species in both counties. Mr. D. Rosie took one at Dinnington, and Mr. Henderson one at Jesmond, which are the only records received of captures North of the Tyne, and I do not think it extends further on the East Coast. Mr. Sticks found the larva and imago regularly but very sparingly about Lintz Green, and Townley Woods on the Derwent, and also at Shotley Bridge. Mr. F. Raine took it once at light at Durham; Mr. Backhouse got it at Shull; Mr. Sang at lamps at Darlington (29th Sept., 1854); and Mr. Gardner met with it in a garden near Hartlepool Workhouse in 1875.

15. *E. fuscantaria*, Haw. DUSKY THORN.

Ennomos fuscantaria. Staint. Man., vol. ii., p. 15.

„ „ Newm. Brit. Moths, p. 57.

„ „ Meyr. Hdbk. Brit. Lep., p. 286.

LARVA. Buck., vol. xii., pl. cix., fig. 1; O. Wils., pl. xvii., fig. 4.

Only a very occasional wanderer into our district. It does not occur in Scotland, and as Mr. Porritt only gives three localities in Yorkshire, York being the most northerly, we may take it that its range does not extend to these counties. Mr.

Henderson took a single example at Jesmond, and Mr. Sang took one on a lamp in Darlington on 9th September, 1855. "Da" is given in the Manual, but it probably refers to Mr. Sang's capture.

16. *E. erosaria*, W.V. SEPTEMBER THORN.

Ennomos erosaria. Staint. Man., vol. ii., p. 16.

" " Newm. Brit. Moths, p. 57.

" " Meyr. Hdbk. Brit. Lep., p. 285.

LARVA. Buck., vol. vii., pl. cix., fig. 2; O. Wils., pl. xvii., fig. 5.

Though this species is generally commoner than the last, and recorded from localities further to the north, I do not consider our counties to be really within its range. The occurrence of two specimens only have been noticed here. The first was taken in August, 1873, by my son, the late P. W. Robson, on some palings between the Hartlepool cemetery and the sea, which, while they stood, afforded shelter for many species, blown seawards, of which we never found the natural habitat. The second specimen was taken by the late W. Maling in September, 1875, in Thornley Wood. This was an undoubted native, for it had just emerged from pupa, and the wings were quite limp when he found it, a proof that the larva had fed there, but the species does not appear to have been met with again.

17. *E. angularia*, W. V. AUGUST THORN.

Ennomos angularia. Staint. Man., vol. ii., p. 16.

" " Newm. Brit. Moths, p. 58.

" *quercinaria*. Meyr. Hdbk. Brit. Lep., p. 286.

LARVA. Buck., vol. vii., pl. cix., fig. 3; O. Wils., pl. xvii., fig. 6.

This is the commonest species of the genus, but it is far from plentiful in the north of England. The only locality given in Dr. Ellis' Catalogue for Lancashire and Cheshire, is Manchester, where it is rare. Mr. Porritt gives several in Yorkshire, but it does not appear to be common in any of them, nor to occur at all north of York. In our district it has only been met with in the Derwent Valley, where Mr. Hedworth took several

specimens some years ago. I have no further notice of its occurrence there till 1896, when Mr. Sticks took a few larvæ at Lintz Green and Thornley Woods.

HIMERA, Dup.

18. *Himera pennaria*, (Linn.). FEATHERED THORN.

Himera pennaria. Staint. Man., vol. ii., p. 16.

„ „ Newm. Brit. Moths, p. 58.

Colotois „ Meyr. Hdbk. Brit. Lep., p. 285.

LARVA. Buck., vol. vii., pl. cix., fig. 4; O. Wils., pl. xvii., fig. 7.

Widely distributed but very far from plentiful. Mr. Finlay reported it as occurring in most parts of his district but not common anywhere. Mr. Henderson met with it at Jesmond. Mr. Hedworth took it once or twice at Gibside; Mr. D. Rosie found larvæ at Stocksfield and Chopwell; Mr. Sang got it occasionally on lamps in Darlington, which is one of the "Manual" localities. Mr. Gardner has occasionally taken it in Upper Teesdale and found a solitary specimen in Hezleden Dene. I do not see any reason why it should not occur more frequently. Perhaps the late season at which it appears prevents it being taken so regularly.

AMPHYDASYDÆ, Gn.

PHIGALIA, Dup.

19. *Phigalia pilosaria*, W. V. PALE BRINDLED BEAUTY.

Phigalia pilosaria. Staint. Man., vol. ii., p. 18.

„ „ Newm. Brit. Moths, p. 59.

Apocherina pedaria. Meyr. Hdbk. Brit. Lep., p. 277.

LARVA. Buck., vol. vii., pl. cix., fig. 5; O. Wils., pl. xviii., fig. 1.

One of the earliest species to appear in the New Year, sometimes emerging in January. It frequents woods, where both sexes sit on tree trunks, but the female, being entirely apterous is easily overlooked. Mr. Finlay found it in all the woods in his neighbourhood, and says, "I have met with this species in January, February, and March." Mr. Henderson and Mr.

Rhagg took it in Jesmond Dene; Mr. Maling took it at Corbridge (4th Feb., 1875); Mr. Nicholson at Hexham, Mr. D. Rosie at Kenton and Dinnington. It is therefore well distributed in Northumberland. Mr. Hedworth got it at Gibside and Thornley and Mr. D. Rosie also found it in the Derwent district. Mr. Stephenson reported it from "gardens" at South Shields; Mr. Ross and Mr. Greenwell both found it about Bishop Auckland. Darlington is a "Manual" locality; Dr. Lees recorded it from the woods of Upper Teesdale where it "rarely appeared before April." It is not uncommon in Hesleden Dene, and its emergence seems much affected by the weather. After a mild winter it is sure to be out by February, and I once saw it as late as April. It will no doubt be found in all the woods of both counties, but its range does not extend much further to the north.

NYSSIA, Dup.

20. *Nyssia hispidaria*, Fab. SMALL BRINDLED BEAUTY.

Nyssia hispidaria. Staint. Man., vol. ii., p. 19.

" " Newm. Brit. Moths, p. 60.

Apocherina ,, Meyr. Hdbk. Brit. Lep., p. 277.

LARVA. Buck., vol. vii., pl. cx., fig. 2; O. Wils., pl. xviii., fig. 3.

Mr. Sticks, Newcastle-on-Tyne, has reared this species from larvæ taken at Lintz Green, Derwent Valley. I have seen Mr. Sticks' specimen and can confirm the record. It has not previously been recorded north of Scarbro' and York.

AMPHIDASIS, Tr.

21. *Amphidasis betularia*, (Linn.). PEPPERED MOTH.

Amphidasis betularia. Staint. Man., vol. ii., p. 21.

" " Newm. Brit. Moths, p. 61.

Biston ,, Meyr. Hdbk. Brit. Lep., p. 288.

LARVA. Buck., vol. vii., pl. cx., fig. 5; O. Wils., pl. xviii., fig. 6.

A generally distributed species, but not abundant anywhere in these counties. It is recorded from Muckle Moss in the Transactions of the Society (vol. v, p. 9). Mr. Nicholson took it at Alnmouth and Lesbury; Mr. Rhagg at Warkworth; Mr. Finlay found it occasionally in most of the woods in his district; Mr. Corder took it in Bothal Wood, Morpeth; Mr. D. Rosie found it at Stocksfield, Kenton, and Dinnington; Mr. Wailes recorded it from Newcastle in Stephen's Illustrations (vol. iii., p. 159); and Mr. Henderson found it more recently at Jesmond. Mr. G. Nowell got three at Axwell; Mr. Hedworth one at Swalwell in 1872; Mr. Brady found a solitary specimen at Ryhope; Mr. Greenwell got it at Leamside; it is in the list in Ornsby's Durham; both Mr. Sang and Mr. Backhouse took it near Darlington, which is also a Manual locality. Dr. Lees took one of the black variety (*Doubledayaria*) in Upper Teesdale, where Mr. Gardner found the type rather common. Mr. C. Trechmann, jun., found a black one in Castle Eden Dene. I generally get one in Hezleden Dene each year, and have found a black one there occasionally in recent years. I took an intermediate form there, and another on the Cemetery palings at Hartlepool, but these are much rarer than either the type or the black form. Mr. Maling once sent me eggs from a black female which had paired with a type male. The progeny were all either typical or black, no intermediates, but there were both sexes of both forms. I tried to pair two black ones, but though the individuals I experimented with, paired readily with the type, they would not pair together. I have had no opportunity to repeat this experiment, which I recommend to those who can readily obtain ova. *Betularia* is noticeable as being one of the first species to exhibit that tendency to melanism which has become such a marked peculiarity in British lepidoptera. A buff or drab variety has also appeared in recent years but not, so far as I know, in our counties.

BOARMIDÆ, Gn.

HEMEROPHILA, Steph.

22. *Hemerophila abruptaria*, Thun. BARRED UMBER.

- Hemerophila abruptaria*. Staint. Man., vol. ii., p. 23.
 „ „ Newm. Brit. Moths, p. 62.
Synopsia „ Meyr. Hdbk. Brit. Lep., p. 267.
 LARVA. Buck., vol. vii., pl. cxi., fig. 1.

This species is marked "Da" in Stainton's Manual, but I do not know on what authority. It is not in either Sang's Diary or Mr. Backhouse's Lists. I took a solitary specimen on the Cemetery palings at Hartlepool on 22nd April, 1874, and another the following year, I know of no others, but expect it will turn up some day.

CLEORA, Curt.

23. *Cleora lichenaria*, W. V. BRUSSELS LACE.

- Cleora lichenaria*. Staint. Man., vol. ii., p. 25.
 „ „ Newm. Brit. Moths, p. 63.
 „ „ Meyr. Hdbk. Brit. Lep., p. 262.

LARVA. Buck., vol. vii., pl. cxi., fig. 3; O. Wils., pl. xix., fig. 2.

This species is also marked "Da" in the "Manual," but I have been unable to ascertain on what authority. It occurs in all the neighbouring counties, Yorkshire, Cheshire, Lancashire, Cumberland, and is, I think, such a probable species to be found here that I have included it on the strength of the Manual record only. Dr. Ellis says it usually occurs in the neighbourhood of old orchards, but it may be sought for in any place where the trees are well covered with Lichens. Pear-tree, Oak, Elm, and Poplar are all named as affording food for the larva, and Newman says he found twenty in 1859 on Lichens on park palings. I am not aware that the larva has been found on Wall Lichens,

BOARMIA, Tr.

24. *Boarmia repandata* (Linn.). MOTILED BEAUTY.

Boarmia repandata. Staint. Man., vol. ii., p. 26.

" " Newm. Brit. Moths, p. 63.

Selidosema " Meyr. Hdbk. Brit. Lep. p. 263.

LARVA. Buck., vol. vii., pl. cxi., fig. 4; O. Wils., pl. xix., fig. 3.

Common everywhere in woods and lanes. The banded variety, *Conversaria*, occurs in Durham. The Rev. J. G. Robinson, Rector of Castle Eden, took one in the Dene there on August 22nd, 1885. Mr. B. Pemberton got another in Hawthorn Dene. Mr. Gardner and I have occasionally taken it in Hezleden Dene, at Edder Acres, etc., but I have no inland records. A dark, nearly unicolorous form, also occurs occasionally.

25. *B. rhomboidaria*, W.V. WILLOW BEAUTY.

Boarmia rhomboidaria. Staint. Man., vol. ii., p. 26.

" " Newm. Brit. Moths, page 64.

Selidosema gemmaria. Meyr. Hdbk. Brit. Lep., p. 264.

LARVA. Buck., vol. vii., pl. cxi., fig. 5.; O. Wils., pl. xix., fig. 4.

Most collectors in both counties report this as equally common with *Repandata*. It is certainly so inland, but it is comparatively rare on the coast. In fact, the only coast record I have is that Mr. Stephenson found it far from common at South Shields. Mr. Gardner says it is "not common in Hezleden Dene." I never took it there nor elsewhere about Hartlepool, though I have found it common in lanes north of Newcastle, from whence every collector reports it. The late Edward Newman introduced as a new species, under the name of *Perfumaria*, a very dark form of this species. Mr. Maling was in the habit of taking very dark specimens in his own garden. He sent me eggs of these, which I reared to maturity, and, on submitting specimens to Mr. Newman, he pronounced them identical with his *Perfumaria*. The same form has been taken by Mr. Madison near Durham.

(*Boarmia abietaria* is recorded in the Transactions of the Society (vol. v., p. 9), as having been taken at Muckle Moss on the occasion of a visit of the members there. The record is certainly an error, a dark form of some closely allied species being doubtless mistaken for it. *Abietaria* is exclusively confined to the Pine woods of the south of England. It is true that Stainton's Manual says "near Dumbarton," and Meyrick's Handbook says "Perth, local." These records have been made in error in years gone by, when distribution of species was less studied, and have been quoted since without investigation, which neither record will bear.)

(*Boarmia consortaria* was recorded in a list of captures at Castle Eden Dene, by Mr. J. Wilson, Junr., (Ent. W. Int. vol. vi., page 155). There can be no doubt that the insect taken was *Tephrosia crepuscularia*. *Consortaria* is strictly a southern species. The most northerly record is Leicester, and even this has never been confirmed, and is almost certainly an error. Mr. Wilson was evidently not aware that his capture, if correctly named, was a very important one, or he would not have recorded it without making special reference to it.

It is necessary to call attention to these errors in their places, lest anyone seeing the records might think they had been overlooked here.)

TEPHROSIA, Bdv.

26. *T. crepuscularia*, Haw. ENGRAILED.

Tephrosia crepuscularia. Staint. Man., vol. ii., p. 28.

„ *biundularia*. Newm. Brit. Moths, p. 66.

Ectropus „ Meyr. Hdbk. Brit. Lep., p. 260.

LARVA. Buck., vol. vii., pl. cxiii., fig. 2; O. Wils., pl. xix., fig. 8.

If Mr. Barrett's idea be correct, that the insects so long known as *Crepuscularia* and *Laricaria*, or *Biundularia* and *Crepuscularia*, are but forms of one species, we have a very extraordinary case to consider. The brown form (*Laricaria* of Stainton's Manual), occurs chiefly in Larch woods in March and April; the grey form in mixed woods in May and June, in very

early seasons sometimes at the end of April. Both, occasionally, in the south at any rate, produce second broods, which do not differ so much as the earlier ones. They do not appear to cross in nature, indeed they scarcely could do so, as they emerge at different periods, but they have been crossed in confinement and the hybrids have proved fertile. I cannot pretend to give even a resume of the controversy here; which, however, is the less necessary, as only the late or grey form occurs with us. It is recorded for North Northumberland as follows.—“This is another species which does not seem to have been noticed by anyone else in the district, and is, I think, new to the Northumberland list. I found two at rest on a low wall bordering the old road leading along the east side of Kyloe Wood, on 17th May, 1896, and another, much worn, on the 14th of the following month.” (G. Bolam, Trans. Ber. Nat. Club, vol. xv., p. 299). Mr. Bolam is mistaken in supposing these captures were the first in Northumberland. It does not appear to have been observed by the earlier collectors; Mr. Wailes records it for Keswick only in Stephens' Illustrations, but Mr. Finlay met with it several years earlier than Mr. Bolam's captures, in the old wood, Netherwitton, where he found it occurred regularly. Mr. Rhagg took it at Corbridge and Riding Mill; Mr. D. Rosie at Stocksfield. It is abundant in Castle Eden and Hezleden Dens, appearing generally from the middle of May to the end of June. In very early seasons I have seen an odd specimen at the end of April. Dark forms are occasionally met with. In May, 1898, we had some exceedingly cold weather, and the appearance of the May insects was delayed thereby. On Whit-Monday, May 30th, I found several specimens at rest on tree trunks in Hezleden Dene. They were all dark, and included the darkest I had ever taken. After a week or more of fine warm weather, I went again, but except one worn specimen, all I saw were of the lighter normal shade. This supports Mr. Merrifield's theory that cold applied just before emergence darkens the imago. (See also under *A. basilinea*, p. 147). The dark forms we take here in no way approach the hue of the earlier insect, which is brown, ours are dark grey.

(*Tephrosia consonaria*. Mr. Sticks informs me that he took a specimen of this insect in a grass field near Gateshead in 1888. The specimen was accidentally destroyed, but Mr. Sticks speaks confidently as to the name. I feel equally confident he is mistaken. *Consonaria* is a very unlikely species to occur in Durham, and certainly not in a grass field. It is probable that the insect in question was the above species, *T. crepuscularia*, which *Consonaria* very closely resembles.)

27. *T. punctulata*. W.V. GRAY BIRCH.

Tephrosia punctulata. Staint. Man., vol. ii., p. 29.

" " Newm. Brit. Moths, p. 67.

Ectropis punctularia. Meyr. Hdbk. Brit. Lep., p. 260.

LARVA. Buck., vol. vii., pl. cxiii., fig. 5.

Recorded in Stephens' Illustrations (vol. iii., p. 193). "Newcastle, Meldon Park, etc., G. Wailes, Esq." Mr. Finlay never met with it in Meldon Park, but took it regularly, though sparingly, in Coal Law Wood. It has not been recorded for Durham. It occurs in several places in Yorkshire, though it has disappeared from many of its old haunts in that county. It should be looked for in May and June, where there is plenty of Birch.

GNOPHOS, Tr.

28. *Gnophos obscurata*, W.V. ANNULET.

Gnophos obscurata. Staint. Man., vol. ii., p. 29.

" *pullata*. " " p. 30.

" *obscurata*. Newm. Brit. Moths, p. 67.

Pseudopanthera obscuraria. Meyr. Hdbk. Brit. Lep., p. 270.

LARVA. Buck., vol. vii., pl. cxiv., fig. 1.

This species appears to be only a coast species here, and is fairly common there except it does not frequent Sand banks. Mr. Patterson found it at Alnmouth; Mr. Wailes recorded it (as *Pullata*) from Tynemouth (Step. Illust., vol. iii., p. 267). Mr. Stephenson found it fairly common, but very local at South

Shields. Mr. Corder reports it from Whitley and at Castle Eden. I have taken it all along the coast from the south end of Black Hall Rocks, nearly as far as Seaham Harbour. It is also abundant in the railway cutting between Hart and Hezleden stations, but I have never seen it on the embankment between Hart and Hartlepool. Inland, Mr. Henderson met with one at Jesmond, and Mr. Finlay one at Meldon Park. The habit of the imago is to rest on the surface of the ground, and it varies by assuming somewhat of the hue of the soil in its different localities. Those found here are a sort of yellowish brown. Stephens applies the name *Pullata* to them, which was long considered to be a distinct species.

GEOMETRIDÆ. Gn.

PSEUDOTERPNA, Bdv.

29. *Pseudoterpna cytisaria*, W.V. GRASS EMERALD.

Pseudoterpna cytisaria. Staint. Man., vol. ii., p. 34.

" " Newm. Brit. Moths, p. 70.

" *pruinata*. Meyr. Hdbk. Brit. Lep., p. 250.

LARVA. Buck., vol. vii., pl. cxiv., fig. 3; O.Wils., pl. xx., fig. 1.

This species is exceedingly local, and has been very seldom met with. Mr. Sang took it in his time on the railway banks near Croft, and at other places about Darlington, but I have no knowledge of any recent capture. I took it occasionally on the railway side near Hartlepool, when I commenced to collect, but have not met with it since 1874. No doubt these counties are at the extreme end of its range. It does not appear to be common anywhere north of York on the east side of the island.

GEOMETRA, Linn.

30. *Geometra papilionaria*, (Linn.). LARGE EMERALD.

Geometra papilionaria. Staint. Man., vol. ii., p. 34.

" " Newm. Brit. Moths, p. 70.

" " Meyr. Hdbk. Brit. Lep., p. 250.

LARVA. Buck., vol. vii., pl. cxiv., fig. 4; O.Wils., pl. xx., fig. 2.

A rare species, and one that appears to avoid the coast. It has not as yet been recorded from the north side of the Tyne, though it appears to occur generally on the south bank. Mr. Patterson met with it at Chopwell; Mr. Hedworth obtained "several fine specimens at Thornley, in July." (See also Ent. x., 256). Mr. Sticks says "only seen imago once, but ova and larvæ fairly numerous at Winlaton, Rowlands Gill, and Lintz Green." Mr. Pickard reported it as "generally rare at Wolsingham, but common in 1870." Mr. Sang took it in Whesoe Lane, near Darlington and also at Hell Kettles. It certainly ought to occur more frequently than these records imply.

IODIS, Hub.

31. *Iodis lactearia*, (Linn.). LITTLE EMERALD.

Iodis lactearia. Staint. Man., vol. ii., p. 36.

" " Newm. Brit. Moths, p. 71.

Euchloris ,, Meyr. Hdbk. Brit. Lep., p. 249.

LARVA. Buck., vol. vii., pl. cxv., fig. 2; O. Wils., pl. xx., fig. 4.

I have received but few records of the occurrence of this species, which probably does not extend very far into Northumberland. Mr. Finlay took it at Hartburn, but very sparingly; Mr. Henderson got one or two at Jesmond. Mr. D. Rosie found it common at Swalwell, the larvæ on Birch there; Mr. Rhagg met with it freely at Thornley; while Mr. Hedworth said it was common throughout that district. It is in the Manual as occurring regularly at Darlington, possibly Mr. Sang thought it too frequent to enter in his diary. We find it regularly but not commonly in the Denes about Hartlepool. It thus appears to be confined to South Durham and to the neighbourhood of the Tyne Valley. The green shade on the wings is exceedingly fleeting, and is rarely seen on a captured specimen, which might readily be passed by a beginner as a worn *Acidalia*.

HEMITHEA, Dup.

32. *Hemithea thymiaria*, (Linn.). COMMON EMERALD.

Hemithea thymiaria. Staint. Man., vol. ii., p. 36.

" " Newm. Brit. Moths, p. 72.

Nemoria strigaria. Meyr. Hdbk. Brit. Lep., p. 247.

LARVA. Buck., vol. vii., pl. cxv., fig. 4; O. Wils., pl. xx., fig. 5.

This, as its trivial name implies, is generally a common insect where it occurs, and as the larva feeds on Oak or Hawthorn, it could find food everywhere, but it does not appear to extend so far north as our counties. Mr Porritt only gives five localities for it in Yorkshire. Dr. Ellis gives five in Cheshire, but only three in Lancashire. In Cumberland and Westmorland I have no knowledge of its occurrence, and the only local capture here that I know of is a stray specimen taken half a century ago by Mr. Backhouse at Darlington. Mr. Meyrick says it occurs in Forfarshire, but I do not know on what authority.

EPHYRIDÆ. Gn.

EPHYRA, Dup.

33. *Ephyra punctaria*, (Linn.). MAIDEN'S BLUSH.

Ephyra punctaria. Staint. Man., vol. ii., p. 38.

" " Newm. Brit. Moths, p. 72.

Leucopthalmia " Meyr. Hdbk. Brit. Lep., p. 245.

LARVA. Buck., vol. vii., pl. cxv., fig. 6; O. Wils., pl. xx., fig. 6.

Though this is generally a tolerably common insect, it is not very well distributed in Yorkshire, and has been seldom met with here. Mr. Henderson took it at Jesmond, the only record north of the Tyne. Mr. Hedworth got it "sparingly" in Thornley Woods, and Mr. Rhagg at Chopwell; Mr. Backhouse found it at Hufall Wood near Durham; while Mr. Sang found larvæ near Darlington on 5th September, 1869, and again on 20th August, 1872. I have taken one or two worn imagines

at long intervals on the ballast hills beyond Hartlepool Cemetery, but never met with it in any of our woods or denes. Mr. Sang's discovery of larvæ as above looks as though it were established there, but we are evidently at the extremity of its range. It is said to have occurred in Scotland, but I believe only in the South-West, and it must not be forgotten how much further north than this a large portion of our district extends. The species is very uncommon in Cumberland.

34. *E. trilinearia*, Bork. CLAY TRIPLE-LINES.

Ephyra trilinearia. Staint. Man., vol. ii., p. 38.

" " Newm. Brit. Moths, p. 73.

Leucopthalmia " Meyr. Hdbk. Brit. Lep., p. 245.

LARVA. Buck., vol. vii., pl. cxv., fig. 7.

This species appears only to reach the more southern parts of Yorkshire. Two stragglers only have been recorded in our counties. One in 1869 taken at Winlaton Mill by Mr. Maling, and another a few years later at Jesmond by Mr. Henderson.

35. *E. pendularia*, (Linn.). BIRCH MOCHA.

Ephyra pendularia. Staint. Man., vol. ii., p. 39.

" " Newm. Brit. Moths, p. 74.

Leucopthalmia " Meyr. Hdbk. Brit. Lep., p. 245.

LARVA. Buck., vol. vii., pl. cxv., fig. 10; O. Wils., pl. xx., fig. 8.

This insect is given in the Twizell list, but does not appear to have been met with since Selby's time. It is well distributed in England, but is very local in the North. Porritt's Yorkshire list only gives Pontefract and Askham Bog; Ellis does not record it for either Lancashire or Cheshire; and Mr. Thwaytes only gives one Cumberland habitat in the M.S. list with which he has supplied me. Yet Meyrick gives it as "rather common," and says it reaches Ross. I cannot very well exclude it here, but give it with considerable hesitation. It is very desirable that its occurrence should be confirmed. It should be sought for among Birch in Spring.

ACIDALIDÆ. Gn.

ASTHENA, Hub.

36. *Asthena luteata*, W.V. SMALL YELLOW WAVE.

Asthena luteata. Staint. Man., vol. ii., p. 42.

„ „ Newm. Brit. Moths, p. 74.

Euchoeca „ Meyr. Hdbk. Brit. Lep., p. 223.

LARVA. Buck., vol. vii., pl. cxvi., fig. 2.

This pretty little moth is exceedingly local. It is recorded by Mr. Wailes for Newcastle as far back as 1829 (see Steph. Illust., vol. iii., p. 302). Mr. Henderson also has taken it at Jesmond, where perhaps Wailes' specimens were obtained. Mr. Hedworth obtained a fine series in Thornley Wood by beating. This would be over twenty years ago, and no more recent collector appears to have taken it there. Dr. Lees reported it as not uncommon by the river side in Upper Teesdale. These are all the records, except that the Manual has Da., signifying that it is found in the Darlington district. The larva feeds on Maple and Alder, and if the insect reaches Argyleshire (Meyrick) we ought to obtain it more numerously. It is not uncommon in the adjacent counties.

37. *A. candidata*, W.V. SMALL WHITE WAVE.

Asthena candidata. Staint. Man., vol. ii., p. 42.

„ „ Newm. Brit. Moths, p. 75.

„ „ Meyr. Hdbk. Brit. Lep., p. 224.

LARVA. Buck., vol. vii., pl. cxvi., fig. 3; O. Wils., pl. xx., fig. 9.

No doubt well distributed throughout the district, but it is not a conspicuous species, and may easily be passed over. Mr. Finlay found it at Hartburn, but not commonly, and did not meet with it elsewhere in his neighbourhood. Yet so long ago as 1829 Mr. Wailes took it at Meldon Park, where Mr. Finlay lived, and also at Tynemouth (see Steph. Illust., vol. iii.,

p. 300). The Manual gives it as occurring regularly at Newcastle as well as at Darlington. Mr. D. Rosie took it at Willington Mill; Mr. Hedworth found it common in the Derwent district, but no other collector reports it from that quarter except Mr. Sticks, who found it "sparingly." We find it in Hezleden Dene, seldom in great numbers, but always there in the season. This year (1900) it was unusually abundant, and might have been taken in hundreds. Mr. Gardner says "Hezleden Dene, of regular occurrence, but never common. The larvæ cannot feed on Hornbeam there, as it does not grow in the Dene." Stainton gives Hornbeam only as the food of the larva, but they certainly feed on Hazel, and perhaps White-thorn. I have taken *Candidata* in Castle Eden Dene also.

38. *A. sylvata*, W.V. WAVED CARPET.

Asthena sylvata. Staint. Man., vol. ii., p. 41.

" " Newm. Brit. Moths, p. 75.

Euchoeca " Meyr. Hdbk. Brit. Lep., p. 223.

LARVA. Buck., vol. vii., pl. cxvi., fig. 4.

Recorded in the Manual for Newcastle and Darlington, but I have no more recent records of it from either place. The only collector who has taken it lately was Mr. Finlay, who met with it at Healey at the end of June, regularly but never common. I have no further knowledge of it here. It is local in the adjoining counties, but generally abundant where it does occur. It is likely enough to turn up in suitable places in both counties, and should be looked for among Alder and Willow.

39. *A. Blomeri*, Curt. CAPTAIN BLOMER'S RIVULET.

Asthena Blomeri. Staint. Man., vol. ii., p. 42.

" *pulehraria*. Newm. Brit. Moths, p. 75.

Euchoeca Blomeri. Meyr. Hdbk. Brit. Lep., p. 223.

LARVA. Buck., vol. vii., pl. cxvi., fig. 5; O. Wils., pl. xx., fig. 10.

In the Transactions of the Field Club, vol. v., p. 3., it is stated that this beautiful little insect was first discovered in Castle Eden Dene in the month of July (1831) by the late

George Wailes. This is incorrect, it was first taken there by Captain Blomer, and named in his honour by Curtis. Wailes took it there subsequently, and sent specimens to Stephens, who acknowledged them in his Illustrations (vol. iv., p. 93), and said "it was previously taken by Captain Blomer." The insect is still plentiful in Castle Eden Dene, where I took several in 1896. It was once even more abundant in Hezleden Dene, but I have not taken it there for many years. Mr. Gardner says "Hezleden Dene, very much scarcer than it was a few years ago." Mr. Henderson records it from Jesmond, but I do not know if he got more than one. Mr. Sang records it in his diary as being taken at Castle Eden from 3rd to 21st July; I have taken it as early as 18th June.

EUPISTERIA, Bdv.

40. *Eupisteria heparata*, W.V. DINGY SHELL.

Eupisteria heparata. Staint. Man., vol. ii., p. 43.

" " Newm. Brit. Moths, p. 75.

Euchoeca obliterata. Meyr. Hdbk. Brit. Lep., p. 223.

LARVA. Buck., vol. vii., pl. cxvi., fig. 6; O. Wils., pl. xx., fig. 11.

Very rare and local in these counties. Mr. Rhagg took specimens at Rowlands Gill and at Chopwell, Mr. Maling also met with it at Chopwell. Mr. Sang took it at Hell Kettles, and elsewhere near Darlington in July, 1861, and subsequent years. I took three specimens at "The Bleachery" near Castle Eden in 1857, but I have had no opportunity of collecting there again, and have not met with it elsewhere. It should be looked for in damp localities where there is plenty of Alder. "Da!" and "Ne" are given in the Manual.

VENUSIA, Curt.

41. *Venusia Cambrica*, Curt. WELSH WAVE.

Venusia Cambrica. Staint. Man., vol. ii., p. 43.

" *Cambricaria*. Newm. Brit. Moths, p. 76.

" *Cambrica*. Meyr. Hdbk. Brit. Lep., p. 225.

LARVA. Buck., vol. vii., pl. cxvi., fig. 7; O. Wils., pl. xx., fig. 12.

Scarce and very local. Mr. Finlay took it rarely at Old Park, Netherwitton. Mr. J. W. Corder writes, "My father took *Cambrica* this year (1897), he thinks in the garden here, but he did not recognise the species, and had it mixed with others, part of which were taken at Bamborough. He collected at no other place, so it must have been one or the other." It would be interesting to know it had occurred at or near Sunderland, but I think Bamborough the likelier locality. Mr. D. Rosie took it at Alston and Slaggyford; Mr. Gardner met with it in Upper Teesdale, "not common." The "Manual" gives Darlington as a locality. The larva feeds on Mountain Ash, of which there is plenty around both Sunderland and Darlington as an ornamental tree. This species is called the Welsh Wave from a reputed occurrence in Monmouthshire, but it is rather more of a northern species than the name implies.

ACIDALIA, Tr.

42. *Acidalia rubricata*, W.V. TAWNY WAVE.

- Acidalia rubricata*. Staint. Man., vol. ii., p. 45
 " " Newm. Brit. Moths, p. 76.
Leptomeris rubiginata. Meyr. Hdbk. Brit. Lep., p. 243.

LARVA. Buck., vol. vii., pl. cxvii., fig. 1.

Dr. Lees took specimens in July, 1875, at Winch Bridge, Upper Teesdale, and could have got more had he then known what they were. Talking the matter over with Dr. Lees, I expressed a desire to see the specimens, and he at once forwarded them to me for my own collection. Though twenty-five years old they are yet in fine condition, and are a grand addition to our local fauna. They occurred on "low lingy ground," and were not uncommon from the first to the third week in July. I would strongly urge those who have the opportunity to endeavour to find again one of the most local of our British Lepidoptera.

43. *A. scutulata*, W.V. SINGLE DOTIED WAVE.*Acidalia scutulata*. Staint. Man., vol. ii., p. 45.

,, ,, Newm. Brit. Moths, p. 76.

Eois dimidiata. Meyr. Hdbk. Brit. Lep., p. 239.

LARVA. Buck., vol. vii., pl. cxvii, fig. 2; O. Wils., pl. xxi., fig. 1.

Very few notices of the capture of this species have reached me, but it is widely distributed, and probably only needs looking for to be found in all suitable localities. Mr. Bolam writes—"Does not appear to be very common, I have only two local specimens. One of these from Ragwort on Cheswick Links on 19th August, 1888; the other from Kylvoe in August, 1891" (Trans. Ber. Nat. Club, vol. xv., p. 299). Mr. Finlay found it "scarce" at Meldon Park; Mr. D. Rosie found it near Dinnington and at Ryton. Mr. Hedworth reported it as "common at Thornley, Axwell, etc." Dr. Lees, "Not uncommon in Upper Teesdale." Mr. Gardner says, "Hartlepool, railway side." I have found it there and on the level ballasted ground beyond the Cemetery, also regularly in Hezleden Dene west of the railway. It is given in the Manual both for Newcastle and Darlington.

44. *A. bisetata*, Bork. SMALL FAN-FOOTED WAVE.*Acidalia bisetata*. Staint. Man., vol. ii., p. 45.

,, ,, Newm. Brit. Moths, p. 77.

Eois ,, Meyr. Hdbk. Brit. Lep., p. 240.

LARVA. Buck., vol. vii., pl. cxvii, fig. 3; O. Wils., pl. xxi., fig. 2.

Generally commoner than the last, and probably so in these counties, though the records are but few. Mr. Finlay took it in Meldon Park, but never found it plentiful; Mr. Henderson met with it at Jesmond. These are the only Northumberland records I have. Mr. Hedworth took it about Thornley, Axwell, etc., wherever he looked for it, and never scarce. Mr. Sibson found it about Stockton, and Mr. Lofthouse got it lower down the Tees on the Salt Marsh at Greatham; Mr. Gardner took it freely on the railway side at Hartlepool. I have found it there

also, and on waste ground generally, as well as in Hezleden Dene. It sits on palings, low down among the herbage at the bottom, but I never saw it on tree trunks.

45. *A. trigeminata*, Haw. TREBLE-BROWN SPOT.

Acidalia trigeminata. Staint. Man., vol. ii., p. 45.

„ „ Newm. Brit. Moths, p. 77.

Eois „ Meyr. Hdbk. Brit. Lep., p. 239.

LARVA. Buck., vol. vii., pl. cxvii., fig. 4.

Always a scarce and local species. The only captures in this district that I know of are two that Mr. L. S. Brady took near Ryhope. The insect is equally rare in the adjacent counties.

46. *A. osseata*, W.V. DARK CREAM WAVE.

Acidalia osseata. Staint. Man., vol. ii., p. 46.

„ *interjectaria*. Newm. Brit. Moths, p. 78.

Eois dilutaria. Meyr. Hdbk. Brit. Lep., p. 237.

LARVA. Buck., vol. vii., pl. cxvii., fig. 7.

There has been considerable diversity of opinion as to the insect here called *Osseata*, and two or more species may be included in the various names given above. Our specimens are pale bone-coloured, with the costa brownish; not red as in one form. I have the idea that the redder form may be but a climatic variant, as I have only seen it in southern examples, but I have no special evidence to support the view. This species does not appear to reach Scotland, indeed Meyrick gives York as the limit of its northward range. Mr. Bolam, however, has met with it at Allerdean Mill, where he took one on 22nd August, 1883 (Trans. Ber. Nat. Club, vol. xv., p. 299). This is probably the most northerly record. Mr. Sticks bred a single specimen from a larva he found in the Derwent Valley in 1895. At South Shields Mr. Stephenson tells me it is common. About Hartlepool it occurs on the railway embankment, and on the levelled ground towards Hart Station, and can still be obtained there in some numbers, though the extension of the

town is driving it further and further away. I took it formerly on a paling on the railway side close to the town, where it sat near the bottom concealed by the herbage. It no longer occurs there, but less than quarter of a mile away it is still comparatively common, but I have not found it anywhere but on ballast or similar ground.

47. *A. virgularia*, Hub. SMALL DUSTY WAVE.

Acidalia virgularia. Staint. Man., vol. ii., p. 47.

„ *incanaria*. Newm. Brit. Moths, p. 78.

Eois virgularia. Meyr. Hdbk. Brit. Lep., p. 236.

LARVA. Buck., vol. vii., pl. cxviii., fig. 2.

Mr. Bolam says, "Very common in gardens in July, about St. John's Tea Plant. Berwick, Scremerston, Alnwick, etc." (Trans. Ber. Nat. Club, vol. xv., p. 300). Mr. Wailes recorded it for Newcastle as long ago as 1829 (see Steph. Illust., vol. iii., p. 310). Mr. Henderson and Mr. Patterson have taken it there more recently. It is also given in the "Manual" for Newcastle and Darlington, the former doubtless referring to Mr. Wailes' captures. Mr. Corder found it common at Sunderland. Mr. Sang took it at Seaton Carew in 1853, the only record of its occurrence I have found in his diary. It occurs about Hartlepool, both on the railway embankment and in Hezleden Dene. It is not an uncommon species generally, and ought to occur in most parts of both counties.

48. *A. incanata*, Hub. SMALL DUSTY WAVE.

Acidalia incanata. Staint. Man., vol. ii., p. 47.

„ *incanaria*. Newm. Brit. Moths, p. 78.

Leptomeris marginepunctata. Meyr. Hdbk. Brit. Lep., p. 241.

LARVA. Buck., vol. vii., pl. cxviii., fig. 5.

This is another of the scarcer *Acidalia*, one that does not range much further north than our counties. It is given in the "Manual" as occurring at Newcastle, but I do not know the authority. Most of the Newcastle references there were given

by the late George Wailes, who also supplied lists to Stephens' Illustrations. As the occurrence of this species is not named in the Illustrations, Mr. Wailes, if he were Stainton's authority, must have found it subsequently to 1829, when Stephens' vol. iii. was published. The only recent capture that I know of is that Mr. D. Rosie took one at Fenham. It should be carefully looked for by the Newcastle collectors, and will I hope be turned up by them. Many of these species are so local that the exact place of occurrence should be noted if it is to be found again. It will be observed that Newman has fused this and the preceding species into one.

49. *A. subsericeata*, Haw. SATIN WAVE.

Acidalia subsericeata. Staint. Man., vol. ii., p. 48.

„ „ Newm. Brit. Moths, p. 80.

Eois „ Meyr. Hdbk. Brit. Lep., p. 237.

LARVA. Buck., vol. vii., pl. cxviii., fig. 7; O. Wils., pl. xxi., fig. 5.

An abundant species about Hartlepool, and apparently not occurring elsewhere in either county. It does not occur at all in Yorkshire, and it is difficult to explain its appearance here in such numbers. Until within the last year or two it was plentiful on the railway embankment beside the Wire Rope Works, close to Ironworks, Cement Works, and other places throwing out volumes of smoke and noxious vapours. This place has been destroyed entomologically by the extension of the town, but *Subsericeata* is still common all the way along the embankment to Hart Station. It is equally common in the deep cutting from Hart Station to Hezleden Dene, being especially abundant just beyond the first bridge over the railway. It also occurs freely on waste ground—levelled ballast—beyond the Cemetery. We find it commonly on the sand hills beyond Hezleden Dene, and on the grassy banks at Black Hall Rocks and beyond. I have dwelt at length on this because it is very extraordinary that there should be an isolated colony here, where the species may be said to swarm, and no other habitat within at least one hundred miles. Meyrick says

it extends to Westmorland on the West of the Island, but I have access to no list for that county. It is not however in the M.S. list of Cumberland species with which Mr. Thwaytes has kindly supplied me. Though Newman says it occurs in the Lake District. Dr. Ellis gives three localities for Lancashire, and three for Cheshire. I have no explanation to suggest for its abundance at Hartlepool, but our ignorance of all matters connected with insect life is always more pronounced than our knowledge.

50. *A. immutata*, (Linn.) LESSER CREAM WAVE.

Acidalia immutata. Staint. Man., vol. ii., p. 48.

„ „ Newm. Brit. Moths, p. 80.

Leptomeris „ Meyr. Hdbk. Brit. Lep., p. 241.

LARVA. Buck., vol. vii., pl. cxix., fig. 1; O. Wils., pl. xxi., fig. 6.

This is recorded in the Twizell list as *Ptychopoda immutata*. There is no further record till 1895, when I took a single specimen at Black Hall Rocks (7th July). Since then Mr. D. Rosie has taken three at Bywell. Our district appears to be just beyond the range of this species. It is widely distributed in the southern part of Yorkshire, but Mr. Porritt gives no localities for it north of York and Scarborough.

51. *A. remutata*, Hub. CREAM WAVE.

Acidalia remutata. Staint. Man., vol. ii., p. 48.

„ „ Newm. Brit. Moths, p. 80.

Leptomeris „ Meyr. Hdbk. Brit. Lep., p. 241.

LARVA. Buck., vol. vii., pl. cxix., fig. 2; O. Wils., pl. xxi., fig. 7.

Recorded in the Twizell list, and in the Manual as occurring at Newcastle-on-Tyne. Mr. Hedworth found it commonly at Thornley, Axwell, etc.; Mr. Rhagg also got it at Thornley and Chopwell; it was once taken at Hartlepool. These are all the records that have reached me, but it is common in the adjoining counties, and will doubtless be turned up on many other places in this district.

52. *A. fumata*, Steph. SMOKY WAVE.*Acidalia fumata*. Staint. Man., vol. ii., p. 48.

" " Newm. Brit. Moths, p. 81.

Pylarge " Meyr. Hdbk. Brit. Lep., p. 244.

LARVA. Buck., vol. vii., pl. cxix., fig. 3.

More of a northern than a southern species, most frequently met with in hilly districts. It ought to be found on all the moors of both counties, more especially on the elevated moors in the west. Hitherto, however, it has been seldom seen. Mr. D. Rosie bred it from larvæ found feeding on Honeysuckle in a heathery district, and Mr. Gardner has taken the imago in Upper Teesdale. It will certainly turn up elsewhere.

53. *A. imitaria*, Hub. SMALL BLOOD-VEIN.*Acidalia imitaria*. Staint. Man., vol. ii., p. 48.

" " Newm. Brit. Moths, p. 82.

Leptomeris " Meyr. Hdbk. Brit. Lep., p. 242.

LARVA. Buck., vol. vii., pl. cxix., fig. 5; O. Wils., pl. xxi., fig. 9.

Though rather a common species where it occurs, it is more general in the South of England. In Yorkshire it is not very numerous, and only appears to reach the southern boundary of our district. Mr. Sang took it in July, 1858, near Darlington, and Dr. Lees says it is not uncommon in Upper Teesdale. The "Manual" gives Darlington and Newcastle as localities for it. The Darlington reference is confirmed by Sang's captures as above, but I have been unable to find any confirmation of the occurrence of the species at Newcastle. There is no reference to it in Stephens' Illustrations. I took a solitary specimen in Hart Lane, Hartlepool, in 1857, and one in Upper Teesdale in 1875.

54. *A. aversata*, (Linn.). RIBBAND WAVE.*Acidalia aversata*. Staint. Man., vol. ii., p. 49.

" " Newm. Brit. Moths, p. 82.

Eois " Meyr. Hdbk. Brit. Lep., p. 238.

LARVA. Buck., vol. vii., pl. cxix., fig. 7; O. Wils., pl. xxi., fig. 10.

The commonest of the genus, occurring everywhere, and generally in fair numbers. The type of the insect is that with a dark band across the forewing, from which it receives its trivial name. The variety *Spoiliata* is the nearly unicolorous form, which is certainly much commoner than the type around Hartlepool. The species is in all the lists, but I have no information whether the type or variety is most numerous, except at Jesmond, where Mr. Sticks informs me that the variety is much the commoner form. It would be interesting to know if this was the case in former years, as it would show that the band was being eliminated.

55. *A. inornata*, Haw. PLAIN WAVE.

Acidalia inornata. Staint. Man., vol. ii., p. 49.

" " Newm. Brit. Moths, p. 83.

Eois " Meyr. Hdbk. Brit. Lep., p. 238.

LARVA. Buck., vol. vii., pl. cxix., fig. 8; O. Wils., pl. xxi., fig. 11.

This species is in the Twizell list, but no recent collector in Northumberland appears to have met with it. Mr. Greenwell reports that he has taken two at Wolsingham. Mr. Sang took it at Black Hall Rocks in 1879. Though I have collected there regularly for nearly fifty years, I never met with the insect till 1888, since when I have taken it every year in small numbers. Most of my specimens have been taken on the bank behind the target, at the southern extremity of the rocks. It sits on the herbage exposed to the full glare of the sun. I have never had the opportunity of going at night. Mr. Gardner has also taken it in Hezleden Dene.

56. *A. emarginata*. SMALL SCALLOP.

Acidalia emarginata. Staint. Man., vol. ii., p. 49.

" " Newm. Brit. Moths, p. 84.

" " Meyr. Hdbk. Brit. Lep., p. 239.

LARVA. Buck., vol. vii., pl. cxix., fig. 10.

This is more a Southern than a Northern insect. Meyrick

limits its range to York, where it is not uncommon. The only record I have of its occurrence here is that Mr. Henderson took it at Jesmond, but I have no knowledge whether he got more than one—probably it was but a stray specimen.

BRADYEPETES, Steph.

57. *Bradyepetes amataria*, (Linn.). BLOOD VEIN.

Bradyepetes amataria. Staint. Man., vol. ii., p. 50.

Timandra „ Newm. Brit. Moths, p. 84.

Calothysanis amata. Meyr. Hdbk. Brit. Lep., p. 246.

LARVA. Buck., vol. vii., pl. cxx., fig. 1; O. Wils., pl. xxi., fig. 13.

This species extends to the Caledonian canal, according to Meyrick, who says it is "scarce in Scotland." It is evidently scarce in these counties also, for I have no records from recent collectors. The Manual gives Darlington as a locality, and the name is in a list of species occurring there, in Sang's handwriting, but I have failed in finding any reference to it in the Diary. It is not in the M.S. list of Cumberland species supplied me by Mr. Thwaytes, nor does it occur in Lancashire, according to Dr. Ellis, though found in several places in Cheshire. In Yorkshire, Mr. Porritt says it is scarce in the West Riding, though fairly common elsewhere. I think it will turn up in some of our localities yet, and therefore include it here on the strength of the Manual record and Sang's list only.

CABERIDÆ, Gn.

CABERA, Tr.

58. *Cabera pusaria*, (Linn.). WHITE WAVE.

Cabera pusaria. Staint. Man., vol. ii., p. 52.

„ „ Newm. Brit. Moths, p. 84.

Deilinia „ Meyr. Hdbk. Brit. Lep., p. 279.

LARVA. Buck., vol. vii., pl. cxx., fig. 2; O. Wils., pl. xxi., fig. 14.

Abundant wherever there is Birch. In all the lists.

59. *C. rotundaria*, Haw. ROUND WINGED WAVE.*Cabera rotundaria*. Staint. Man., vol. ii., p. 52.

,, ,, Newm. Brit. Moths, p. 85.

I give this separately for convenience, because Stainton does so, but there is no doubt that it is an abnormal form of *Pusaria*. It is given in the Twizell list, and the only other record I have is that Mr. Gardner has bred it occasionally. It is a form that is rarely taken at large, but may be obtained by rearing a large number of *Pusaria* from the larva. The most curious fact in connection with it is that the shape of the wing is considerably altered from that of *Pusaria*. If there were any doubts as to its distinctness they would be cleared up by the fact that Mr. Atmore, of Kings Lynn, has reared a specimen that was *Pusaria* on one side and *Rotundaria* on the other.

60. *C. exanthemaria*, Scop. COMMON WAVE.*Cabera exanthemaria*. Staint. Man., vol. ii., p. 52.

,, ,, Newm. Brit. Moths, p. 85.

Deilinia exanthemata. Meyr. Hdbk. Brit. Lep., p. 279.

LARVA. Buck., vol. vii., pl. cxx., fig. 3; O. Wils., pl. xxi., fig. 15.

A very abundant species, occurring everywhere among Willows. It is in all the lists.

MACARIDÆ, Gn.

MACARIA, Curt.

61. *Macaria liturata*, (Linn.). TAWNY-BARRED ANGLE.*Macaria liturata*. Staint. Man., vol. ii., p. 56.

,, ,, Newm. Brit. Moths, p. 88.

Opisthograptis ,, Meyr. Hdbk. Brit. Lep., p. 257.

LARVA. Buck., vol. vii., pl. cxxi., fig. 4.

A rare species in our district, but well distributed, and will, I expect, be found in most of the Fir woods in the district. It is in the Twizell list, and has been taken at Muckle Moss (see

Trans. Tyneside Nat. Field Club, vol. v., p. 9). Mr. Wailes also records it for Meldon Park and Gibside (Steph. Illust., vol. iii., p. 321). These explain the Manual record of Newcastle. Mr. Finlay never took it in Meldon Park, nor in any of the Fir woods around, which is rather strange, as he was an exceptionally good collector, and though the insect is of very retiring habits, it not unfrequently sits on tree trunks. Mr. D. Rosie took it at Dipton, Hexham, and at Alston, but I have no record from the Derwent Valley. Mr. Greenwell reported it as rare at Bishop Auckland. Mr. Sang took it near Darlington 27th June, 1869. About Hartlepool we have only taken it at Edder Acres near Thornley Station, though my first specimen was obtained at the Lighthouse here.

HALIA, Dup.

62. *Halia wavaria*, (Linn.). V. Moth.

Halia wavaria. Staint. Man., vol. ii., p. 56.

" " Newm. Brit. Moths, p. 88.

Diastictis wauvaria. Meyr. Hdbk. Brit. Lep., p. 259.

LARVA. Buck., vol. vii., pl. cxxi., fig. 5; O. Wils., pl. xxii., fig. 1.

Generally a garden insect, the larva feeding on Currant and Gooseberry, it is consequently common wherever these are grown, and is most frequently reported from town suburbs. Mr. Finlay found it common at Meldon Park; Miss Rosie at Kenton; Mr. Rhagg about Newcastle. Mr. D. Rosie not uncommon. Mr. Hedworth reported it as "common in gardens at Swalwell"; Mr. Brady "common in gardens at Sunderland"; Mr. Maddison found it at Durham; Mr. Backhouse at Darlington; Mr. G. Ross at Bishop Auckland; Dr. Lees reported it as "a pest in gardens in Upper Teesdale." It is also common in gardens about Hartlepool, and I reared a dark slate-coloured specimen from a larva found in the Nursery Gardens, West Hartlepool, now, alas, covered with houses. I have also taken it about Hezleden, but never in the Dene, though Gooseberry grows wild there in plenty.

FIDONIDÆ, Gn.

STRENIA, Dup.

63. *Strenia clathrata*, (Linn.). LATTICED HEATH.

Strenia clathrata. Staint. Man., vol. ii., p. 58.

" " Newm. Brit. Moths, p. 89.

Opisthograptis ,, Meyr. Hdbk. Brit. Lep., p. 257.

LARVA. Buck., vol. vii., pl. cxxi., fig. 6.

Rather a local species, but sometimes exceedingly numerous where it occurs. Mr. Finlay found it very local near Cambo; Mr. Rhagg got it at Bardon Mill and at Bellingham; Mr. Sticks found it "sparingly at Ebchester." Mr. Wailes recorded it for Newcastle and Tynemouth (see Steph. Illust., vol. iii., p. 303, and Stainton's Manual as above). Miss Rosie took it at Kenton, and her brother at Dinnington and Swalwell. Mr. Maling found it plentiful at Whitley, and inland at Witton-le-Wear. Mr. Brady met with it on the sea banks at Ryhope, and Mr. Sibson near Stockton. It is also in the Manual for Darlington. At Hartlepool it is abundant on the railway embankment, and in the cutting above Hart Station, and also at Black Hall Rocks and other places. It flies in the sun as well as at dusk, and is easily disturbed at any time, the females, which are much smaller than the males, are less easily disturbed. It varies greatly in the extent of the dark markings, and I once took a specimen without any cross bars. The ground colour of our examples is white, in the South it is yellow.

LOZOGRAMMA, Steph.

64. *Lozogramma petraria*, Hub. BROWN SILVER LINE.

Lozogramma petraria. Staint. Man., vol. ii., p. 59.

Panagra ,, Newm. Brit. Moths, p. 90.

Pseudopanthera ,, Meyr. Hdbk. Brit. Lep., p. 271.

LARVA. Buck., vol. vii., pl. cxxi., fig. 7.

This species is in the Twizell list, the only Northumberland record. In Durham, Mr. Brady reports it from Ryhope Dene.

I have felt doubtful about this record, as no one else has taken it on the Durham coast, and *Eubolia plumbaria*, which so much resembles it, is common there. Mr. Pickard took *Petraria* on the moors at Wolsingham, and Mr. Backhouse at Shull and Hoffall Wood. The larva feeds on common Bracken, so that the species might occur anywhere; but with us, it seems to be more of a moorland insect.

NUMERIA, Dup.

65. *Numeria pulveraria*, (Linn.). BARRED UMBER.

Numeria pulveraria. Staint. Man., vol. ii., p. 59.

„ „ Newm. Brit. Moths, p. 90.

Metrocampa „ Meyr. Hdbk. Brit. Lep., p. 281.

LARVA. Buck., vol. vii., pl. cxxii., fig. 1; O. Wils., pl. cxxii., fig. 2.

Generally a common insect, but not in these counties. Mr. Wailes met with it in Meldon Park (see Steph. Illust., vol. iii., p. 195), and gives April and June as the time of its appearance. This must be an error, as it is a single brooded species, and does not appear even in the South till quite the end of May—Stephens says June. Mr. Finlay never met with the insect in Meldon Park nor elsewhere, and I have no further notice of it in Northumberland except that the Manual gives Newcastle as a locality for it, but this probably refers to Mr. Wailes' captures. In Durham, Mr. Hedworth found it common at Thornley, but not elsewhere, and none of the recent Newcastle collectors appear to have met with it at all. Mr. Backhouse got it at Hoffall Wood. Darlington is a Manual locality, with the ! signifying it to occur regularly. Mr. Gardner and I have met with it sparingly in Hezleden Dene, and no doubt it occurs in Castle Eden Dene and other suitable localities, but it is less plentiful towards the North, and even in Yorkshire is scarce where it occurs. In fact it seems to be dying out in our district, and if it has not already disappeared from Meldon Park, Thornley Woods, etc., its most northerly habitats, its re-discovery there would be a matter of considerable interest.

MÆSIA, Steph.

66. *Mæsia belgiaria*, Hub. GREY SCALLOPED BAR.

Mæsia belgiaria. Staint. Man., vol. ii., p. 60.

Scodiona ,, Newm. Brit. Moths, p. 91.

Crocota belgiaria. Meyr. Hdbk. Brit. Lep., p. 272.

LARVA. Buck., vol. vii., pl. cxxii., fig. 2; O. Wils., pl. xxii., fig. 3.

Exclusively a moorland species, but not rare in suitable places in either county. It is recorded by Mr. Wailes as occurring at Prestwick Carr (see Steph. Illust., vol. iii., p. 151). That I suppose was before the famous locality was drained. The Manual gives Newcastle as one of its habitats, which must refer to Prestwick Carr or other moorland haunts. Mr. Bolam says, "My only capture was taken at Adderstone Hall in 1888" (Trans. Ber. Nat. Club, vol. xv., p. 300). Mr. Finlay reported it as not uncommon on the Northumberland moors. Mr. Nicholson found it on the Moors near Gilsland. In Sang's diary I find records of the larvæ being found on the Weardale moors at Wolsingham, etc. Dr. Lees says it is common on the moors of Upper Teesdale. The Durham specimens that I have seen are rather paler than others from Yorkshire moors, but I have not seen enough to warrant me in stating that this is always so.

FIDONIA, Tr.

Fidonia carbonaria is recorded in the Twizell list, but there are no details of the capture, nor were there any specimens in the collection when it was examined for me. It is a species that only occurs as British on the mountains of Perthshire, and it is scarcely likely that even a stray specimen would reach the East Coast of Northumberland. It is true there is a record of the supposed capture of a specimen on 24th April, 1856, on Ingleborough, a mountain between Yorkshire and Lancashire (see E. W. I., 10th May, 1856, vol. i., p. 44). There can be little doubt but a variety of *Atomaria* was mistaken here for *Carbonaria*, and it is more than probable that Selby fell into the same error.

67. *F. atomaria* (Linn.). COMMON HEATH.*Fidonia atomaria*. Staint. Man., vol. ii., p. 61.

" " Newm. Brit. Moths, p. 92.

Bupalus atomarius. Meyr. Hdbk. Brit. Lep., p. 265.

LARVA. Buck., vol. vii., pl. cxxii., fig. 4; O. Wils., pl. xxii., fig. 4.

Though the larva of this species does not feed exclusively on plants confined to moors and heaths, the insect is almost entirely a moorland insect, and is generally abundant in such localities. The species is given in the Twizell list. Mr. Hewitson gave Newcastle as a locality in Stephens' Illustrations (vol. iii., p. 148), but this must refer to Prestwick Carr, or some similar place near, not to the city or its immediate outskirts. Mr. Wailes in the same work says, "Heaths in plenty, Durham." Mr. Maling says, "Swarming on the moors." Mr. Rhagg, "Bardon Mill, Bellingham." Miss Rosie, "Kenton." Mr. J. A. Woodcock, "Found sparingly on the road to Hartley." Mr. Backhouse, "Shull, very common." Dr. Lees, "Abundant on all the moors in Upper Teesdale." Mr. Greenwell, "Common on the moors about Bishop Auckland." It is an exceedingly variable species, and many local races might be recognised, but being common, little interest is taken in it.

68. *F. piniaria*, (Linn.). BORDERED WHITE.*Fidonia piniaria*. Staint. Man., vol. ii., p. 61.

" " Newm. Brit. Moths, p. 92.

Bupalus piniarius. Meyr. Hdbk. Brit. Lep., p. 265.

LARVA. Buck., vol. vii., pl. cxxii., fig. 5; O. Wils., pl. xxii., fig. 5.

A day flying geometer, generally abundant where there is plenty of Scotch fir. The males fly freely in the morning sun, and are easily taken on the wing. The females need beating out. It is in the Twizell list. Mr. Finlay found it always plentiful in plantations of Scotch fir; Miss Rosie found it at Kenton, and Mr. Maling abundantly at Hexham. It is in the list in Ornsby's Durham as occurring in woods near Hoppyland,

and at Raypeth, near Flass. Mr. Backhouse found it common at Shull. Mr. Hedworth at Chopwell and Gibside. Mr. Greenwell reports it as common near Wolsingham. Dr. Lees says, "Not uncommon in Upper Teesdale." It occurs in most of the woods and denes about Hartlepool, I think most abundantly in an offshoot of Castle Eden Dene near Shotton, where it is a pretty sight to see the males on the wing on a fine sunny morning. Southern examples of this insect have a yellow ground in the male, those occurring here are white. The female is yellow in both cases, but ours are more dingy than specimens from the South.

69. *F. brunneata*, Steph. RANNOCK GEOMETER.

Fidonia brunneata. Staint. Man., vol. ii., p. 62.

„ *pinetaria*. Newm. Brit. Moths, p. 93.

Diastictis brunneata. Meyr. Hdbk. Brit. Lep., p. 258.

LARVA. Buck., vol. vii., pl. cxxii., fig. 6.

The only place whence this local species has been recorded is Muckle Moss, Northumberland (see Trans. Tyneside Nat. Field Club, vol. v., p. 9). It is generally considered to be a purely Scotch insect, occurring chiefly in Perthshire, but there does not appear to be anything impossible in its occurrence in North Northumberland. It is a very distinct species, and I understand the late Mr. Wailes, Mr. V. R. Perkins, and others, agreed on the attribution. I therefore admit the species here, and call attention to the desirability of the record being confirmed. The larva is said to feed on *Pinus sylvestris* and *Vaccinium*.

ASPILATES, Tr.

70. *Aspilates strigillaria*, Hub. GRASS WAVE.

Aspilates strigillaria. Staint. Man., vol. ii., p. 63.

„ „ Newm. Brit. Moths, p. 97.

Crocota „ Meyr. Hdbk. Brit. Lep., p. 272.

LARVA. Buck., vol. vii., pl. cxxiii., fig. 4.

I have not been able to satisfy myself of the correct distribution of this species in the North of England. It appears to be fairly common on the west side, as least as far north as Carlisle. Mr. Meyrick says it extends to Ross and Moray in Scotland. If that be so, it is curious it should not occur freely with us. It is only recorded from four localities in Yorkshire, in one of which, at least, it is very rare. I would assume it reached its north-eastern limits in Yorkshire, but for Mr. Meyrick's statement. The only notice I have of its occurrence with us is that Mr. Backhouse recorded it (under the name of *Respersaria*) as being found at Shull. It is a likely enough locality, but the record was made 40 or 50 years ago, and it is certainly desirable we should know if it still occurs there. The larva feeds on Broom. Can the collectors in the Derwent Valley not turn it up?

ZERENIDÆ.

ABRAXAS, Leach.

71. *Abraxas grossulariata*, (Linn.). LARGE MAGPIE.

Abraxas grossulariata. Staint. Man., vol. ii., p. 66.

" " Newm. Brit. Moths, p. 98.

" " Meyr. Hdbk. Brit. Lep., p. 267.

LARVA. Buck., vol. vii., pl. cxxiv., fig. 1; O. Wils., pl. xxii., fig. 7.

This species of course is abundant everywhere, and the name appears in all the lists. A specimen with the ground colour deep yellow was taken at Byers Green by the late Thomas Hann. Mr. J. P. Taylor took one at Throston, Hartlepool, in which the forewings were nearly all black. I once found on some Gooseberry bushes that had run wild in West Hartlepool Cemetery some 300 pupæ of this insect. From these I bred some very curious varieties, including one with bone-coloured ground, one so slightly scaled that it looked transparent, one much darker on one wing than the other, etc. I endeavoured to pair the bone-coloured one with an ordinary male, but they would not pair, and she sat absolutely without moving. I have no doubt she was diseased in some way. Many years

ago my brother found at Wideopen, near Newcastle, a race of nearly black larvæ of this species. One of these is figured in Morley's Illustrations (*Abraxas*, pl. iv., fig. 6 and 7), but it had evidently commenced to contract for pupation, and the figure appears to be badly drawn. They only produced the most ordinary form of the imago. I isolated some of the darkest of these larvæ, paired the imagines, and the larva produced were nearly all absolutely black, no trace of either white or yellow. This is one of the most variable of the Lepidoptera, and wonderful forms may be seen in large collections, but it is evident the tendency to variation of this Wideopen race was confined to the larvæ. Since my brother found them they have been noticed in many places on both sides of the Tyne and about Sunderland. It is the only species I know of in which the melanic tendency in the Lepidoptera of to-day appears in the larva. I have not heard of the occurrence of these dark larvæ outside our own counties.

72. *A. ulmata*, Fab. CLOUDED MAGPIE.

Abraxas ulmata. Staint. Man., vol. ii., p. 66.

„ „ Newm. Brit. Moths, p. 100.

„ *sylvata*. Meyr. Hdbk. Brit. Lep., p. 268.

LARVA. Buck., vol. vii., pl. cxxiv., fig. 2; O. Wils., pl. xxii., fig. 8.

Well distributed through both counties, and occurring, generally in some abundance, in all the woods and denes where there is plenty of Elm. Mr. Hewitson took it in the early part of the century at Meldon Park, Gibside, Dinsdale Woods, &c. (see Steph. Illust., vol. iii., p. 246). Mr. Finlay recorded it for all the woods about Morpeth; Miss Rosie found it at Kenton; and Mr. Henderson at Jesmond. Mr. Hedworth and others got it at Chopwell, Thornley, Gibside, and generally along the valley of the Derwent. Mr. Backhouse took it at Hoffall Wood and at Shotley; Mr. W. Procter, jun., found it "in great profusion" around Durham (Ent. W. Int., vol. i., p. 150). Mr. Wailes in his address to the members (Trans., vol. v., p. 9) mentions having taken one in Castle Eden Dene

which approached *Pantaria*. *Ulmata* is abundant in this Dene, and varies very little, these paler forms being very rare. My wife took one of them which is figured in Mosley's Illustrations (*Abraxas*, pl. 6, fig. 1) as the British form of *Pantaria*. *Ulmata* is equally plentiful in Hezleden Dene but I have never seen a striking variety there. After a cold May the dark spots are larger, and a series of them is noticeably darker than a similar series after a warm spring. *Ulmata* appears to change its headquarters in the Dene every few years, and will then almost disappear from that part of the wood where it formerly abounded. Suffused specimens of this insect occur in some of the Yorkshire woods, but I have heard of none in our district.

LOMASPILIS, Hub.

73. *Lomaspilis marginata*, (Linn.). CLOUDED BORDER.

Lomaspilis marginata. Staint. Man., vol. ii., p. 67.

" " Newm. Brit. Moths, p. 101.

Abraxas " Meyr. Hdbk. Brit. Lep., p. 268.

LARVA. Buck., vol. vii., pl. cxxiv., fig. 4; O. Wils., pl. xxii., fig. 9.

This pretty little species is common in all mixed woods in both counties. It is an exceedingly variable species, as may be seen from the figures in Newman's work. Besides these and all intermediate forms I have taken specimens in Hezleden Dene, where the darker markings were pale golden brown, but the most striking variety I have met with had the fringes and a narrow edge round both wings pure white.

HYBERNIDÆ, Gn.

HYBERNIA, Latr.

74. *Hybernia rupicapraria*, W.V. EARLY MOTH.

Hybernia rupicapraria. Staint. Man., vol. ii., p. 70.

" " Newm. Brit. Moths, p. 102.

Theria " Meyr. Hdbk. Brit. Lep., p. 273.

LARVA. Buck., vol. vii., pl. cxxv., fig. 1; O. Wils., pl. xxii., fig. 10.

Though I have few records of the occurrence of this species, I have little doubt but it is common in all parts of the district; indeed, the records I give cover both counties. Appearing in January and February, when the weather is seldom favourable for collecting, and only enthusiasts are looking for Lepidoptera, it may easily be plentiful and yet escape notice. Mr. Finlay recorded it as abundant everywhere in his district. Mr. D. Rosie got larva near Prudhoe and at Callerton. Mr. Hedworth found it common at Gibside, Thornley, etc.; Mr. Ross got it plentifully at Bishop Auckland. The Manual gives Newcastle as a place where it occurs, and Darlington as one where it occurs regularly. It is not uncommon on lamps on the outskirts of Hartlepool, and often enters Railway Signal Cabins. I have also found it on palings and tree trunks, and under sleepers lying on the railway embankment. It does not seem to be affected much by ordinary cold. I have had it emerge in a room where there was no fire, during a severe frost, and I have seen it paired when snow was on the ground, but outside it disappears during intense frost, to reappear as plentiful as ever when a thaw comes. This species has a very close superficial resemblance to *Aleucis pictaria*.

75. *H. leucophearia*, W.V. SPRING USHER.

Hybernia leucophearia. Staint. Man., vol. ii., p. 70.

" " Newm. Brit. Moths, p. 103.

" " Meyr. Hdbk. Brit. Lep., p. 275.

LARVA. Buck., vol. vii., pl. cxxv., fig. 2.

Recorded from few places in either county. Mr. Finlay only found it in the Old Park, Netherwitton, and not commonly there. Mr. Henderson once took it at Jesmond, and Mr. Wailes recorded it for Newcastle in Stephens' Illustrations (vol. iii., p. 152). Mr. Hedworth met with it at Thornley and Gibside. Dr. Lees took it in April in Upper Teesdale; and the late Mr. Soutter told me he had seen it in the Bishops Park at Bishop Auckland, but the Auckland collectors do not appear to have met with it. We never see it around Hartlepool.

76. *H. aurantiaria*, Hub. SCARCE UMBER.*Hybernia aurantiaria*. Staint. Man., vol. ii., p. 70.

" " Newm. Brit. Moths, p. 103.

" " Meyr. Hdbk. Brit. Lep., p. 275.

LARVA. Buck., vol. vii., pl. cxxv., fig. 3.

Appearing late in autumn, not in early spring, this species is generally scarcer than others of the genus. It is in the Twizell list as *Prosapiaria*; Mr. Finlay found it common in the Old Park, Netherwitton, but not elsewhere in his district. Mr. Henderson got it at Jesmond, and Newcastle is a "Manual" locality. Mr. Hedworth recorded it for Thornley and Gibside without comment, but in another communication he said, "One male at Thornley," from which I assume the species was certainly not common; Mr. Rhagg, however, has also met with it there. Darlington is a "Manual" locality, with the !, implying that it occurred there regularly, but the present collectors there give no information, and the only entry in Sang's Diary is "Lamps, Darlington (date torn), 1853." I am inclined to think the insect is considerably affected by meteorological conditions. I resided at West Hartlepool for five years, and during that time passed regularly by the Cemetery there. For two or three consecutive nights in the autumn of 1879, which were unusually dark, warm, and soft, I found the males sitting in some numbers on the lamps there; the weather changed, and I never saw another. Mr. Gardner never took it about Hartlepool, but he found it "not very common" in Upper Teesdale.

77. *H. progemmaria*, Hub. DOTTED BORDER.*Hybernia progemmaria*. Staint. Man., vol. ii., p. 70.

" " Newm. Brit. Moths, p. 104.

" *marginaria*. Meyr. Hdbk. Brit. Lep., p. 225.

LARVA. Buck., vol. vii., pl. cxxv., fig. 4; O. Wils., pl. xxii., fig. 11.

Common everywhere, and in all the lists. In the older records it is called *Capreolaria*. A dark unicolorous variety

(*Fuscata*, Mosley), is not uncommon. The ♀ has wings better developed than others of the genus, and this dark variety is found in the female also.

78. *H. defoliaria*, (Linn.). MOTTLED UMBER.

Hybernia defoliaria. Staint. Man., vol. ii., p. 71.

„ „ Newm. Brit. Moths, p. 104.

„ „ Meyr. Hdbk. Brit. Lep., p. 275.

LARVA. Buck., vol. vii., pl. cxxv., fig. 5; O. Wils., pl. xxii., fig. 12.

This is generally abundant throughout the district, but more plentiful inland than near the sea. It is in the Twizell list; Mr. Finlay found it plentiful in the Old Park, Netherwitton; Mr. Henderson and Mr. Rhagg got it at Jesmond; and Mr. D. Rosie says "larvæ common along the Tyne Valley, on Oak, Hazel, Whitethorn, Birch, etc." Mr. Hedworth also says "larvæ abundant in the woods at Thornley and Gibside." Mr. Corder found *Defoliaria* in Horden Dene; Mr. Backhouse met with it at Darlington; where Mr. Sang took it at lamps in 1853. Mr. Ross has found two at Bishop Auckland. Mr. Gardner met with it at Eggleston, and we took one in Hezleden Dene in November, 1873, the only imago I have seen here. It is also in the list in Ornsby's "Durham." *Defoliaria* is an exceedingly variable species, and very fine forms may be obtained by breeding.

ANISOPTERYX, Steph.

79. *Anisopteryx æscularia*, W.V. MARCH MOTH.

Anisopteryx æscularia. Staint. Man., vol. ii., p. 71.

„ „ Newm. Brit. Moths, p. 105.

Erannis „ Meyr. Hdbk. Brit. Lep., p. 252.

LARVA. Buck., vol. vii., pl. cxxvi., fig. 1.

This would appear, from the paucity of records, to be much rarer than the other winter moths, but is a common and well distributed species, and will no doubt be found in many localities where it has not yet been observed. Mr. Finlay

alone, of the Northumberland collectors, has recorded its occurrence, and he only met with it in Meldon Park, where it was far from common. Mr. Hedworth took it at Gibside and Thornley, but always very sparingly; Mr. Stock also found it there both as larva and imago; at South Shields Mr. Stephenson has met with it, and at Hartlepool I took a single specimen in April, 1874, on the Cemetery palings. This is the only imago I have seen here, but I have beaten the larva off hedges more than once. The ♀ is very slender bodied, entirely without wings, but easily recognised by having a small brush or tuft of hairs on the anal segment.

LARENTIDÆ, Gn.

CHEIMATOBIA, Steph.

80. *Cheimatobia brumata*, (Linn.). WINTER MOTH.

Cheimatobia brumata. Staint. Man., vol. ii., p. 76.

Chimatobia „ Newm. Brit. Moths, p. 106.

Operophtera „ Meyr. Hdbk. Brit. Lep., p. 222.

LARVA. Buck., vol. vii., pl. cxxvi., fig. 2; O. Wils., pl. xxiii., fig. 1.

Very abundant all the winter everywhere. It emerges as early as October or November, and continues to appear till January. The male is plentiful on gas lamps, in the outskirts of towns, or on the oil lamps of country railway stations, on house windows, etc., or may be seen flitting about the leafless hedges at dusk searching for the wingless female. Like *Rupicaprararia* it seems almost impervious to cold, and I have seen it on the wing in comparatively severe weather. The female, being wingless, is not so easily found, but may be got in any number by breeding.

81. *C. boreata*, Hub. NORTHERN WINTER MOTH.

Cheimatobia boreata. Staint. Man., vol. ii., p. 76.

Chimatobia „ Newm. Brit. Moths, p. 108.

Operophtera „ Meyr. Hdbk. Brit. Lep., p. 222.

LARVA. Buck., vol. vii., pl. cxxvi., fig. 3; O. Wils., pl. xxiii., fig. 2.

More of a northern species than the preceding, and not nearly so common. Mr. Finlay found it in the Old Park, Netherwitton; and Miss Rosie reared it from larvæ found at Bellingham on Birch. In Durham, Mr. Sang, who met with it near Darlington, is the only collector I know of who has taken it. It is probably often passed over as *Brumata*, but may be distinguished from that species by being rather larger, rather lighter in colour, the forewings rather more pointed, and the markings thereon rather more distinct. It also appears earlier, and is almost over before *Brumata* emerges. It should be looked for in October where there is plenty of Birch, and will be found yet in many places in both counties.

OPORABIA, Steph.

Considerable diversity of opinion obtains as to the number of species we should recognise under this genus, and it will be more convenient to refer to this here than under each species. The authorities to which I refer differ widely. Stainton gives three species, Newman two, and Meyrick only one, whilst others have endeavoured to introduce one or more additional species. The facts are as follows. *Dilutata* is a common insect over the whole of Britain, appearing in the perfect state in October and November. In these months it may be beaten out of every hedge, and found in every wood. The larvæ appear to be most numerous on Hawthorn, but are by no means confined to it. It is the largest of the genus, and a dark suffused form is not uncommon. *Filigrammaria* is a northern species, appearing on moors and heaths in August. The larvæ feed on Ling (*Calluna vulgaris*), and differ considerably from those of *Dilutata*. The imago is smaller, more glossy, and those I have taken have been more distinctly banded, though this does not appear always to be the case. It is on the wing in August and early September, *Dilutata*, as already said, in October and November. About the distinctness of these two there should not be the shadow of a doubt. *Autumnaria* is rather more difficult to differentiate. It is closely allied to *Filigrammaria*,

but emerges a little later, and the larvæ appear to have a preference for Birch. It may be that from the Ling-feeding *Filigrammaria* a new race is being formed, spreading to the Birch woods on the moor borders, and assuming a different appearance in its newer abode and from its altered food. With reference to its distinctness from *Dilutata*, the late Mr. Gregson pointed out a striking difference of habit. Both species rest at times on tree trunks. "*O. dilutata*," says Mr. Gregson, "flies off the tree boles rapidly, and generally flies upwards. *O. autumnata* is one of the most sluggish flyers. An old friend once observed to me, 'Nay, do not hurry, *Autumnata* will not go fast or far,'" (Zool., 1859, 6348). *Autumnata* is much commoner than it was forty years ago, and though still chiefly a northern insect, it has been taken by Major Robertson at Swansea. All three have been taken in our counties, and I trust more attention will now be given to the genus among our local collectors.

82. *Oporabia dilutata*, W.V. NOVEMBER MOTH.

Oporabia dilutata. Staint. Man., vol. ii., p. 77.

" " Newm. Brit. Moths, p. 108.

Asthena " Meyr. Hdbk. Brit. Lep., p. 224.

LARVA. Buck., vol. vii., pl. cxxvi., fig. 4; O. Wils., pl. xxiii., fig. 3.

Dilutata is in the Twizell list, and is given in Stephens' Illustrations (vol. iii., p. 274) as occurring commonly at Newcastle, Meldon Park, etc. Mr. Finlay found it everywhere plentiful in October and November; Mr. Henderson took it at Jesmond, and generally about Newcastle, as did Mr. Rhagg and others. Mr. D. Rosie found larvæ on various trees at Prudhoe, Kenton, and elsewhere. Mr. Hedworth recorded it as very abundant about Thornley and Gibside; Mr. Backhouse took it at Shull; Mr. Ross found it very common at Bishop Auckland; Dr. Lees got it plentifully in Upper Teesdale, where he also met with the dark variety. About Hartlepool it is always common in October, and we also take the dark suffused form regularly. These are often larger than the type.

83. *O. autumnaria*, Bdv. (?)

Oporabia autumnaria. Staint. Man., vol. ii., p. 77.

LARVA. Buck., vol. viii., pl. cxlvii., fig. 7.

Stainton's Manual is the only one of the authorities to which I refer that recognises this as a distinct species. Newman never mentions it at all, though the figure given as a pale variety of *Dilutata* has almost certainly been taken from a specimen of *Autumnaria*. Meyrick gives the name as a mere synonym of the preceding species, and gives *Filigrammaria* as a synonym also, which is quite inexcusable. The only records I have of its occurrence here that are reliable are that Mr. Gardner took it near Coxhoe Hall, and both he and I have met with it occasionally in Hezleden Dene. It should be looked for in September in Birch woods at a considerable elevation, and will doubtless be found more generally when properly searched for.

84. *O. filigrammaria*, H.S. AUTUMNAL MOTH.

Oporabia filigrammaria. Staint. Man., vol. ii., p. 77.

„ „ Newm. Brit. Moths, p. 109.

LARVA. Buck., vol. vii., pl. cxxvi., fig. 5.

A common moorland species, the larva feeding on Ling (*Calluna vulgaris*). Strange to say Mr. Finlay never met with it on the Greenleighton or other moors in his district. Miss Rosie, however, took it about Kenton, and Mr. Henderson found it at Jesmond. In 1875 Mr. Maling took three specimens at light in Newcastle. It is common on the Durham moors. I have taken it in great abundance on Cotherstone Moor, and both Dr. Lees and Mr. Gardner have found it in plenty on other moors in Upper Teesdale. Mr. Meyrick does not separate it at all from *Dilutata*, giving the name merely as a synonym, and does not appear to know that the larva of this species feeds on Ling, which he does not include in his list of food plants.

LARENTIA, Tr.

85. *Larentia didymata*, (Linn.). TWIN-SPOT CARPET.*Larentia didymata*. Staint. Man., vol. ii., p. 78.

" " Newm. Brit. Moths, p. 109.

Zanthorhoe " Meyr. Hdbk. Brit. Lep., p. 228.

LARVA. Buck., vol. vii., pl. cxxvii., fig. 1; O. Wils., pl. xxiii., fig. 4.

An abundant species everywhere.

86. *L. multistrigaria*, Haw. MOTTLED GREY.*Larentia multistrigaria*. Staint. Man., vol. ii., p. 78.

" " Newm. Brit. Moths, p. 110.

Xanthorhoe " Meyr. Hdbk. Brit. Lep., p. 228.

LARVA. Buck., vol. vii., pl. cxxvii., fig. 2; O. Wils., pl. xxiii., fig. 5.

This species is widely distributed, and probably occurs wherever the food plant *Galium verum* (Yellow Bed-straw) is plentiful. The imago, however, emerges early in the year, being on the wing in March, and it does not therefore fall in the way of those who wait for fine weather to commence operations, hence records are few. "Taken in one or two localities near Berwick, and probably not rare. It was abundant in the moors at Alwinton in April, 1894," G. Bolam (Trans. Ber. F. Club, vol. xv., p. 300). Mr. Finlay found it plentifully in the Old Park, Netherwitton, and elsewhere. Mr. Hedworth took it at Thornley; Mr. Sang at Waskerley; Mr. Gardner in Upper Teesdale; and Mr. Brady at Castle Eden Dene. It is very abundant at Hartlepool, both on the sand-hills and on the railway embankments. The imago sits on palings on the railway side, always low down among the herbage.

87. *L. cæsiata*, W.V. GRAY MOUNTAIN CARPET.*Larentia cæsiata*. Staint. Man., vol. ii., p. 78.

" " Newm. Brit. Moths, p. 110.

Hydriomena " Meyr. Hdbk. Brit. Lep., p. 215.

LARVA. Buck., vol. vii., pl. cxxvii., fig. 3; O. Wils., pl. xxiii., fig. 6.

Common on the higher moors of both counties. "Rothley Craggs, and on the moors north of Greenleighton," J. Finlay; "Moors near Blanchland," J. S. Brady; "Shull, Place Fell, and St. John's," W. Backhouse; "Abundant on faces of limestone and trap rocks at Widdy Bank, Highfield, Eggleston Fell, etc., etc.," F. A. Lees; "Rare near Hamsterley," J. Greenwell; "Common on the moors in Teesdale. One worn specimen close to Hezleden Dene in August, 1897—probably brought from the west on a coal truck," J. Gardner. I searched in vain for this species on Cotherstone Moor, but found it very abundant on the fells beyond Cauldron Snout. There is a good deal of bare surface rock there, with very little vegetation. *Casiata* was sitting about everywhere. Heavy rain had fallen, and little pools were all over the flat rocks. In these were hundreds of drowned *Casiata* floating on the water.

88. *L. flavicinctata*, Gn. YELLOW-RINGED CARPET.

Larentia flavicinctata. Staint. Man., vol. ii., p. 78.

„ *ruficinctata*. Newm. Brit. Moths, p. 111.

Hydriomena flavicinctata. Meyr. Hdbk. Brit. Lep., p. 215.

LARVA. Buck., vol. vii., pl. cxxvii., fig. 4.

Stainton's Manual gives Newcastle as a locality for this species, which must refer to some of the Northumberland moors, but none of the recent collectors appear to have met with it. Dr. Lees writes, "Not uncommon on Heather at night. If *Saxifraga granulata* be its food plant, it is abundant on the banks about Middleton-in-Teesdale." This species should be looked for on some of the higher moors where *Saxifragas* abound. The larva does not confine itself to one species. Stainton gives *Saxifraga granulata* and *hypnoides*, and Meyrick gives *airoides*. The imago appears in July.

89. *L. salicaria*, Hub. STRIPED TWIN-SPOT.*Larentia salicaria*. Staint. Man., vol. ii., p. 79.,, *salicata*. Newm. Brit. Moths, p. 111.*Xanthorhoe* ,, Meyr. Hdbk. Brit. Lep., p. 231.

LARVA. Buck., vol. vii., pl. cxxvii., fig. 5.

A very rare and local species. It is in the Twizell list; Mr. Finlay found it very sparingly in Coal Law Wood; Mr. Sang got it in the neighbourhood of Darlington; and Mr. Gardner got it in Upper Teesdale, though not commonly. It will doubtless be found elsewhere.

90. *L. olivaria*, Hub. BEECH GREEN CARPET.*Larentia olivaria*. Staint. Man., vol. ii., p. 79.,, *olivata*. Newm. Brit. Moths, p. 112.*Xanthorhoe* ,, Meyr. Hdbk. Brit. Lep., p. 231.

LARVA. Buck., vol. vii., pl. cxxvii., fig. 6.

Fairly common and well distributed in both counties, but does not appear to occur near the sea. Mr. Bolam says, "My only specimen is from Adderston Hall, where Mr. John Bruce had several specimens in 1884. Selby records it from Twizell, which adjoins Adderton" (Tran. Ber. F. Club, vol. xv., p. 300). Mr. Finlay found it in Coal Law Wood and elsewhere, always local, but not rare where it occurred; Miss Rosie took it at Kenton, her brother bred it from pupæ taken near Alston, and got the perfect insect at Stocksfield, and near Dalton, by Ponteland. Mr. Maling met with the species in Chopwell Wood in July, 1875; Mr. Hedworth at Gibside and Thornley; Mr. Backhouse at Shotley; Mr. Sang in Coniscliffe Lane, near Darlington, in July, 1854; Mr. Ross and Mr. Greenwell both found it about Bishop Auckland, "fairly common," and Mr. Gardner got it in Upper Teesdale, "not common." We never got it around Hartlepool, and it will be noticed there are no localities given that approach the coast.

91. *L. miaria*, Hub. GREEN CARPET.*Larentia miaria*. Staint. Man., vol. ii., p. 79.,, *pectinitaria*. Newm. Brit. Moths, p. 112.*Xanthorhoe viridaria*. Meyr. Hdbk. Brit. Lep., p. 232.

LARVA. Buck., vol. vii., pl. cxxvii., fig. 7; O. Wils., pl. xxiii., p. 7.

Generally distributed and no doubt plentiful in most or all woods, but I have comparatively few records. Mr. Finlay found it in all the woods he collected in, and always common; Miss Rosie got it at Kenton, where I also took it freely many years ago; her brother took it at Brunton, and more numerous in Dipton Wood; Mr. Henderson found it at Jesmond. Mr. Hedworth met with it abundantly about Gibside, Thornley, Chopwell, and other woods in that district. Mr. Greenwell found it rarely in the woods about Bishop Auckland. At Hartlepool it may be taken regularly on tree trunks in the denes and woods, and also on the wing. It is a lovely insect when fresh, but like all green insects it quickly loses its colour.

EMMELESIA, Steph.

92. *Emmelesia affinitata*, Steph. RIVULET.*Emmelesia affinitata*. Staint. Man., vol. ii., p. 80.

,, ,, Newm. Brit. Moths, p. 113.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 219.

LARVA. Buck., vol. viii., pl. cxxviii., fig. 1.

This pretty species ought to occur in all the woods and denes where *Lychnis diurna* (Red Lychnis) grows freely, but the records I have met with are not very numerous. The *Rivulata* of the Twizell list is probably this species, though the name has also been applied to the next. Mr. Patterson found it at Ebchester; Mr. Wailes recorded it from Meldon Park in Stephens' Illustrations (vol. iii., p. 297). Mr. Finlay did not meet with it there, though he found the next freely. Mr. Rosie took a few at Stocksfield. In Durham records are equally few.

Mr. Backhouse took it in Hoffall Wood; the "Manual" gives Darlington and Newcastle. Mr. Lofthouse took it at Greatham. We find it regularly but never abundantly in Castle Eden and Hezleden Denes, and breed it from the seed capsules of the food plant. I never saw the imago on tree trunks, and never beat it out from trees or shrubs. It probably hides during the day in the low herbage or among the *Lychnis*, which may explain why it is seldom recorded, as many of our woods are not accessible for night collecting.

93. *E. alchemillata*, (Linn.). SMALL RIVULET.

- Emmelesia alchemillata*. Staint. Man., vol. ii., p. 80.
 " " Newm. Brit. Moths, p. 113.
Hydriomena " Meyr. Hdbk. Brit. Lep., p. 219.

LARVA. Buck., vol. viii., pl. cxxviii., fig. 2.

Like the last, a retiring species, not sitting on trees or other exposed situations, consequently less frequently noticed. Mr. Bolam says, "Not uncommon about the end of June along the sea-banks north of Berwick, and I have noticed it in plenty at Coldingham, and amongst the Cheviots at Langleyford" (Trans. Ber. Field Club, vol. xv., p. 300). Mr. Finlay recorded it as not scarce in Meldon Park; Mr. Patterson took it at Ebchester; Mr. Hedworth met with it at Thornley, Chopwell, &c. It is in the Manual list both for Newcastle and Darlington, and marked at both as occurring regularly. We got it in Castle Eden and Hezleden Denes, though not so plentifully as its larger relation.

94. *E. albulata*, W.V. GRASS RIVULET.

- Emmelesia albulata*. Staint. Man., vol. ii., p. 81.
 " " Newm. Brit. Moths, p. 114.
Hydriomena " Meyr. Hdbk. Brit. Lep., p. 220.

LARVA. Buck., vol. viii., pl. cxxviii., fig. 3.

Though I have few records of the occurrence of this species, I have no doubt it is common in both counties wherever the food plant, *Rhinanthus Crista-galli* (Yellow rattle), is found, and that grows almost everywhere. Mr. Bolam says, "Occurs along with the last, upon our sea banks, but perhaps less frequently. I have also seen it at Langleyford" (Trans. Ber. Field Club, vol. xv., p. 300). Mr. Finlay reported it as generally distributed and common in all parts of his district. Mr. Hedworth got it plentifully in all parts of the Derwent Valley, and other collectors there find it common also. Mr. Greenwell took it commonly about Bishop Auckland, and Mr. Sang took it at Dinsdale near Darlington on 3rd June, 1858. About Hartlepool it is very abundant. It flies late in the afternoon, and I have seen the males assemble in hundreds where there was a newly emerged female, sitting all around on the grass stems like little white flags, or fluttering round, although she had already found a partner. It was a sight not to be forgotten. It is easily disturbed at any time, when it will fly a short distance and settle again.

95. *E. decolorata*, Hub. SANDY CARPET.

Emmelesia decolorata. Staint. Man., vol. ii., p. 81.

" " Newm. Brit. Moths, p. 114.

Hydriomena " Meyr. Hdbk. Brit. Lep., p. 219.

LARVA. Buck., vol. viii., pl. cxxviii., fig. 4; O. Wils.,
pl. xxiii., fig. 8.

Widely distributed but very local, and not abundant where it occurs. It is in the Twizell list; Mr. Finlay found it in Meldon Park, but never common; Mr. Rhagg took it about Newcastle. These are all the Northumberland records. The Bishop Auckland collectors report it as fairly common in their district. Mr. Gardner says, "Hezleden Dene, not unfrequent." I have taken it there, and also in lanes, &c., about the town almost always singly. I have no doubt it occurs in many other parts of both counties.

96. *E. tæniata*, Steph. BARRED CARPET.*Emmelesia tæniata*. Staint. Man., vol. ii., p. 81.

" " Newm. Brit. Moths, p. 114.

Hydriomena " Meyr. Hdbk. Brit. Lep., p. 218.

This insect was first recorded in our district by Mr. J. C. Dale, who found it in Castle Eden Dene (see Entom. xxviii., p. 141). It was not seen again for some years, but I am informed by Mr. C. Eales that Mr. Wailes was one day collecting there, and he found a small light coloured moth flying in great abundance in all parts of the Dene. He concluded it was *Albulata*, and without examining them he boxed one or two only. On reaching home he found they were this rare species. He returned to the Dene next day, and many times subsequently, but never saw another. Often as I have collected in the Dene I have never taken it. In 1895 and 1896 the proprietor of the Dene, Major Burdon, was good enough to give me a pass for the season that I might find this species, and I went repeatedly on what I thought were suitable days, but it was all in vain. The only other collector who has taken it is Dr. F. A. Lees, who got it at Cross Fell in Teesdale, and at the top of Alston Moor. The "Ne" of the Manual refers to the specimens taken by Mr. Wailes.

97. *E. unifasciata*, Haw. HAWORTH'S CARPET.*Emmelesia unifasciata*. Staint. Man., vol. ii., p. 81.

" " Newm. Brit. Moths, p. 115.

Hydriomena " Meyr. Hdbk. Brit. Lep., p. 218.

LARVA. Buck., vol. viii., pl. cxxviii., fig. 5.

Meyrick says of this species "not uncommon, but overlooked." I believe I was the first to take it in our counties, and I used to take it in 1856 and successive years. I got them on palings by the railway side at the foot of Hart Lane, or in the lane itself flying about the hedge. Mr. Sang named it for me, mine being the first specimens he had ever seen. He

subsequently took it himself on the railway at Darlington on July 24th, 1864. When I ceased to collect at random, I ceased to take *Unifasciata*, and have not met with it again. Mr. Gardner and other Hartlepool collectors got it in the same place, but no one takes it now, and I have no other records. It is not recorded for Yorkshire.

98. *E. ericetaria*, Curt. HEATH RIVULET.

- Emmelesia ericetaria*. Staint. Man., vol. ii., p. 81.
 „ *ericetata*. Newm. Brit. Moths, p. 115.
Hydriomena minorata. Meyr. Hdbk. Brit. Lep., p. 218.

Mr. Bolam is the only collector who has met with this pretty little rivulet. He took it in the valley at Langleyford, amongst the Cheviots. The larva feeds on Eyebright, and it might occur on heaths in the west of either county. It should be looked for in June.

99. *E. blandiata*, W.V. PRETTY PINION.

- Emmelesia blandiata*. Staint. Man., vol. ii., p. 82.
 „ „ Newm. Brit. Moths, p. 116.
Hydriomena adæquata. Meyr. Hdbk. Brit. Lep., p. 218.

LARVA. Buck., vol. viii., pl. cxxviii., fig. 6.

I took a single specimen of this rare insect on the railway side behind the ropery on 1st June, 1874. The larva feeds on *Euphrasia officinalis* (Eyebright), which is very plentiful a mile or two from where I captured the insect. This little sheltered nook close to the town has produced a considerable number of rare species, generally only single stray specimens like the present. This species is best known in Scotland, but it occurs regularly in the Lake district, and in a few other places.

EUPITHECIA, Curt.

This large genus has not received the attention it deserves from the collectors of Northumberland and Durham. About fifty species are recognised as British, and there are at least half-a-dozen named varieties that some have considered worthy of specific rank. The great similarity in some of the imagines, their dull coloration and indistinct markings, and consequent difficulty of naming except when in the finest condition, have combined to render the group unattractive. Nearly three-quarters of the British species are enumerated below, but it will be observed some of them rest on single records only. I have most carefully investigated all doubtful claims, and if I have erred it is in being too particular. In many cases I have seen the specimens, and as it is often extremely difficult and sometimes impossible to be certain of the name of a worn pug, I have passed over all doubtful insects. My friend, Mr. Gardner, has given me very able assistance with the group, and has taken much trouble in examining specimens, and comparing them with those in his own collection. Several melanic forms have also been submitted to Mr. Barrett and Mr. Porritt.

It will be observed that there are no references to Stainton's "Manual" for several of the species. The second volume of that work was completed and published in 1859. Shortly afterwards the Rev. H. Harper Crewe undertook the investigation of the genus, and reared nearly all the pugs from the egg. In doing this he found it necessary to introduce several additional species. Some of them had been previously known under a wrong name; some, considered variable, were found to be two distinct species, and others were either new to Britain or new to science. These, added to our fauna after the publication of the Manual, could not, of course, be included in that work. Where it has appeared advantageous I have referred more fully to these investigations and discoveries under their respective heads.

I would strongly urge upon our local collectors to give more attention to the pugs, and especially to increase their know-

ledge of their earlier stages. Many that are rare in the perfect state are comparatively easy to find as larvæ. Most of them feed on flowers or seeds, often quite exposed, and require very little attention to bring them to maturity. It will be found that some, very closely allied as imagines, are very distinct as larvæ; while others, very similar as larvæ, are widely different as perfect insects.

100. *Eupithecia venosata*, Fab. NETTED PUG.

Eupithecia venosata. Staint. Man., vol. ii., p. 83.

" " Newm. Brit. Moths, p. 118.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 186.

LARVA. Buck., vol. viii., pl. cxxix., fig. 1; O. Wils., pl. xxiv., fig. 1.

This very pretty and distinct species has been seldom taken in our district. It is, no doubt, an insect of very retiring habits, but I see no cause for its apparent scarcity here, and expect it will be found much commoner than appears at present. Mr. D. Rosie took a single specimen at Stocksfield. Darlington is a "Manual" locality, but I do not know on what authority. Mr. Gardner and I have taken single specimens at Hartlepool, on the railway side behind the Ropery, and elsewhere, where there was an abundance of *Silene inflata*, but we never found the larva, and I do not think the species is established about Hartlepool. The last I took was in 1893.

(*E. extensaria*. A rumour reached me that this insect had been reared from larvæ found on the Durham coast. I have fully investigated the matter, and find that the definite statement made to me was not correct. When news of the discovery of this species at Spurn Point, Yorkshire, was first published, Mr. Gardner and I thought the extensive salt marshes at the mouth of the River Tees was a place where the species was likely to occur. A search there did not produce it, but in Entomology non-discovery is by no means proof of non-existence, and I still think the locality so suitable (and there

may be others with which I am unacquainted), that I place the rumour on record in its place, in the hope that it will one day be shown to be a fact).

101. *E. linariata*, W.V. BEAUTIFUL PUG.

Eupithecia linariata. Staint. Man., vol. ii., p. 84.

" " Newm. Brit. Moths, p. 119.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 190.

LARVA. Buck., vol. viii., pl. cxxix., fig. 3; O. Wils., pl. xxiv., fig. 2.

This pretty pug is rarely seen in the perfect state, and most of our cabinet specimens are bred. The larva feeds upon *Linaria vulgaris* (Yellow Toad-flax), which is not a rare plant in either county, and I think if this be gathered when in full flower the imago will appear in due time. As yet, however, it has only been met with in Durham. Mr. Sticks has reared it from larvæ on Toad-flax at Seaham Harbour; and Mr. Gardner has got a few specimens near Hartlepool.

102. *E. pulchellata*, Steph. FOX-GLOVE PUG.

Eupithecia pulchellata. Staint. Man., vol. ii., p. 84.

" " Newm. Brit. Moths, p. 119.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 190.

LARVA. Buck., vol. viii., pl. cxxix., fig. 4; O. Wils., pl. xxiv., fig. 3.

The larva of this pug feeds upon *Digitalis purpurea* (Fox-glove), and the insect is therefore confined to places where this grows. Fox-glove is said not to occur on Magnesian Limestone, and though Mr. Gardner was shown a spike of the ordinary colour which had been gathered in Hezleden Dene, it certainly does not grow there generally, nor in any of the other Denes or ravines on the Durham coast, in which we have both collected carefully for nearly fifty years. Fox-glove is common on the higher land in the west of both counties, towards the Cheviots in Northumberland, and in Upper Tyndale, Weardale, and Teesdale generally. Mr. Sticks found the

larvæ fairly common at Gibside; Mr. Gardner found it also common on the seeds and flowers of *Digitalis* in Upper Teesdale. I only once had the opportunity of taking it there, and found larvæ without any difficulty. It is certain to occur wherever the plant is plentiful in a state of nature, and might be found in such a place as Jesmond Dene where it is cultivated.

103. *E. centaureata*, W.V. LIME SPECK.

Eupithecia centaureata. Staint. Man., vol. ii., p. 84.

" " Newm. Brit. Moths, p. 120.

Tephroclystis oblongata. Meyr. Hdbk. Brit. Lep., p. 189.

LARVA. Buck., vol. viii., pl. cxxx., fig. 1; O. Wils., pl. xxiv., fig. 4.

Another very distinct species, well distributed over both counties, and probably occurring everywhere. It was taken at Warkworth by Mr. Rhagg; at Bamborough by Mr. Corder; it was recorded for Newcastle by Mr. Wailes in Stephens' "Illustrations" (vol. iii., p. 283). Mr. Stephenson took it at South Shields; Mr. Ross at Bishop Auckland; Dr. Lees found it on walls and palings in Upper Teesdale, generally common; Mr. Sang took it at light at Darlington in August, 1860. About Hartlepool it is tolerably common; sits on palings by the Railway side, comes occasionally to sugar, and is often seen on Ragwort flowers, where it may be ovipositing. The larvæ are not uncommon on Ragwort flowers, and occasionally on those of other Compositæ.

104. *E. succenturiata*, Linn. BORDERED LIME-SPECK.

Eupithecia succenturiata. Staint. Man., vol. ii., p. 84.

" " Newm. Brit. Moths, p. 121.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 190.

LARVA. Buck., vol. viii., pl. cxxx., fig. 2.

A tolerably distinct species and rather rare, or perhaps needing a special search. The larva feeds on *Artemisia vulgaris* (Mugwort), and conceals itself in the twisted and withered leaves on the lower part of the stem. Mugwort being

a common plant, I have no doubt the insect will be found generally distributed, though records, as yet, are not very numerous. Newcastle is a "Manual" locality, and Mr. Rhagg has taken it there recently. Mr. Backhouse met with it in Hoffall Wood, near Durham; Darlington is a "Manual" locality, and Mr. Sang has taken it at Seaton Carew. Mr. Gardner and I have taken it for many years about Hartlepool. Here it occurs on ballast and the railway side. I have not met with it in country lanes, though Mr. Gardner has taken it at Greatham. Possibly some of the older records refer to the next species which for a long time was scarcely separated from this.

105. *E. subfulvata*, Haw. TAWNY SPECK.

Eupithecia subfulvata. Newm. Brit. Moths, p. 122.

Tephroclystis „ Meyr. Hdbk. Brit. Lep., p. 189.

LARVA. Buck., vol. viii., pl. cxxx., fig. 3; O. Wils., pl. xxiv.,
fig. 5.

Haworth described this as a distinct species, and Stephens and others followed him, but the discovery of varieties intermediate between this and the last species inclined entomologists to the opinion that they were all forms of one variable insect. These were *Disparata*, Hub., a variety of *Succenturiata* with a dark centre, and *Cognata*, Steph., a variety of *Subfulvata* without tawny scales. Those who possess a good series of all these will not wonder that the opinion obtained that they were all one species, until the larvæ of both were discovered, and ably described by the Rev. H. Harper Crewe in the Entomologist's Annual:—the present species in that for 1861, and both compared and differentiated in that for 1862. In Stainton's second volume the type and varieties are all described under *Succenturiata*. *Subfulvata* is generally commoner than *Succenturiata*, and will be found in many places where it has not yet been recorded. Mr. Bolam says, "Several examples have occurred in and about Berwick" (Trans. Ber. Field Club, vol. xv., p. 301); Mr. Wailes got it in Meldon Park before 1829 (see Steph. Illust., vol. iii., p. 288), and Mr. Finlay found it still

there and tolerably abundant. Mr. Sang records it in his Diary from several places round about Darlington, and also from Seaton Carew. His captures date from 23rd July to 21st August. About Hartlepool it is one of the commoner pugs; it sits on palings, where its tawny hue renders it rather conspicuous; it comes freely to sugar, and also to Ragwort flowers. The larvæ are not uncommon on the leaves and flowers of Yarrow, and are very easy to rear. They should be looked for late in September, or through October.

106. *E. subumbrata*, W. V. SHADED PUG.

Eupithecia subumbrata. Staint. Man., vol. ii., p. 85.

" " Newm. Brit. Moths, p. 122.

Eucymatoge scabiosata. Meyr. Hdbk. Brit. Lep., p. 197.

LARVA. Buck., vol. viii., pl. cxxx., fig. 4; O. Wils., pl. xxiv.,
fig. 6.

At present this pug has only been taken in Northumberland. Mr. Finlay found it flying between 8 and 9 in the evening at the Garden House, Longwitton. It was not at all rare. Miss Rosie has also taken it at Kenton. Newman says the species occurs in open spaces in Beech woods. I cannot think it can be confined to such places. The larva feeds on a great number of common plants.

107. *E. plumbeolata*, Haw. LEAD-COLOURED PUG.

Eupithecia plumbeolata. Staint. Man., vol. ii., p. 85.

" " Newm. Brit. Moths, p. 123.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 191.

LARVA. Buck., vol. viii., pl. cxxx., fig. 5.

This is not by any means a rare species generally, but the only person who has met with it in these counties is Miss Rosie, who took it at Kenton. The larva and its food plant were long unknown, though the insect was taken freely in many places. It is now known to feed upon *Melamprium pratense* (Common Cow Wheat), which is "frequent in hilly woods and heaths" (Trans., vol. ii., p. 17). In such places the

insect should be looked for, and I expect its discovery will be the reward. It has been found at Scarborough, and might therefore turn up at some of our coast localities. It is not scarce in Cumberland in many places, and will doubtless be found in the west of both our counties.

108. *E. pygmæata*, Hub. MARSH PUG.

Eupithecia pygmæata. Staint. Man., vol. ii., p. 85.

" " Newm. Brit. Moths, p. 124.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 192.

LARVA. Buck., vol. viii., pl. cxxxi., fig. 2.

This is given in the "Manual" as occurring regularly at Darlington, but I do not know the authority. I have found no Durham record of it in Sang's diary, but several for Richmond in Yorkshire, which might come within the "Darlington district." The larva feeds on *Stellaria holostea* (Greater Stitchwort), which is a common plant in most places, and I think the species so likely to occur that I have included it here from the "Manual" record only. Why this should be called the "Marsh" pug is incomprehensible.

109. *E. satyrata*, Hub. SATYR PUG.

Eupithecia satyrata. Staint. Man., vol. ii., p. 86.

" " Newm. Brit. Moths, p. 126.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 189.

LARVA. Buck., vol. viii., pl. cxxxi., fig. 4; O. Wils., pl. xxiv., fig. 8.

Rather a common species, and generally well distributed. It is certain to be found in most or all suitable localities. Mr. Finlay met with it in Meldon Park, and found it freely also on the moors; Mr. Patterson took it near Newcastle-on-Tyne. The "Manual" records it for Castle Eden Dene, and we find it fairly common along the coast from Black Hall Rocks. Mr. Gardner has also met with it in Teesdale. I have taken it on the wing at the foot of Hezleden Dene flying in the morning

sun. The Rev. H. Harper Crewe says in Buckinghamshire this species only occurs in open spaces between Beech woods (see Newman's note under *Subumbrata*). This is certainly not the case here.

110. *E. castigata*, Haw. GRAY PUG.

Eupithecia castigata. Staint. Man., vol. ii., p. 86.

„ „ Newm. Brit. Moths, p. 127.

Tephroclystis „ Meyr. Hdbk. Brit. Lep., p. 190.

LARVA. Buck., vol. viii., pl. cxxxi., fig. 5; O. Wils., pl. xxv., fig. 1.

Rather a common species, and no doubt occurring regularly at most places. Mr. Finlay found it generally distributed and not scarce in all suitable localities in his district; Mr. Patterson got it about Newcastle. It is recorded in the "Manual" for Darlington, near which town Mr. Sang took it on 22nd June, 1854. We get it commonly on the coast northward from Black Halls. Mr. Gardner writes—"a black variety is of common occurrence. When bred, if the insect emerge quite black and without markings, it remains black; but if markings, however faint, are perceptible under the black shade, the black will gradually fade, and eventually leave a typical, though rather dark specimen." This is a very interesting observation. I have taken a perfectly black insect believed to be this species flying in the morning sun.

111. *E. lariciata*, Frr. LARCH PUG.

Eupithecia lariciata. Newm. Brit. Moths, p. 129.

Tephroclystis „ Meyr. Hdbk. Brit. Lep., p. 191.

LARVA. Buck., vol. viii., pl. cxxxv., fig. 1; O. Wils., pl. xxiv., fig. 9.

This species was not known as British till after the publication of the "Manual." I believe the first to take it was Mr. E. Hopley, who met with it in Surrey in 1864 or 1865, and sent fertile ova to the Rev. H. Harper Crewe, who reared the larvæ on Larch and Spruce fir. It is not easy to explain why

so large and generally distributed an insect should have remained undetected till then. It is well distributed in our district, and only needs looking for to be found elsewhere than the localities I give. Mr. Bolam "took two specimens in June, 1887; one in the flower garden at Twizell House, the other on Doddington Moor" (Tran. Ber. F. Club, vol. xv., p. 301). Mr. Finlay found it in Coal Law Wood, but seldom plentiful. Mr. Rhagg got it at Chopwell; Mr. Greenwell at Bishop Auckland; Mr. Sang at Darlington (12th June, 1872). We get it regularly in Hezleden Dene, not very rare; and Mr. Gardner has also met with it in Upper Teesdale.

112. *E. pimpinellata*, Gn. (non Hub). PIMPINEL PUG.

Eupithecia pimpinellata. Staint. Man., vol. ii., p. 87.

" " Newm. Brit. Moths, p. 131.

Tephroclystis virgaureata. Meyr. Hdbk. Brit. Lep., p. 191.

LARVA. Buck., vol. viii., pl. cxxxii., fig. 6; O. Wils., pl. xxv., fig. 6.

I took a solitary specimen of this rather distinct Pug on the railway side at Hartlepool on 18th July, 1876. We appear to be rather beyond the range of the species. It is common at York, but I know of no more northerly station for it. The larva is not confined to one plant for food, but will eat Yarrow, Ragwort, Golden-rod, &c. The insect is named after Pimpinel, but the Rev. H. Harper Crewe doubted if it fed upon it. He, at all events, could never find that it did so. Our collectors in the Derwent Valley, and towards Hexham, are, I think, the most likely to find the species.

113. *E. albipunctata*, Haw. WHITE-SPOTTED PUG.

Eupithecia albipunctata. Newm. Brit. Moths, p. 128.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 188.

LARVA. Buck., vol. viii., pl. cxxxiii., fig. 6; O. Wils., pl. xxv., fig. 4.

This was originally named by Haworth, and his specimens are yet in the collection of Mr. Dale at Glanvilles Wootton,

Dorset. The species was subsequently re-discovered and named *Tripunctata* by Herrick-Schaffer. In the Entomologist's Annual for 1863 (p. 127), the Rev. H. Harper Crewe pointed out the identity of the species, since when it has been known by Haworth's name as *Albipunctata*. Stephens considered it tolerably well distributed in Britain—perhaps it was afterwards mixed with *Pimpinellata*. At all events it was omitted from the "Manual" by Stainton, but it has been fully recognised as a British species at least since 1863. In our district it has been seldom recorded, probably only because it has not been looked for. It is in Selby's Twizell list representing North Northumberland. It also occurs in Hezleden Dene representing the South of our counties. It will yet turn up in many places between. The larva feeds on flowers of Angelica.

114. *E. valerianata*, Hub. VALERIAN PUG.

Eupithecia valerianata. Newm. Brit. Moths, p. 129.

Tephroclystis ,, Meyr. Hdbk. Brit. Lep., p. 188.

LARVA. Buck., vol. viii, pl. cxxxii., fig. 7.

This stands as *E. viminata*, Dbld., in the 1859 Edition of Doubleday's Catalogue. In 1863 the Rev. H. Harper Crewe described the larva in the Annual for that year (p. 123), which was found on the flowers and seeds of *Valeriana officinalis*. It proved to be identical with the *Valerianata* of Hubner, and Doubleday's name was therefore sunk. The only collector in our counties who has met with it is Mr. Gardner, who found the larva in Hezleden Dene "not uncommon." I never met with either larva or imago myself. Valerian is plentiful in both counties. "Streamsides and ditches, common, ascending to 450 yards in the Cheviot ravines, to 1600 feet in Harwood Dale" (Trans., vol. ii., p. 186).

(*E. irriguata* is given in the "Manual" as occurring at Newcastle. I know nothing of the authority for it, and believe it to be an error. Lyndhurst, in Hampshire, is the only other "Manual" locality. Newman says the species occurs in the

New Forest, which is practically the same as Lyndhurst. Meyrick says, "South of England to Hereford and Norfolk, local." *Irriguata* is one of the rarer British species, and I am not prepared to admit it here without further evidence).

115. *E. innotata*, Hub.

Eupithecia innotata. Staint. Man., vol. ii., p. 87.

Tephroclystis ,, Meyr. Hdbk. Brit. Lep., p. 195.

LARVA. Buck., vol. viii., pl. cxxxvi., fig. 6.

Considerable confusion arose respecting this and the next species which I will endeavour to clear up. Stainton in his "Manual" as above, translating Guenée, correctly described *Innotata* and its larva. When the Rev. H. Harper Crewe was working at the genus, he bred an insect from Ash that appeared to be identical with the British specimens hitherto called *Innotata*. As the larva was distinctly different, and fed on a totally different food, this was introduced as a species new to science, and called *Fraxinata* from the food-plant. So far all was clear, but it was somewhat hastily assumed that all the British specimens previously called *Innotata* were *Fraxinata*, and *Innotata* was struck out of our lists as an insect not occurring in Britain. In July, 1879, Mr. Porritt was collecting on the Lincolnshire coast at Skegness, and took two examples of a pug that he thought were true *Innotata*. Subsequent investigation confirmed this opinion, the larva was found by Mr. Warren, and later by the Rev. J. Hellins. The former gentleman bred true *Innotata* and identified the others, and the species was restored to our lists. The perfect insects are so nearly alike that they may readily be misnamed, though *Innotata* is distinctly larger than *Fraxinata*, and has transverse lines on the wings that are not traceable in the smaller insect. After this explanation it will be seen that all early records of *Innotata* must be taken with considerable caution.

Innotata is given in the Twizell list, but the specimens are gone from the Collection, and I think it more likely they were *Fraxinata*. The late John Sang captured some specimens on

the railway bank at Darlington on 30th June, 1861, which were probably true *Innotata*. More recently Mr. Gardner took a melanic pug on the railway at Hartlepool, near the Cemetery which is on the Sand Banks, concerning which he writes:—"There was a great deal of *Artemisia* growing close to where I took it, and I concluded it must be *Innotata*, and now, after close inspection, when faint markings are discernable on the wings, I am still of the same opinion. It is much too large for *Fraxinata*." This is probably correctly attributed to *Innotata*.

In August, 1899, I took some pug larvæ on the sand banks between Black Hall Rocks and Castle Eden, which produced three melanic imagines for which the same name is suggested. I made no notes of the larva, thinking them some common species, and writing now from memory I think they more resembled *Fraxinata* than *Innotata*. They were feeding on Scabious, and I do not remember any *Artemisia* near, but certainly there was no Ash. Up to the present time I believe *Innotata* has only been found on *Artemisia*. Mr. Gardner says, "I find all the pugs I have bred will feed upon the flowers of plants, particularly of Scabious and Centaurea."

It will be seen there is no certain record here of *Innotata*, but I have so little doubt, at least as to Mr. Sang's and Mr. Gardner's specimens, that I include it, feeling sure satisfactory proof will yet be found for its occurrence.

116. *E. fraxinata*, Crewe. ASH-TREE PUG.

Eupithecia fraxinata. Newm. Brit. Moths, p. 131.

Tephroclystis ,, Meyr. Hdbk. Brit. Lep., p. 195.

LARVA. Buck., vol. viii., pl. cxxxii., fig. 8; O. Wils., pl. xxiv., fig. 10.

Fraxinata, as already said, was introduced by the Rev. H. Harper Crewe in 1863 as a species new to science. One or both of the earlier records of *Innotata* may belong to this insect, and I have two additional that are certainly correct. Mr. Finlay took it regularly though sparingly in Meldon Park; and Mr. Maling got it near Hexham. It is likely to occur else-

where, and the larvæ are said to prefer the young shoots where an Ash tree has been cut down. The Rev. H. Harper Crewe reared five specimens on Lauristinus. Hoffmann says it also feeds on Sloe, Whitethorn, and Dog-rose. I think this very improbable, and am of opinion that he is wrong altogether about this insect. He calls it a variety of *Innotata*, but when he admits that the larvæ differ, that they feed on different plants, that the imagines appear at different periods, that one is double brooded and the other single, I am at a loss to know what more is needed to prove their distinctness.

117. *E. indigata*, Hub. OCHREOUS PUG.

Eupithecia indigata. Staint. Man., vol. ii., p. 88.

„ „ Newm. Brit. Moths, p. 132.

Tephroclystis „ Meyr. Hdbk. Brit. Lep., p. 193.

LARVA. Buck., vol. viii., pl. cxxxiii., fig. 1.

This insect is widely distributed, and many intermediate localities will be found for it when more attention is given to the genus. It should be looked for in and about Fir woods, and the imago may be found at rest on the tree trunks. Mr. Bolam took the species at Kylloe Wood on 21st May, 1888 (see Trans. Ber. F. Club, vol. xv., p. 301). Mr. Finlay found it on Needless Hall Moor; in some seasons it was rather plentiful. Mr. Sang took it at Darlington (12/6/72), Mr. Gardner has taken it at Edder Acres, near Thornley Colliery Station, and also in Weardale and Upper Teesdale. The Rev. H. Harper Crewe reared it upon Juniper and Cypress (see Ent. Ann., 1863, p. 124), but the natural food is Fir.

118. *E. constrictata*, Gn. WILD THYME PUG.

Eupithecia constrictata. Staint. Man., vol. ii., p. 88.

„ „ Newm. Brit. Moths, p. 132.

Tephroclystis „ Meyr. Hdbk. Brit. Lep., p. 193.

LARVA. Buck., vol. viii., pl. cxxxiii., fig. 2.

Mr. Finlay took a single specimen of this local species at Healey, Netherwitton. The "Manual" gives it as occurring

at Darlington. The late John Sang was in the habit of taking the species, but I always understood he got them at Richmond, where it certainly does occur, and which was included in Mr. Sang's "Darlington District." The larva feeds on Wild Thyme, and the insect might occur wherever that grows freely.

119. *E. nanata*, Hub. NARROW-WINGED PUG.

Eupithecia nanata. Staint. Man., vol. ii., p. 88.

" " Newm. Brit. Moths, p. 133.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 196.

LARVA. Buck., vol. viii., pl. cxxxiii., fig. 3; O. Wils., pl. xxiv., fig. 11.

A moorland insect, but one that is not infrequent on heathery places on the coast, and one that often wanders far from its native haunts. Mr. Finlay reported it as common on the Northumberland moors, and I have taken it, when with him on Greenleighton, flying in the morning sun. Mr. D. Rosie took both larva and imago on heather at Dinnington; Mr. Hedworth got it at Marley Hill; Mr. Wailes took it at Gibside (Steph. Illust., vol. iii., p. 289); Mr. Gardner found it on the moors both of Weardale and Teesdale; and Dr. Lees also reported it as common on heaths in Upper Teesdale. Mr. Backhouse got it among Ling at Shull; Mr. Greenwell took it at Bishop Auckland; and Mr. Sang at lamps at Darlington, which is a "Manual" locality. Coast records are—Newbiggin-by-the-Sea, W. Maling; South Shields, W. Eales; Hartlepool, J. Gardner. I have seen it at sugar on Hartlepool Sand-hills, and have taken it on palings by the railway side, and on the wing on heathery ground at Black Halls.

120. *E. subnotata*, Hub. PLAIN PUG.

Eupithecia subnotata. Staint. Man., vol. ii., p. 88.

" " Newm. Brit. Moths, p. 134.

Eucymatoge " Meyr. Hdbk. Brit. Lep., p. 197.

LARVA. Buck., vol. viii., pl. cxxxiii., fig. 4; O. Wils., pl. xxv., fig. 7.

Mr. Gardner has taken this rather scarce pug occasionally about Hartlepool. The larva feeds on *Atriplex* and *Chenopodium*, and the species should occur where these are abundant. The Rev. H. Harper Crewe thinks it rather prefers the banks of tidal rivers.

121. *E. vulgata*, Haw. COMMON PUG.

Eupithecia vulgata. Staint. Man., vol. ii, p. 89.

„ „ Newm. Brit. Moths, p. 135.

Tephroclystis „ Meyr. Hdbk. Brit. Lep., p. 188.

LARVA. Buck., vol. viii., pl. cxxxiii., fig. 5; O. Wils., pl. xxv., fig. 8.

Perhaps the commonest of the pugs, though records are few; I expect it occurs in all parts of the district except the higher moorland. Mr. Finlay found it common in Meldon Park; Mr. Henderson got it at Jesmond. Mr. Hedworth reported it common everywhere in the Derwent Valley. Mr. Backhouse got it at Hoffall Wood, near Durham; Mr. Stephenson found it common at South Shields; Newcastle and Darlington are "Manual" localities. Mr. Greenwell got it at Bishop Auckland. It is very common about Hartlepool. It sits on palings by the railway side, and on tree trunks in the Dene. A large number of plants are given on which the larva will feed. The "Manual" says Golden Rod and Willow. Newman, Whitethorn. Meyrick, Hawthorn, Senecio, and Rubus. Owen Wilson says Oak and Whitethorn, and the Rev. H. Harper Crewe, Whitethorn. I have found it regularly among low plants, and did not think it very particular in its food.

122. *E. absynthiata*, Linn. WORMWOOD PUG.

Eupithecia absynthiata. Staint. Man., vol. ii., p. 89.

„ „ Newm. Brit. Moths, p. 136.

Tephroclystis absynthiata. Meyr. Hdbk. Brit. Lep., p. 187.

LARVA. Buck., vol. viii., pl. cxxxiv., fig. 1; O. Wils., pl. xxv., fig. 10.

Newman, for some unexplained reason, attaches no scientific

name to this species, though he uses it in comparing with the next species. Mr. Bolam took "one or two about Berwick" (Trans. Ber. F. Club, vol. xv., p. 301); Mr. Wailes took it in Meldon Park more than sixty years ago (see Steph. Illust., vol. iii., p. 286). This explains the "Manual" "Ne." Mr. Maling recorded it in 1868 from Witton-le-Wear; Mr. Corder found it flying on the cliffs near Sunderland. Darlington is given in the "Manual." At Hartlepool we formerly took it freely on the ballast beyond the Cemetery, but I have not seen it for some years now. We also got larvæ feeding on Ragwort flowers—a short, stiff, hairy, green larva, not much resembling the most of Pug larvæ; the usual V markings are also very indistinct.

123. *E. minutata*, Hub. LING PUG.

Eupithecia minutata. Staint. Man., vol. ii., p. 89.

" " Newm. Brit. Moths, p. 137.

Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 187.

LARVA. Buck., vol. viii., pl. cxxxiv., fig. 2; O. Wils., pl. xxv., fig. 11.

Another moorland species, and not uncommon in suitable places in either county. It is given in the Manual for Newcastle; Mr. Finlay found it at Throphill Moor, generally, but not always common; Miss Rosie took it at Kenton, and her brother got both larva and imago at Dinnington; Mr. Maling got it freely at Hexham. In Durham Mr. Hedworth found it at Marley Hill, Thornley, &c., &c.; Dr. Lees got it abundantly on heaths in Upper Teesdale, and Mr. Sticks found it common on the Weardale moors about Stanhope. The imago of this species is so close to that of the preceding that Guenée at one time united them, and Meyrick says it may be very questionable whether "this is anything more than a heath frequenting form of *Absinthiata*." Stainton, however, points out that *Minutata* is "smaller and less reddish." The larvæ differ, though not very much, and they feed on different plants.

124. *E. assimilata*, Dbld. CURRANT PUG.

- Eupithecia assimilata*. Staint. Man., vol. ii., p. 89.
 " " Newm. Brit. Moths, p. 138.
Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 187.

LARVA. Buck., vol. viii., pl. cxxxiv., fig. 3; O. Wils., pl. xxiv.,
 fig. 12.

This should be a garden insect, the larva feeding on Black Currant, occasionally Red Currant, or Wild Hop, but it does not appear to be common in either county, though widely distributed. It was found in Meldon Park by Mr. Finlay, but was always scarce; Mr. Rhagg got it about Newcastle, which is a "Manual" locality. Mr. Gardner found it rather plentiful at Wolsingham, and in Hezleden Dene, where I also have taken it occasionally.

125. *E. tenuiata*, Hub. SLENDER PUG.

- Eupithecia tenuiata*. Staint. Man., vol. ii., p. 89.
 " " Newm. Brit. Moths, p. 138.
Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 192.

LARVA. Buck., vol. viii., pl. cxxxiv., fig. 4.

This is generally considered a local species, but I think it is commoner than is supposed. Mr. Finlay reported it as not scarce in Coal Law Wood, the only Northumbrian notice I have of it. Mr. Sticks found the larva common in Sallow Catkins in the Derwent Valley; Mr. Corder found it in Hardwick Dene; Mr. Sang took the imago in Castle Eden Dene on 12th August, 1855, and again on 8th August, 1858. The insect is retiring in its habits, and no one else appears to have taken it. Mr. Gardner and I have bred it freely from larvæ in Sallow Catkins in Hezleden Dene, but never took the imago. It does not sit on tree trunks as so many do. If our collectors will gather a bagful of Catkins before they are quite ripe, they will almost certainly breed *Tenuiata* amongst other things.

126. *E. subciliata*, Gn. MAPLE PUG.

- Eupithecia subciliata*. Staint. Man., vol. ii., p. 90.
 " " Newm. Brit. Moths, p. 139.
Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 193.

LARVA. Buck., vol. viii., pl. cxxxiv., fig. 5.

This pug is given in the "Manual" as occurring at Darlington, and the late John Sang took it regularly in several places around that town. No one else appears to have met with it in either county. The larva feeds on Maple flowers in May. This is considered indigenous in the limestone denes, but no one has met with the insect there. Maple is also grown occasionally in hedges. Perhaps now that attention is called to the species it may be turned up elsewhere.

127. *E. abbreviata*, Steph. BRINDLED PUG.

- Eupithecia abbreviata*. Staint. Man., vol. ii., p. 90.
 " " Newm. Brit. Moths, p. 140.
Tephroclystis " Meyr. Hdbk. Brit. Lep., p. 194.

LARVA. Buck., vol. viii., pl. cxxxv., fig. 3; O. Wils., pl. xxv.,
 fig. 12.

Though *Abbreviata* does not appear to have been met with in Scotland, it occurs in the extreme north of Northumberland, Mr. Bolam having taken it on Kyoel Moor (see Trans. Ber. F. Club, vol. xv., p. 301). It is also in the Twizell list, where very few pugs are recorded. Mr. Finlay also met with it in Coal Law Wood, though never commonly. Newcastle is given in the Manual as well as Darlington. Mr. Maling took it at Witton-le-Wear in May; Mr. Gardner took it in Upper Teesdale in 1894, and a single specimen in Hezleden Dene in 1899. The larva feeds on Oak in June, and Mr. Meyrick calls it a common species, which it certainly is not in these counties.

128. *E. exiguata*, Hub. MOTTLED PUG.*Eupithecia exiguata*. Staint. Man., vol. ii., p. 90.

" " Newm. Brit. Moths, p. 141.

Tephroclystis ,, Meyr. Hdbk. Brit. Lep., p. 194.

LARVA. Buck., vol. viii., pl. cxxxv., fig. 4; O. Wils., pl. xxiv., fig. 13.

A very generally distributed and common species. The larva feeds on Hawthorn, and the insect might occur in any lane. It is in the Twizell list; Mr. Finlay found it in most parts of his district, though not often common; Mr. Wailes recorded it for Newcastle (which is a "Manual" locality) in Stephens' Illustrations, vol. iii., p. 283; Mr. Maling's got it at Hexham in June; Mr. D. Rosie bred it from larvæ found on Birch at Dinnington and Swalwell. Mr. Hedworth took it at Thornley and other places in the Derwent Valley. Mr. Gardner got it in Upper Teesdale, though not very commonly. It is plentiful enough in Hezleden Dene, and I have also taken it freely in lanes about Stockton-on-Tees.

129. *E. sobrinata*, Hub. JUNIPER PUG.*Eupithecia sobrinata*. Staint. Man., vol. ii., p. 91.

" " Newm. Brit. Moths, p. 142.

Tephroclystis ,, Meyr. Hdbk. Brit. Lep., p. 196.

LARVA. Buck., vol. viii., pl. cxxxv., fig. 5.

Mr. Bolam says, "I took a moth, which Mr. Richard South believes to be this, at Kyloe Wood, 21st May, 1888" (Trans. Ber. F. Club, vol. xv., p. 301). The presence or absence of the food plant in the immediate neighbourhood should settle this point. The "Manual" gives Newcastle as a habitat for this species, but I believe the specimens referred to were taken in Castle Eden Dene, at the Shotton end of which, as well as at the mouth, the insect occurs in some numbers. It was formerly common on the coast at Black Hall Rocks, but the Juniper has died off within the last twenty years, and *Sobrinata* has disappeared with it. Juniper occurs in the Cheviots and other

hilly places in the west, down to the high land in Upper Teesdale. At the latter place Dr. Lees and Mr. Gardner have found *Sobrinata* freely, and I have no doubt it will be found on the Cheviots, &c., when looked for at the right time. Juniper is also to be found in some places on the coast, and wherever it is plentiful the insect will occur. It is not easy to beat the larva out, but the moth rests in the bushes by day, and is easily disturbed.

130. *E. togata*, Hub. CLOAKED PUG.

Eupithecia togata. Staint. Man, vol. ii., p. 91.

„ „ Newm. Brit. Moths, p. 142.

Encymatoge „ Meyr. Hdbk. Brit. Lep., p. 198.

LARVA. Buck., vol. viii., pl. cxxxvi., fig. 1.

This rare species is given in the "Manual" as occurring at Darlington, where, so far as I know, only one specimen was taken. This was got on a gas lamp by the late John Sang, who also met with the insect at Richmond, in Yorkshire, which is not very far from Darlington, and was included in Mr. Sang's Darlington district. The larva feeds in the cones of *Pinus abies*, and perhaps other Firs, and is quite likely to be found in Fir woods in other parts of both counties.

131. *E. rectangulata*, Linn. GREEN PUG.

Eupithecia rectangulata. Staint. Man., vol. ii., p. 92.

„ „ Newm. Brit. Moths, p. 144.

Chloroclystis „ Meyr. Hdbk. Brit. Lep., p. 182.

LARVA. Buck., vol. viii., pl. cxxxvi., fig. 4.

A garden, or rather orchard insect as a rule, the larva feeding on Apple and Pear blossom, but as it will also eat the flowers of Crab-apple, it is occasionally met with in woods and luns. It is in the Twizell list; Mr. Wailes got it in Meldon Park more than sixty years ago (see Steph. Illust., vol. iii., p. 280), and Mr. Finlay found it still there, though far from common. The Manual gives Newcastle as a locality, and Mr. Maling

says, "The town (Newcastle-on-Tyne) in June. I have only taken the black variety." Mr. D. Rosie took it at Kenton, and also at Swalwell; Dr. Lees informed me it was common in gardens in Upper Teesdale; Darlington is given in the Manual; Mr. Taylor got it at Dalton Percy, where I found it rather common, and also at Elwick, two villages near Hartlepool. My specimens were rather dark green, but did not approach the black variety, *Nigrosericeata*, which is common about Newcastle.

LOBOPHORA, Curt.

132. *Lobophora viretata*, Hub. YELLOW-BARRED BRINDLE.

Lobophora viretata. Staint. Man., vol. ii., p. 94.

" " Newm. Brit. Moths, p. 147.

Trichopteryx " Meyr. Hdbk. Brit. Lep., p. 180.

LARVA. Buck., vol. viii., pl. cxxxvii., fig. 4.

Decidedly a rare species here, and occurring only about Newcastle, especially in the productive region to the west of that city. The Manual says it has occurred at Newcastle. I have not been able to trace the authority, but Mr. Finlay took a single specimen in Meldon Park, where Mr. Wailes often collected, and perhaps he met with the insect there. The late Mr. Maling had two in his collection that were taken at Gibside, where Mr. Hedworth found the species in considerable numbers in June, 1881, at rest on the trunks of Beech trees. (See also Ento., vol. xiv., p. 259). It has not been recorded since nor elsewhere. The larva feeds on Privet, Holly, Ivy, &c.

133. *L. lobulata*, Hub. EARLY TOOTH-STRIPE.

Lobophora lobulata. Staint. Man., vol. ii., p. 94.

" " Newm. Brit. Moths, p. 148.

Trichopteryx carpinata. Meyr. Hdbk. Brit. Lep., p. 180.

LARVA. Buck., vol. viii., pl. cxxxvii., fig. 5; O. Wils.,
pl. xxvi., fig. 1.

Much commoner than the last, more widely distributed, and likely to be found in all the larger woods when they are

examined early in the year. The imago emerges in April, and sits on the trunks of the leafless trees, where its pale colour renders it very conspicuous. It is given in the Manual as occurring at Newcastle, which probably refers to specimens taken in Meldon Park by Mr. Wailes. Mr. Finlay does not appear to have taken it there, but he found it in Coal Law Wood. It still occurs in Meldon Park, for Mr. Corder took it there quite recently. Mr. Hedworth got it in Thornley Woods twenty or thirty years ago; and Mr. Rhagg found it still there. Mr. Gardner took one in Upper Teesdale. I have taken it rather freely in Castle Eden Dene, but had no opportunity of going there early enough for some years. We never found it in Hezleden Dene.

THERA, Steph.

134. *Thera juniperata*, Linn. JUNIPER CARPET.

Thera juniperata. Staint. Man., vol. ii., p. 95.

" " Newm. Brit. Moths, p. 150.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 210.

LARVA. Buck., vol. viii., pl. cxxxviii., fig. 1.

Always a local species and very rare in these counties. Mr. J. W. Corder took a single specimen in his own house at Sunderland, which might have strayed from some place in the vicinity, or might have fed on some garden variety of Juniper. Dr. Lees took it on the moor above High Force Fell, where there is a good deal of the food plant. It never occurred on the Juniper in the Denes and on the coast about Hartlepool, but I think it likely to be found on the hilly tracks to the west of both counties between the Cheviots and Upper Teesdale.

135. *T. coniferata*, Curt. CHESTNUT-COLOURED CARPET.

Thera coniferata. Staint. Man., vol. ii., p. 96.

" *simulata*. Newm. Brit. Moths, p. 150.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 210.

LARVA. Buck., vol. viii., pl. cxxxviii., fig. 2.

Necessarily confined to places where Juniper grows, but probably occurring wherever the food plant is at all plentiful. Baker and Tate, in their *Flora of the Counties* (Trans., vol. ii., p. 252), say of Juniper—"Scattered amongst the hill tracks from the Cheviots to the Tees . . . and occurring also in the Magnesian Limestone Denes, and sometimes amongst the Coast Links." *Coniferata* or *Simulata*, as it is more frequently called, is not an insect often met with except when specially looked for. It sits in the day time on the Juniper stems, and when beaten goes to the ground and sits on the fallen needles, gently moving its wings up and down. Owing to the close compact growth of the Juniper here on the coast, it is more easily seen than dislodged, and the larvæ are equally difficult to obtain, but further west it grows more freely, and is therefore more accessible. My experience is that the larva is full fed at the end of June, and the imago appears about the third week in July, continuing on the wing till the middle or end of August, but the dates given below differ considerably. Mr. Bolam got a single specimen near Windmill Hill on 10th September, 1882 (Trans. Ber. Field Club, vol. xv., p. 301). This is certainly a very late date. The species is included in the Twizell list, where no dates are given. Mr. Wailes "took it" in Castle Eden Dene in June, 1834 (see Steph. Illust., Appendix, vol. iv., p. 392). This is a very early date, unless he obtained a larva, though the phrase quoted seems to refer to the imago. Mr. Sang records having found it at Black Hall Rocks on 27th July, 1862; at High Force, Upper Teesdale, on 23rd July, 1873; and larvæ at Wolsingham on 25th June, 1874. At Wolsingham, Mr. Gardner tells me, the larvæ are not at all uncommon. We got the species regularly for many years at Black Hall Rocks, though always sparingly, but the Juniper has died off there during the last twenty years, and the Castle Eden Dene locality is not easily accessible. The insect is certain to occur on all the higher land from the Cheviots southward. The "Manual" gives Newcastle and Darlington, but they both refer to captures at Castle Eden or Black Halls.

136. *T. variata*, W.V. SHADED BROAD-BAR.*Thera variata*. Staint. Man., vol. ii., p. 96.,, *obeliscata*. Newm. Brit. Moths, p. 151.*Hydriomena variata*. Meyr. Hdbk. Brit. Lep., p. 210.

LARVA. Buck., vol. viii., pl. cxxxviii., fig. 3.

Thera variata is said to be common everywhere, and it is certain to be more abundant in these counties than appears from the few records I have. The larva feeds on Fir, and the insect ought to be found in every wood containing Firs. The species is given in the Twizell list; Mr. Finlay found it plentifully in the woods at Needless Hall; Mr. Maling met with it at Hexham. Mr. Backhouse took it at Hoffall Wood near Durham, and at Woodlands, Darlington. I have taken it freely in Castle Eden Dene in years gone bye. It is not uncommon at Edderacres near Thornley, and we have taken it in Hezleden Dene. I have also taken it on the Cemetery palings at Hartlepool, probably blown from a fir wood above Throston, though I never found the insect there.

137. *T. firmaria*, Hub. PINE CARPET.*Thera firmaria*. Staint. Man., vol. ii., p. 96.

,, ,, Newm. Brit. Moths, p. 152.

Xanthorhoe firmata. Meyr. Hdbk. Brit. Lep., p. 230.

LARVA. Buck., vol. viii., pl. cxxxviii., fig. 4.

Said to be rather a common species, but in our counties it is both local and rare. Mr. Finlay took it at Needless Hall Moor, but it was very scarce; Miss Rosie met with it at Kenton. Mr. Maling got a single specimen at Witton-le-Wear at the end of August; Mr. Gardner has found it in Teesdale, but very sparingly. It is not very common in the neighbouring counties.

YPSIPETES, Steph.

138. *Ypsipetes ruberaria*, Frey. RUDDY HIGHFLYER.

- Ypsipetes ruberaria*. Staint. Man., vol. ii., p. 97.
 " " Newm. Brit. Moths, p. 152.
Hydriomena trifasciata. Meyr. Hdbk. Brit. Lep., p. 213.

LARVA. Buck., vol. viii., pl. cxxxviii., fig. 5; O. Wils.,
 pl. xxvi., fig. 2.

Meyrick fuses this and the next into one species. He does not even consider them different forms of the same insect, but gives the names as mere synonyms. Stainton, on the other hand, points out structural differences, this being larger than *Impluviata*, and the palpi being longer in proportion. *Ruberaria* is rather a rare species, the Manual giving but three localities in Britain, but that was nearly fifty years ago. It is only recorded from Northumberland by Mr. Finlay, who found it at Needless Hall Moor, not scarce in some seasons. In Durham it occurs in the Derwent Valley, having been taken at Dunston and Thornley by both Mr. Maling and Mr. Hedworth. Mr. Gardner and I have taken it in Hezleden Dene, but never commonly. The larva closes up a sallow leaf in autumn, as does that of *Elutata* in spring, and pupates in a crevice of the bark, the imago emerging next spring. Mr. Gardner has a wonderful series of varieties bred from Hezleden Dene larvæ.

139. *Y. impluviata*, W.V. MAY HIGHFLYER.

- Ypsipetes impluviata*. Staint. Man., vol. ii., p. 97.
 " " Newm. Brit. Moths, p. 153.

LARVA. Buck., vol. viii., pl. cxxxviii., fig. 6.

Not a common species in these counties, but one that should be found in all woods where there is an abundance of Alder, on which the larva feeds. It is in the Twizell list; Mr. Finlay found it at Healey, Netherwitton, but not every year; Miss Rosie has taken it at Kenton, and Mr. Patterson near Newcastle, which is a Manual locality, as is Darlington. Mr. Eales

got one at rest on a wall at South Shields. I have taken it occasionally both in Castle Eden and Hezleden Denes. Mr. Gardner has also taken it in Hezleden Dene, and bred a single specimen; he has also found it in Upper Teesdale, but never common.

140. *Y. elutata*, W.V. JULY HIGHFLYER.

Ypsipetes elutata. Staint. Man., vol. ii., p. 97.

" " Newm. Brit. Moths, p. 153.

Hydriomena sordidata. Meyr. Hdbk. Brit. Lep., p. 212.

LARVA. Buck., vol. viii., pl. cxxxviii., fig. 7; O. Wils.,
pl. xxvi., fig. 3.

Generally distributed over both counties, and always common everywhere. In all the lists, old and recent. It is a most variable species, scarcely two specimens being exactly alike. It is said that those occurring on moorland are black. I never took it in such a locality, but I believe when reared in confinement a large proportion are always black. That at least is my experience. It is a very common insect in Hezleden Dene, but I never took a black one there; but whenever I have reared a number of larvæ a very large proportion of the imagines were black. Though the larva conceals itself by fastening the Willow leaves together, it is most impatient of confinement when brought in to rear. In Teesdale, Mr. Gardner tells me, the larvæ feed naturally on Ling, and the imagines are rather smaller than those fed on Willow in our woods.

MELANTHIA, Dup.

141. *Melanthia rubiginata*, W.V. BLUE-BORDERED CARPET.

Melanthia rubiginata. Staint. Man., vol. ii., p. 98.

" " Newm. Brit. Moths, p. 154.

Plemyria bicolorata. Meyr. Hdbk. Brit. Lep., p. 205.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 1.

The larva of this species feeds on Alder, and it probably occurs wherever that tree grows freely. Mr. Bolam (Trans.

Ber. F. Club, vol. xv., p. 301) speaks of it as being common "where old Alders grow." He took a specimen at Foulden Hag on 23rd August, 1891, which "measures quite an inch and a quarter in expanse of wings." It is in the Twizell list; Mr. Finlay found it in Meldon Park, in some seasons not uncommon. He also found, in one place only, the suffused form *Plumbata*, Curtis, this being the only record I have of the occurrence of this variety. Mr. Rhagg got the type at Gilsland. Mr. Maling at Witton-le-Wear; Mr. Backhouse at Shull and Shotley; Mr. Greenwell found it rare at Wolsingham; Mr. Gardner got it commonly in Upper Teesdale; Mr. Sang at Hell Kettles and other places about Darlington, which is a "Manual" locality. Mr. Gardner met with it in 1891 at Castle Eden Dene, and I took it the same year in Hezleden Dene, at a place where there were but one or two small Alders. Newcastle is also a "Manual" locality, from specimens taken by Mr. Wailes at Meldon Park.

142. *M. ocellata*, Linn. PURPLE BAR CARPET.

Melanthia ocellata. Staint. Man., vol. ii., p. 98.

" " Newm. Brit. Moths, p. 155.

Hydriomena " Meyr. Hdbk. Brit. Lep., p. 209.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 2; O. Wils., pl. xxvi., fig. 4.

This species probably occurs in all suitable localities in both counties. Mr. Bolam says, "Not uncommon, and well distributed on both sides of the Border; besides taking it in many localities around Berwick, I have found it along the coast as far as Fast Castle, and at Langleyford it is plentiful in August, and is met with far up the hill sides" (Trans. Ber. F. Club, vol. xv., p. 301). It is in the Twizell list; Mr. Rhagg took it at Warkworth; Mr. Patterson at Alnmouth; Mr. Finlay reported it as common everywhere; Miss Rosie took it at Kenton; and Mr. Wailes found it at Tynemouth (see Steph. Illust., vol. iii., p. 222). Mr. Hedworth and others found it generally common at Thornley, Gibside Axwell, &c. Mr. Ross reports

two only at Bishop Auckland, where Mr. Greenwell also found it rare. About Hartlepool it occurs everywhere, but not in great numbers. It often sits on low plants exposed to the full glare of the sun. I think it is an insect with a decided preference for the coast in these counties.

143. *M. albicillata*, Linn. BEAUTIFUL CARPET.

Melanthia albicillata. Staint. Man., vol. ii., p. 99.

" " Newm. Brit. Moths, p. 156.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 217.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 3.

This beautiful insect is scarce in both counties, though it has been more frequently met with in Durham than in Northumberland. It is given in the "Manual" for Newcastle; Mr. Finlay found it scarce in Coal Law Wood; Mr. Patterson took it at Ebchester. Mr. Hedworth and Mr. Maling got it at Gibside, Thornley, Chopwell, &c. Mr. Backhouse met with it at Shotley Bridge; Mr. Gardner took a single specimen on a tree trunk in Hezleden Dene in 1874; Mr. Sang took it near Darlington on 21st June, 1872, Darlington being a "Manual" locality. The insect is rather common in Yorkshire, and should, I think, occur more freely with us. The larva feeds on Bramble as well as Rasp, so that food presents no difficulty.

MELANIPPE, Dup.

144. *Melanippe hastata*, Linn. ARGENT AND SABLE.

Melanippe hastata. Staint. Man. vol. ii., p. 100.

" " Newm. Brit. Moths, p. 157.

Plemyria ,, Meyr. Hdbk. Brit. Lep., p. 205.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 4.

This handsome species is in the Twizell list, and is given in the Manual as occurring at Newcastle. It is also in the list in Ornsby's "Durham" as being found at Hoppylands by the Rev. E. Bungay. These are all half a century ago or more, and the only more recent record I have is that Mr. Maling took one at

Hexham at the end of June. It is not uncommon in Yorkshire, and should be found more plentifully here in some of our Birch woods.

145. *M. tristata*, Linn. SMALL ARGENT AND SABLE.

Melanippe tristata. Staint. Man., vol. ii., p. 100.

" " Newm. Brit. Moths, p. 156.

Plemyria " Meyr. Hdbk. Brit. Lep., p. 205.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 5.

A local species, but sometimes plentiful where it occurs. Mr. Finlay found it at Old Park, Netherwitton, and at Rothley Lakes, "in some seasons common." It is given in the "Manual" for Newcastle; Mr. Maling found it plentiful at Hexham at the end of June. Mr. Sang took it at High Force on 25th June, 1856; Dr. Lees found it common at Widdy Bank Farmhouse, and under Cronkley Fell in July; Mr. Gardner also found it common in Upper Teesdale. It is given in the list in Ornsby's "Durham," and Mr. Greenwell found it fairly common at Bishop Auckland. It would appear from these localities to avoid the coast. We never found it about Hartlepool.

146. *M. unangulata*, Haw. SHARP-ANGLED CARPET.

Melanippe unangulata. Staint. Man., vol. ii., p. 100.

" " Newm. Brit. Moths, p. 159.

" " Meyr. Hdbk. Brit. Lep., p. 217.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 7; O. Wils.,
pl. xxvi., fig. 5.

The late W. Backhouse took this species in Hoffall Wood near Durham. Mr. Maddison, of Durham, writes me respecting this and the next species. "I know Houghall Wood very well, and have very often collected in it. I am quite sure that neither *Unangulata* nor *Rivata* occur there now, nor I should think for the last thirty years. *Ulmata* was there 35 years ago, but vanished about that time. Houghall Pit no doubt

caused some things to die out." This is really a Southern species. It is not given for Yorkshire in Porritt's catalogue, but since that appeared, Messrs. Wilson and Lumb, of Wakefield, took it at Haw Park, Barnsley (see Trans. Barnsley Nat. Soc., vol. iv., p. 21). Dr. Ellis only gives two localities for Lancashire, though it is more frequent in Cheshire, but all this tends to prove that we are now beyond its range.

147. *M. rivata*, Hub. WOOD CARPET.

Melanippe rivata. Staint. Man., vol. ii., p. 101.

" " Newm. Brit. Moths, p. 159.

Plemyria " Meyr. Hdbk. Brit. Lep., p. 206.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 8.

This species is recorded for Newcastle by the late W. C. Hewitson (see Steph. Illust., vol. iii., p. 224). The late W. Backhouse took it in Hoffall Wood. It does not occur in Hoffall Wood now, and I have no more recent records except that Mr. Gardner has a single specimen he took in Hezleden Dene. Mr. Meyrick says it is rather common as far north as Perth. That is certainly not so on the east side of the island. Mr. Porritt only gives four localities in all Yorkshire, but suggests that it may be mistaken for the next species. I think collectors are more prone to mistake common things for rarities, but these two very closely resemble each other, and a mistake might easily be made. The present species is always distinctly larger than the next.

148. *M. biriviata*, Stainton(?). COMMON CARPET.

Melanippe biriviata. Staint. Man., vol. ii., p. 101.

" *subtristata*. Newm. Brit. Moths, p. 160.

Plemyria sociata. Meyr. Hdbk. Brit. Lep., p. 106.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 9; O. Wils.,
pl. xxvi., fig. 6.

Very common in the woods and lanes of both counties. In all the lists. The late Alfred Wood took a very curious speci-

men at Hartlepool, that was probably this species. It is considerably smaller, and has the central band much narrower. It is probably a starved specimen, for this is not an insect subject to much variation.

149. *M. montanata*, W.V. SILVER GROUND CARPET.

Melanippe montanata. Staint. Man., vol. ii., p. 101.

„ „ Newm. Brit. Moths, p. 162.

Xanthorhoe „ Meyr. Hdbk. Brit. Lep., p. 230.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 10; O. Wils., pl. xxvi., fig. 7.

Very common everywhere, and in all the lists. Very interesting varieties of this species often occur. I have seen one entirely black, and another with only a trace of the central band. A form with the band broken in the centre is not uncommon in Hezleden Dene, and probably elsewhere.

150. *M. galiata*, W.V. GALIUM CARPET.

Melanippe galiata. Staint. Man., vol. ii., p. 101.

„ „ Newm. Brit. Moths, p. 163.

Plemyria „ Meyr. Hdbk. Brit. Lep., p. 206.

LARVA. Buck., vol. viii., pl. cxxxix., fig. 11; O. Wils., pl. xxvi., fig. 8.

A very local species, and so far as I know only occurring singly. Mr. Bolam says, "I took a specimen at rest on the sea cliffs at Marshall Meadows, 12th July, 1891, and Miss Dickinson had another, taken in her garden at Norham a year or two previously." Mr. Patterson took one at Chopwell, but no other collector reports it from that district. It has also occurred at Darlington, which is a "Manual" locality. It is tolerably common in Yorkshire, especially in the West Riding; is locally common both in Cheshire and Lancashire, and I think it ought to be found more freely with us. The larva feeds on *Galium*, and is not confined to one species.

151. *M. fluctuata*, Linn. GARDEN CARPET.*Melanippe fluctuata*. Staint. Man., vol. ii., p. 102.

,, ,, Newm. Brit. Moths, p. 164.

Xanthorhoe ,, Meyr. Hdbk. Brit. Lep., p. 231.LARVA. Buck., vol. viii., pl. cxxxix., fig. 12; O. Wils.,
pl. xxvi., fig. 9.

A garden insect as the trivial name implies, but not at all confined to gardens, and occurring in abundance everywhere. Like so many common species, *Fluctuata* is a very variable insect. The type has a blotch on the costa representing the central band, but examples are not at all uncommon with the band distinctly marked across the wing. A large and dark form was taken near Naples and called *Neapolisata*. This was introduced as British from specimens taken at Aberdeen, and Mrs. Robson took a very fine example of it at Hezleden near Hartlepool. I also took in the Dene there a specimen with a number of wavy lines across the wing much after the style of *Scotosia undulata*.

ANTICLEA, Steph.

152. *Anticlea badiata*, W.V. THE SHOULDER STRIPE.*Anticlea badiata*. Staint. Man., vol. ii., p. 103.

,, ,, Newm. Brit. Moths, p. 165.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 215.LARVA. Buck., vol. viii., pl. cxl., fig. 3; O. Wils., pl. xxvi.,
fig. 12.

Generally distributed and common, and given in all the lists. I have occasionally taken a variety in which the shoulder stripe and most of the pale markings were obscured by the darker colour.

153. *A. derivata*, W.V. STREAMER.*Anticlea derivata*. Staint. Man., vol. ii., p. 103.

,, ,, Newm. Brit. Moths, p. 166.

Hydriomena nigrofasciaria. Meyr. Hdbk. Brit. Lep., p. 216.LARVA. Buck., vol. viii., pl. cxl., fig. 4; O. Wils., pl. xxvi.,
fig. 13.

This pretty species is very widely distributed, but appears to be rare everywhere. It is much commoner in Yorkshire, and I think it scarcely maintains itself with us. Mr. Finlay met with it in Meldon Park, but never commonly; Mr. Henderson took it at Jesmond; Newcastle is a Manual locality; Mr. Rhagg got it at Corbridge and in Thornley Woods, Mr. Hedworth took one at Winlaton Mill in 1871, Mr. Sang found it at Darlington, which is a Manual locality; and Mr. Gardner and I have taken it in Hezleden Dene, always very sparingly, and nearly always where the railway embankment crosses the Dene. It occasionally sits on tree trunks.

COREMIA, Gn.

154. *Coremia munitata*, Hub. RED CARPET.

Coremia munitata. Staint. Man., vol. ii., p. 104.

„ „ Newm. Brit. Moths, p. 168.

Xanthorhoe „ Meyr. Hdbk. Brit. Lep., p. 230.

LARVA. Buck., vol. viii., pl. cxi., fig. 6.

Widely distributed over both counties, but not by any means common, and only met with in small numbers where it occurs. Mr. Bolam says, "This is another pretty moth which occurs with *M. ocellata*, *C. populata*, etc., at a considerable elevation upon the Cheviots, and is not uncommon about Langleyford. I have also taken it on Coldingham Moor, and occasionally in Berwick" (Trans. Ber. F. Club, vol. xv., p. 301). It is given in the Twizell list; Mr. Finlay found it scarce at Needless Hall Moor. It was taken at Muckle Moss (see Trans., vol. v., p. 9); Mr. Maling got it at Newbiggen-by-the-Sea, but not plentiful. From Durham I have fewer records, and only in the southern part of the county. Darlington is a "Manual" locality—one of seven—Mr. Backhouse took it there, and Mr. Sang got it at Hell Kettles, which is within a few miles. Mr. Sibson took it near Stockton-on-Tees. Mr. Lofthouse met with single specimens on the swampy ground near Bellingham. About Hartlepool it is decidedly scarce, and I have only taken odd specimens, except at the Bleachery, Castle Eden, where it occurred freely. Mr. Gardner has also taken it

both in Upper Teesdale and Weardale, but never found it common. The larva is said to feed on Ragwort or Grounsel, but I have always had the idea it was attached to damp places, which the above list of localities, so far as I know them, tends to confirm. Mr. Barrett tells me he believes the favourite food of this species is Lady's Mantle (*Alchemilla*).

155. *C. propugnata*, W.V. FLAME CARPET.

Coremia propugnata. Staint. Man., vol. ii., p. 105.

" " Newm. Brit. Moths, p. 168.

Xanthorhoe designata. Meyr. Hdbk. Brit. Lep., p. 229.

LARVA. Buck., vol. viii., pl. cxl., fig. 7; O. Wils., pl. xxvi., fig. 14.

Propugnata has been seldom met with, but I think it must be overlooked. It should be a common insect, for it is plentiful enough in all the surrounding counties. The larva feeds on Cabbage (Owen Wilson says they prefer the red variety) and Horse Radish. Meyrick suggests it must have other foods, but it will eat the various kinds of wild cabbage, and perhaps the mustards also. Mr. Bolam took "a fine specimen in Fenwick Wood on 16th June, 1895; it was beaten from hazel" (Trans. Ber. F. Club, vol. xv., p. 302). Mr. Finlay found it "always scarce" at Meldon Park; Mr. Wailes recorded it from "Newcastle, &c." (see Steph. Illust., vol. iii., p. 220), which is a "Manual" locality; Mr. Maling got one at Warden near Hexham. Mr. Hedworth found it at Thornley, but never common; Mr. Gardner took it at Eggleston in Upper Teesdale, and Darlington is given in the "Manual." Mr. Greenwell sent me one to name that he had taken near Bishop Auckland. We never got it about Hartlepool.

156. *C. ferrugaria*, Linn. RED TWIN-SPOT CARPET.

Coremia ferrugaria. Staint. Man., vol. ii., p. 105.

" *ferrugata*. Newm. Brit. Moths, p. 168.

Xanthorhoe spadicearia. Meyr. Hdbk. Brit. Lep., p. 229.

LARVA. Buck., vol. viii., pl. cxl., fig. 8; O. Wils., pl. xxvi., fig. 15.

It is difficult to explain the apparent almost total absence of this common insect from these counties. Well distributed in Yorkshire, it scarcely seems to occur here at all. Mr. Finlay took one at Greenleighton; Mr. Backhouse took one at Shull; Mr. Greenwell sent me one to name that he had taken near Bishop Auckland; and I have taken one in nearly fifty years collecting about Hartlepool. In contrast to this Mr. Gardner says, "Black Halls, common in damp places, Teesdale common in similar situations." I feel sure my friend is mistaken as to Black Halls, and no one but himself appears to have met with it in Teesdale.

157. *C. unidentaria*, Haw. DARK TWIN-SPOT CARPET.

- Coremia unidentaria*. Staint. Man., vol. ii., p. 105.
 „ *unidentata*. Newm. Brit. Moths, p. 169.
 „ *ferrugata*. Meyr. Hdbk. Brit. Lep., p. 229.

LARVA. Buck., vol. viii., pl. cxl., fig. 9.

Though rather a common species, extending quite to the North of Scotland, and often abundant where it is found, *Unidentaria* (which Mr. Meyrick fuses with the last species) does not appear to occur in these counties, the only capture being one taken by Mr. Bolam. He says, "This is another good record, which, though I believe it is included by Selby in his Twizell list, does not appear to have been taken by any one else in the district, nor so far as I am aware in Northumberland. My only specimen I took upon the wing at Newham Bog on 25th May, 1893" (Trans. Ber. F. Club, vol. xv., p. 302). The species is not included in the Twizell list, and it is quite a puzzle to me why these common *Coremia* are so nearly absent from this district.

CAMPTOGRAMMA, Steph.

158. *Camptogramma bilineata* (Linn.). YELLOW SHELL.

- Camptogramma bilineata*. Staint. Man., vol. ii., p. 106.
 „ „ Newm. Brit. Moths, p. 171.
Hydriomena „ Meyr. Hdbk. Brit. Lep., p. 220.

LARVA. Buck., vol. viii., pl. cxli., fig. 1.

A very common species everywhere. A variety with a distinct black band across the wings often occurs at Hartlepool, and probably elsewhere. This black band gradually becomes paler in specimens in our cabinets. I have also once or twice taken a form that I think must be Standinger's var. *testaceolata*, which he describes as "testaceis non flavus."

PHIBALAPTERYX, Steph.

159. *Phibalapteryx lignata*, Hub. OBLIQUE CARPET.

Phibalapteryx lignata. Staint. Man., vol. ii., p. 108.

" " Newm. Brit. Moths, p. 175.

Xanthorhoe vittata. Meyr. Hdbk. Brit. Lep., p. 226.

LARVA. Buck., vol. viii., pl. cxli., fig. 5; O. Wils.,
pl. xxvi., fig. 17.

Very seldom met with in our counties. Mr. Maling found it at Newbiggin-by-the-Sea, but it was very scarce. Mr. Corder took a single specimen at Roker in 1896, and Mr. Sang met with the species at Hell Kettles near Darlington on September 9th, 1874. It is said to extend as far north as Renfrewshire, and I see no reason why it should not occur in many places where *Galium* is plentiful. Newman has misplaced the names of *P. lignata* and *conjunctaria*, the figure and description on page 175 being the present species, not *conjunctaria*.

SCOTOSIA, Steph.

160. *Scotosia dubitata* (Linn.). TISSUE.

Scotosia dubitata. Staint. Man., vol. ii., p. 109.

" " Newm. Brit. Moths, p. 176.

Hydriomena " Meyr. Hdbk. Brit. Lep., p. 215.

LARVA. Buck., vol. viii., pl. cxlii., fig. 1; O. Wils.,
pl. xxvii., fig. 1 (pl. xxvi in text).

Dubitata is recorded in Stephens' Illustrations as captured by Mr. Wailes at Tynemouth (vol. iii., p. 263), but there is nothing to show whether more than a single specimen was taken. No one else appears to have met with it in Northum-

berland, and the "Ne" of the "Manual" refers to this Tyne-mouth record. Since then Mr. Eales took it at South Shields "at flowers of Ragwort," but again I have no information as to number. Their occurrence at Ragwort showed they were newly emerged specimens. Mr. Hedworth took two hibernated specimens at Dunston in 1868. Mr. Ross took one at Bishop Auckland; Mr. Sang took it at Darlington also at Ragwort, which is another "Manual" locality. At Hartlepool I took one on 30th May, 1876, on the Cemetery palings, another on 26th May the following year, and a third, much worn, on a garden wall at West Hartlepool on 29th June the same year—an exceedingly late date for a hibernated specimen. Mr. Gardner also has taken one or two at Hart Station, but he has given me no dates.

161. *S. certata*, Hub. SCARCE TISSUE.

Scotosia certata. Staint. Man., vol. ii., p. 110.

" " Newm. Brit. Moths, p. 178.

Calocalpe " Meyr. Hdbk. Brit. Lep., p. 201.

LARVA. Buck., vol. viii., pl. cxlii., fig. 4; O. Wils., pl. xxvii., fig. 4.

The late R. W. Merryweather took a single specimen of this insect on the palings by the Railway side at Hartlepool in 1864 (see also E. M. M., vol. i, p. 144). It can only have been a stray specimen, as the species does not extend north of York. The larva feeds on *Berberis vulgaris*, which is a very rare plant in these counties (see Trans., vol. ii., p. 119).

162. *S. undulata*, Linn. SCALLOP SHELL.

Scotosia undulata. Staint. Man., vol. ii., p. 110.

" " Newm. Brit. Moths, p. 179.

Calocalpe " Meyr. Hdbk. Brit. Lep., p. 201.

LARVA. Buck., vol. viii., pl. cxlii., fig. 5.

This pretty species is represented by a stray specimen taken on the wing near the river at Middleton-in-Teesdale by Dr. F. A. Lees. It is very local in Yorkshire, the nearest localities

there that I know of are York and Ripon, the latter not in Porritt's Catalogue, but where my friend the late Thomas Meldrum found both larvæ and imagines.

CIDARIA, Tr.

163. *Cidaria psittacata*, W.V. RED GREEN CARPET.

Cidaria psittacata Staint. Man., vol. ii., p. 111.

" " Newm. Brit. Moths, p. 180.

Hydriomena siterata. Meyr. Hdbk. Brit. Lep., p. 212.

LARVA. Buck., vol. viii., pl. cxlii., fig. 6

Widely distributed, but very scarce everywhere. Mr. Bolam says it "has occurred two or three times in Berwick, but appears to be much less common than its relative *C. miata*" (see Trans. Ber. F. Club, vol. xv., p. 302). Berwick is on the Scotch side of the Tweed, but it seems well to include these here, as they show that it extends beyond the North of Northumberland. It is given in the Twizell list; Mr. Finlay found it "very scarce" in Meldon Park; Mr. Maling took one at Sweetthopes in September, 1869. Mr. Backhouse found it at Shull; it is in the Manual both for Newcastle and Darlington; Mr. Gardner found it rare in Upper Teesdale, and equally so in Hezleden Dene, near where I obtained one specimen at light.

164. *C. miata*, Linn. AUTUMN GREEN CARPET.

Cidaria miata. Staint. Man., vol. ii., p. 111.

" " Newm. Brit. Moths, p. 181.

Hydriomena miata. Meyr. Hdbk. Brit. Lep., p. 212.

LARVA. Buck., vol. viii., pl. cxlii., fig. 7; O. Wils.,
pl. xxvii., fig. 5.

Generally distributed all over the district, and often plentiful. It appears in autumn, and again in spring after hibernation. It is in all the lists, and I need not give localities. The larva has often been found on Birch and the moth reared.

(*C. picata*. In the Twizell list I find *biangulata*, Haworth's name for *C. picata*. This is evidently an error, *picata* being always a southern species).

165. *C. corylata*, Thunb. BROKEN-BARRED CARPET.*Cidaria corylata*. Staint. Man., vol. ii., p. 112.

,, ,, Newm. Brit. Moths, p. 182.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 214.LARVA. Buck., vol. viii., pl. cxlii., fig. 9; O. Wils.,
pl. xxvii., fig. 7.

Widely distributed, and likely to be found in all suitable localities, though at present records are few. Mr. Bolam found it plentifully at Kylloe and at Newham Bog. He also found the variety *Albo-crenata* not very uncommon (see Trans. Ber. F. Club, vol. xv., p. 302). It is in the Twizell list; Mr. Finlay found it plentifully in the Old Park, Netherwitton, and also *Albo-crenata*; Mr. Henderson got it at Jesmond. Mr. Hedworth found it in most of the woods on the Derwent, and Mr. Rhagg got it more recently at Chopwell Wood; Mr. Backhouse got it at Hoffall Wood; Dr. Lees in Upper Teesdale; Mr. Greenwell at Bishop Auckland. We find it regularly in Hezleden Dene, very variable as to the central bar, and Mr. Gardner has once taken the extreme form *Albo-crenata*.

166. *C. russata*, W. V. MARBLED CARPET.*Cidaria russata*. Staint. Man., vol. ii., p. 113.

,, ,, Newm. Brit. Moths, p. 184.

Hydriomena truncata. Meyr. Hdbk. Brit. Lep., p. 213.LARVA. Buck., vol. viii., pl. cxliii., fig. 2; O. Wils.,
pl. xxvii., fig. 9.

In all the woods and lanes of both counties, and fairly common everywhere. This is a very variable species, but the only variety common here is that with the centre of the forewings suffused with reddish scales (*Cidaria comma-notata*).

167. *C. immanata*, Haw. MARBLE CARPET.*Cidaria immanata*. Staint. Man., vol. ii., p. 113.

,, ,, Newm. Brit. Moths, p. 185.

Hydriomena truncata. Meyr. Hdbk. Brit. Lep., p. 213.LARVA. Buck., vol. viii., pl. cxliii., fig. 3; O. Wils.,
pl. xxvii., fig. 10.

Another common species, and generally plentiful. Meyrick gives it as identical with *Russata*, but everyone else recognises them as distinct. In all our local lists. My experience of the two is that *Russata* is always common in lanes, *Immanata* never occurs out of woods, and that *Russata* is always over long before *Immanata* appears. *Immanata* too is always larger, and varies on different lines, the form with red centre patch for instance that is so common with *Russata* never appears in *Immanata*.

168. *C. suffumata*, W. V. WATER CARPET.

Cidaria suffumata. Staint. Man., vol. ii., p. 113.

" " Newm. Brit. Moths, p. 187.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 214.

LARVA. Buck., vol. viii., pl. cxliii., fig. 4; O. Wils.,
pl. xxvii., fig. 11.

Common everywhere, and in all the lists. The dark variety *Piceata* also occurs in every part of our district, and is often commoner than the type form. It is the earliest of the genus to emerge.

169. *C. silaceata*, W. V. SMALL PHOENIX.

Cidaria silaceata. Staint. Man., vol. ii., p. 113.

" " Newm. Brit. Moths, p. 189.

Hydriomena ,, Meyr. Hdbk. Brit. Lep., p. 214.

LARVA. Buck., vol. viii., pl. cxliii., fig. 6.

Not a very common species, but generally distributed, and no doubt occurring sparingly in all the larger woods and denes. Mr. Bolam says—"Does not appear to be generally common, but I have taken it at Marshall's Meadows, Newham Bog, Fenwick Wood, and near Ayton, from 25th May till the middle of July, no doubt double brooded" (Trans. Ber. F. Club, vol. xv., p. 302). It is also in the Twizell list; Mr. Finlay found it in all the woods he collected in, but it was never common; Mr. Maling took it near Hexham; and Newcastle is a Manual locality. Mr. Hedworth found it in the Thornley woods, but

not commonly (see also Entom., vol. x., p. 256). More recent collectors do not appear to have met with it in that district. Mr. Brady took one in a garden at Sunderland, and Darlington is a Manual locality. We find it regularly in Hezleden Dene, but I think it less numerous than formerly. Twenty or thirty years ago it could always be found at rest on tree trunks, where it was difficult to approach, but we never see it in such situations now. It is not double brooded in the district. In confinement the larvæ from one batch of eggs will feed up at different periods and emerge accordingly, sometimes emerging in autumn, but then always smaller in size. An autumn specimen is never seen at large here.

170. *C. prunata* (Linn.). PHENIX.

Cidaria prunata. Staint. Man., vol. ii., p. 114.

„ *ribesaria*. Newm. Brit. Moths, p. 190.

Eustroma prunata. Meyr. Hdbk. Brit. Lep., p. 203.

LARVA. Buck., vol. viii., pl. cxliv., fig. 1; O. Wils.,
pl. xxvii., p. 12.

I cannot but think this moth much overlooked by our collectors, notwithstanding its great size, for it ought to be common, yet has been very seldom recorded. It is in the Twizell list; Mr. Finlay found it generally distributed, and in some seasons it was not scarce; Mr. Maling found it plentiful in a garden at Newbiggin-by-the-Sea in August, 1871; Mr. Rhagg got it freely at Allendale Town. I have no Durham records at all, except from the south-west of the county. Mr. Gardner found it not uncommon in Upper Teesdale. I have taken it at Barnard Castle, and once at Stanhope, but never met with it around Hartlepool.

171. *C. testata* (Linn.). CHEVRON.

Cidaria testata. Staint. Man., vol. ii., p. 114.

„ „ Newm. Brit. Moths, p. 191.

Eustroma „ Meyr. Hdbk. Brit. Lep., p. 204.

LARVA. Buck., vol. viii., pl. cxliv., fig. 2; O. Wils.,
pl. xxvii., fig. 13.

This species appears to occur everywhere, but to be most abundant on the moors, especially at their edges. It is also abundant in many of our woods and denes. It is in all the lists, and I need not specify localities. Dark forms are also quite common. Stainton gives only Aspen as a food plant, but the larvæ feed also on *Salix*, Birch, *Calluna*, &c., &c.

172. *C. populata*, Bork. NORTHERN SPINACH.

Cidaria populata. Staint. Man., vol. ii., p. 114.

" " Newm. Brit. Moths, p. 191.

Eustroma " Meyr. Hdbk. Brit. Lep., p. 204.

LARVA. Buck., vol. viii., pl. cxliv., fig. 3; O. Wils.,
pl. xxvii., fig. 14.

Very generally distributed, and in all the lists, but no one speaks of it as being abundant. It is perhaps most plentiful in Upper Weardale and Upper Teesdale, but is so common that I need not give localities.

173. *C. fulvata*, Forst. BARRED YELLOW.

Cidaria fulvata. Staint. Man., vol. ii., p. 114.

" " Newm. Brit. Moths, p. 192.

Hydriomena fulvata. Meyr. Hdbk. Brit. Lep., p. 211.

LARVA. Buck., vol. viii., pl. cxliv., fig. 4; O. Wils.,
pl. xxvii., fig. 15.

Common wherever there is rose. In all the lists. A beautiful insect when fresh, and not subject to variation.

174. *C. pyraliata*, Tr. BARRED STRAW.

Cidaria pyraliata. Staint. Man., vol. ii., p. 115.

" " Newm. Brit. Moths, p. 192.

Hydriomena dotata. Meyr. Hdbk. Brit. Lep., p. 211.

LARVA. Buck., vol. viii., pl. cxliv., fig. 5; O. Wils.,
pl. xxvii., fig. 16.

This species appears to be fairly common in all parts of the district. It is in all the lists, old and recent, but appears to be rather more numerous inland than immediately on the coast. The synonymy is rather confused between this and the next

species, this being called *Dotata* by Meyrick and in South's Catalogue. The larva of the present species feeds on *Galium aparine* (common Goose-grass). Stainton distinguishes these two by the fringes, which are spotted in *Dotata* and unspotted in *Pyraliata*.

175. *C. dotata*, Linn. SPINACH.

Cidaria dotata. Staint. Man., vol. ii., p. 115.

„ „ Newm. Brit. Moths, p. 193.

„ *associata*. Meyr. Hdbk. Brit. Lep., p. 204.

LARVA. Buck., vol. viii., pl. cxliv., fig. 6.

Apparently a scarce and local species, and rarely recorded. Mr. Finlay met with it at Meldon Park, but it was always scarce. I have no other record from Northumberland. The late Mr. Backhouse took it at Shull; Mr. Ross found it fairly common at Bishop Auckland; and Mr. Gardner reports it as not uncommon in Upper Teesdale. The larva feeds on Currant, and it might be looked for with success in gardens. It is the *Spinaciata* of Haworth, by which name Mr. Backhouse records it.

PELURGA, Hb.

176. *Pelurga comitata* (Linn.). DARK SPINACH.

Pelurga comitata. Staint. Man., vol. ii., p. 116.

„ „ Newm. Brit. Moths, p. 194.

„ „ Meyr. Hdbk. Brit. Lep., p. 221.

LARVA. Buck., vol. viii., pl. cxliv., fig. 7; O Wils.,
pl. xxvii., fig. 17.

Pelurga comitata is widely distributed over both counties, but appears to be rather scarce in the southern part of Durham. I can give no explanation of this, and expect it will yet be found in most places. The imago is rather sluggish, and does not fly much; Mr. Barrett calls it a "pretty, lazy, species." It feeds on *Chenopodium*, and should be found everywhere. It is in the Twizell list; Mr. Finlay met with it in Meldon Park, but rarely; Mr. Patterson took it at Alnmouth; Mr. Wailes recorded it for Newcastle as long ago as 1839 (see

Steph. Illust., vol. iii., p. 239). Mr. Hedworth took one at Thornley; Mr. C. Eales found it on ballast at South Shields; Mr. Corder found it common at Hendon; and it occurs at Hartlepool, but not very commonly.

EUBOLIIDÆ, Gn.

EUBOLIA, Dup.

177. *Eubolia cervinata*, W. V. MALLOW.

Eubolia cervinata. Staint. Man., vol. ii., p. 118.

" " Newm. Brit. Moths, p. 194.

Xanthorhoe cervinata. Meyr. Hdbk. Brit. Lep., p. 227.

LARVA. Buck., vol. viii., pl. cxlv., fig. 1; O Wils.,
pl. xxvii., fig. 18.

Apparently a scarce and local species, though perhaps the late period at which the imago appears may partly explain its absence from the lists. It is in the Twizell list; and in the "Manual" list for Newcastle. Mr. Maling records that he had found the larvæ at Newbiggin-by-the-Sea, and had taken the imago in the outskirts of Newcastle. Mr. Hedworth found it at Thornley and Gibside, and Darlington is given in the "Manual." About Hartlepool it was formerly very common, but the "herbalists" have quite destroyed the food plant, *Malva sylvestris*, in a mistaken idea that it was "Marsh Mallow" (*Althæa officinalis*), and the insect has consequently disappeared. Where the Common Mallow grows freely, the larva should be looked for at the end of June. When disturbed it falls to the ground, coils itself up and looks very like the circular unripe seeds of the plant. The imago is easy to rear and pairs readily in confinement. The eggs do not hatch till spring.

178. *E. mensuraria*, W. V. SMALL MALLOW.

Eubolia mensuraria. Staint. Man., vol. ii., p. 119.

" " Newm. Brit. Moths, p. 196.

Xanthorhoe limitata. Meyr. Hdbk. Brit. Lep., p. 227.

LARVA. Buck., vol. viii., pl. cxlv., fig. 2.

In all the lists. Common everywhere, perhaps most abundant on the coast. This is an example of the inappropriateness of English names. There is no possible reason for associating it with Mallow.

179. *E. plumbaria*, Fab BELLE.

Eubolia plumbaria. Staint. Man., vol. ii., p. 119.

„ *palumbaria*. Newm. Brit. Moths, p. 196.

Xanthorhoe plumbaria. Meyr. Hdbk. Brit. Lep., p. 227.

LARVA. Buck., vol. viii., pl. cxlv., fig. 3.

Common in all suitable localities. The larva eats Heath and Clover, and can find food anywhere. It is in all the lists. About Hartlepool it is common on waste land and rough pastures, but I have not seen it in lanes or woods.

180. *E. bipunctaria*, W. V. CHALK CARPET.

Eubolia bipunctaria. Staint. Man., vol. ii., p. 119.

„ *bipunctata*. Newm. Brit. Moths, p. 197.

Xanthorhoe bipunctaria. Meyr. Hdbk. Brit. Lep., p. 228.

LARVA. Buck., vol. viii., pl. cxlv., fig. 4.

This moth appears to be most abundant on Magnesian Limestone, only two localities being given for it on Mountain Limestone, viz., Twizell, where it is recorded by Mr. Selby, and Cotherstone where Dr. Lees found it on dry limestone cliffs. It is abundant on the Durham coast from Marsden to Hartlepool, occurring freely also in Crimdon Cut, and on an open bank in Hezleden Dene. It flies at twilight, but is so active by day that it flies up at once as the collector approaches. The imago prefers to rest on the bare ground.

CARSIA, Hub.

181. *Carsia imbutata*, Hub. MANCHESTER TREBLE-BAR.

Carsia imbutata. Staint. Man., vol. ii., p. 120.

„ „ Newm. Brit. Moths, p. 198.

„ *paludata*. Meyr. Hdbk. Brit. Lep., p. 201.

LARVA. Buck., vol. viii., pl. cxlvi., fig. 1.

I have no recent records of the occurrence of this species, but it evidently was abundant at one time. Stephens in his

"Illustrations" says, "Apparently very common in the North of England, whence I have received numerous examples." "Heaths, Prestwick Car, G. Wailes, Esq." No other locality is given, but it is evident the earlier Northumbrian collectors knew of others. In the Transactions of the Society, Vol. V., is an account of a visit by the members to "Muckle Moss," and several species taken there are enumerated. It is also mentioned that *Carsia imbutata* was not found. I take this as evidence that it was expected to be found, and was known to have occurred there previously. The only other record I have of the species is that the late W. Backhouse took it at Shull. Now that attention is called to it, I hope some of our collectors will re-discover the insect. The larva feeds on Cranberry, which should guide collectors to suitable localities.

ANAITIS, Dup.

182. *Anaitis plagiata*, Linn. TREBLE BAR.

Anaitis plagiata. Staint. Man., vol. ii., p. 121.

" " Newm. Brit. Moths, p. 198.

Eucestia " Meyr. Hdbk. Brit. Lep., p. 200.

LARVA. Buck., vol. viii., pl. cxlvi., fig. 2; O. Wils.,
pl. xxvii., fig. 20.

This pretty species is well distributed over both counties, but does not appear to be very common anywhere. It is in the Twizell list; Mr. Finlay found it in all parts of his district, but always scarce; Mr. Maling found it at Rothbury in September, 1871, evidently the second brood. The Manual gives Newcastle. Mr. Brady found it at Thornley; Mr. Hedworth at Gibside; Mr. Patterson at Shotley; Mr. Backhouse at Shull and Darlington. It is given in Ornsby's "Durham." Dr. Lees found it plentiful near Wynch Bridge, Upper Teesdale, and on "the island." He says the larva feeds on *Hypericum perforatum* and *dubium*. No other food than *Hypericum* is given in the books, but I think it must feed on something else, as it is common in places about Hartlepool where there is none. It appears in June, and again in August or September.

CHESIAS, Tr.

183. *Chesias spartiata*, Fab. STREAK.*Chesias spartiata*. Staint. Man., vol. ii., p. 122.

" " Newm. Brit. Moths, p. 200.

Eucestia " Meyr. Hdbk. Brit. Lep., p. 199.LARVA. Buck., vol. viii., pl. cxlvi., fig. 4; O. Wils.,
pl. xxvii., fig. 21.

Not by any means common, but probably to be found wherever Broom grows freely. It is in the Twizell list; Mr. Maling found it near Hexham; Mr. Henderson got it at Jesmond, and Miss Rosie at Kenton. Mr. Rhagg got it at Rowlands Gill; Mr. Hedworth at Thornley in 1876; Mr. Backhouse took it at Shull among Broom; Ornsby's "Durham" says, "About Broom in Houghall Wood and near Bearpark." Mr. Ross took one at Bishop Auckland, where Mr. Greenwell found it in Carr Wood. Mr. Sang got it at lamps at Darlington on 18th September, 1853. We never see it in the Hartlepool district, for there is no Broom.

SIONIDÆ, Gn.

ODEZIA, Bd.

184. *Odezia chærophyllata* (Linn.) SWEEP.*Odezia chærophyllata*. Staint. Man., vol. ii., p. 123.*Tanagra* " Newm. Brit. Moths, p. 201.*Baptria atrata*. Meyr. Hdbk. Brit. Lep., p. 251.

LARVA. Buck., vol. viii., pl. cxlvi., fig. 6.

Very common in all parts of the district, and in all the lists. It is not however a species that may be found everywhere, but is locally abundant in meadows, pastures, and similar places, where the food plant occurs.

This completes the Geometræ, and as in the preceding group, it will be seen that about two-thirds of the British species have been taken in these counties.

With this we also complete what are generally called the Macro-Lepidoptera, and the first volume of the catalogue.

APPENDIX.

While the preceding pages have been passing through the press, one additional species has been taken. I add also two notes that appear to me to be specially important.

New localities for several species have reached me, but I propose to give all these at the end of the next volume, when probably others will have come to hand, and I may perhaps be able to speak more definitely of the range of some species, of which I have but a very fragmentary knowledge at present.

Page 106.

19a. *A. puta*, Hub. SHUTTLE-SHAPED DART.

Agrotis puta. Staint. Man., vol. i., p. 223.

„ „ Newm. Brit. Moths, p. 317.

„ „ Barr. Lep. Brit. Is., vol. iii., p. 301.

„ „ Meyr. Hdbk. Brit. Lep., p. 94.

LARVA. Buck., vol. v., pl. lxx., fig. 3.

A single specimen of this Southern species was taken in 1899 at Ragwort flowers in Crimdon Cut, above Hart Station, by Mr. Gardner. This insect has no established habitat in the North of England. Stainton's Manual gives it as occurring at Birkenhead. Dr. Ellis's Lancashire and Cheshire Catalogue states that a single specimen was taken at Wallasey by Mr. F. Brockholes. As this gentleman supplied Stainton with the list of species occurring at Birkenhead, it would appear that but one had been taken. Morris, in his "British Moths," gives Sutton-on-Derwent as a habitat for it, but gives no authority. This record does not appear to have been confirmed; Porritt quoted it, without confirming it, and knew of no other Yorkshire locality. Meyrick says the range of the insect extends to York, but he had no original information, and did not investigate doubtful records; it is probable therefore that Meyrick's statement referred to Sutton-on-Derwent only. Barrett gives its correct Southern range, and says it is "recorded, though very rarely, in Cheshire, Yorkshire, and Cumberland." The

Cumberland specimen was taken by Mr. G. B. Routledge, of Carlisle, and I understand only one was taken. It is certain therefore that this occurrence of *Puta* is but of a stray specimen. Records of such occurrences are, however, of great interest, as it is from such, when a suitable locality is found, that the fauna of a district may be increased.

Sphinx convolvuli, page 39.

This insect has very rarely been met with in the larva state in this country, and never, so far as I know in these counties, but this year (1901) Mr. Proudlock was fortunate to find some fifty larvæ on a hedge overgrown with *Convolvulus sepium* near Seaton Sluice. This is an absolutely unprecedented occurrence, and not very easy to explain, as it is the general habit of all the larger hawks to deposit their eggs singly. There is, however, no possible error, for a larva and a spray of the food plant were sent to me for identification, and later two pupæ concerning which there can be no error. With one exception, a small larva which did not feed up, all went to earth, and it is to be hoped will emerge in due time.

Gastropacha ilicifolia, page 82.

The doubt I expressed as to the supposed occurrence of this insect at Castle Eden Dene attracted the attention of Mr. E. R. Bankes, who purchased the specimen in question at the sale of Dr. Wheeler's collection. Mr. Bankes informs me that the specimen is undoubtedly British, and bears on the pin a label in Dr. Wheeler's writing, "Castle Eden Dene, J. Sang." Mr. Bankes has most kindly communicated on the subject with Dr. Wheeler, who, while he feels sure the insect came from Sang, does not recollect anything about it, and can find no note referring thereto, but suggests that he may have "accidentally made some mistake in interpreting Sang's data, or in writing the label." Mr. Bankes is of opinion that had Sang taken or bred this insect in sufficient numbers to have it for exchange the fact would have been known in entomological circles. It

is quite certain this was not so. Unless my memory misleads me, Sang never had but one specimen of *Illicifolia*, which was purchased by the late Mr. Tugwell when the collection was sold. I am inclined to think therefore that Dr. Wheeler is mistaken in supposing the insect came from Sang, and would suggest either that when labelling insects he had accidentally placed on this pin a label prepared for some other insect sent him by Sang, or that, if any considerable interval elapsed between the receipt of the moth and the writing the label, Dr. Wheeler's memory may have failed him as to where it came from. Mr. Banks finds that the pin, the setting, and the insect itself are identical with others known to have been taken or bred by the Cannock Chase collectors. Taking all these points into consideration, I am afraid I must consider my original doubt confirmed, and that we must wait longer before we can include *Illicifolia* among our Durham insects.

INDEX.

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In the following index to Genera, the names adopted in the catalogue are printed in Roman type; other names used by the authors referred to, in italics. Where a generic name used in the catalogue is applied by any of these authors to species placed here under other genera, separate references are given to the pages in italic figures.

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