

The Neuroptera Planipennia

RECORDED FROM SOMERSET: WITH SOME RECENT RECORDS FROM
DEVON AND GLOUCESTER.

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- I. Introduction.
- II. Notes on the Genera and Species.
- III. Records for Somerset, Devon and Gloucester.

I. INTRODUCTION.

Sub-Order PLANIPENNIA.

INSECTS with a complete metamorphosis and true pupal instar. Carnivorous in all stages. Adults with biting jaws and two pairs of wings. Marginal dichotomy of veins of wings very characteristic. Wing-coupling apparatus typically present, but jugal bristles lost. Cross-veins usually specialized, some often arranged as a very regular 'gradate series.'

This order which is of especial interest to the morphologist and to the student of life-histories is represented in the British Isles by small and inconspicuous insects. In countries possessing richer faunas than ours, many members of the order are large and conspicuous creatures, often brilliantly coloured. Perhaps the most frequently mentioned examples are the ant-lions (Myrmeleonidae), some of which are quite large insects. None of them, however, are found in this country. None the less our list of species is a fairly long one as may be seen in the sequel, and the beautiful venation of the wings

characteristic of the order as a whole is well in evidence in many British species.

The order is perhaps a little neglected by collectors, but many important papers have appeared of late years dealing with structure, habits and classification.

Economically these insects are of considerable importance. A large proportion of our British species prey chiefly on aphides. Many of them are found especially on coniferous trees, a hint perhaps of the antiquity of the group.

The notes given below are extremely sketchy, but I hope they may be of some use to entomologists; and at any rate they put on record for the first time several interesting inhabitants of S.W. England.

Leisure is wanting to me, as well as any extensive knowledge of this very interesting group, to give an account as full as I should wish to do. To any who care to make a closer acquaintance with the Planipennia I recommend a study of the works listed below, and I discharge myself here of the duty of acknowledging my indebtedness to them for most of my knowledge, such as it is, of the group. I have quoted freely from them.

MacLachlan, R. A Monograph of the British Neuroptera-Planipennia. *Trans. Entom. Soc. Lond.*, 1868, pp. 145-224, Pl. VII-XI.

Withycombe, C. L. Notes on the Biology of some British Neuroptera (Planipennia). *Trans. Entom. Soc., Lond.*, 1923, pp. 501-594, Pl. XXXVIII-XLIII.

Morton, K. J. Notes on the British species of Sympherobius. *The Entomologist*, XLVII, Aug. 1914, pp. 209-212, Pl. v.

I have also to thank Mr. Morton and Mr. Withycombe for their kind help in naming species. To the latter I am further obliged for a number of named examples of British species which I have found very useful.

In conclusion I should like to refer to the works of two writers who have made a special study of the venation of insect wings. These are (i) Comstock's book on "The Venation of the wings of Insects," and (ii) Tillyard's papers on the same subject dealing largely with the Neuroptera. These papers

have been published mostly in the *Journal of the Linnean Society of New South Wales*.

I can here give the reference to one only of these papers :—The Panorpid Complex, Pt. 3.—The Venation. *Proc. Linn. Soc. N.S. Wales*, 1919, XLIV, pt. 3, pp. 533–718, Pl. xxxi–xxxv.

There is a treasure-house full of fascinating material in the writings of these authors ; I cordially commend them to all interested in the morphology of the insect-wing.

A few explanatory remarks on the terms employed in describing the venation are necessary.

In a primitive Planipennia wing one would theoretically find the following main longitudinal veins, in order from the anterior margin of the wing backwards (especially referring to fore-wing).

1. The *Sub-costa* (Sc.) lying parallel to the anterior margin of the wing, unforked but giving off on its anterior side short veinlets roughly at right angles.

2. The *Radius* (R.), which gives off one principal branch, the ‘*radial sector*’ (Rs.), near its base. The radius remains after this without (important) branches for the rest of its length (R_1), but the sector branches twice dichotomously so as to end in four subequal branches which are labelled, from before backwards, R_2 , R_3 , R_4 , R_5 .

3. The *Media* (M.) branches twice dichotomously, the resulting four branches being from before backwards, M_1 , M_2 , M_3 , M_4 .

4. The *Cubitus* has two principal branches, Cu_1 and Cu_2 ; both of these in many cases are divided further ; the resulting twigs are labelled Cu_{1a} , Cu_{1b} , Cu_{2a} , Cu_{2b} , etc.

5. Lastly there are one or more *anal* veins (A.) ; foremost is 1A the next 2A and so on.

Complications of this primitive type are mainly of three kinds. Firstly there is the tendency, characteristic of almost all the families of the order, for the veins to undergo repeated dichotomous branching as they approach the wing-margin. This branching gives the veins in many cases a beautiful, complicated lace-like pattern from which the order derives its name.

Then there is the apparent shifting of the origin of some of

the important branches due to the beheading of their basal parts by cross-veins (somewhat as a river will 'behead' the watershed of another). This shifting is especially in evidence in the case of R_s and its branches; so that in many families the primitive dichotomous branching of R_2-R_5 is lost altogether and they take on a pectinate appearance; in other cases this is carried a stage further and they are switched on

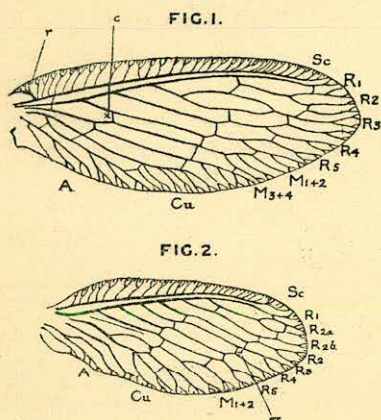


Fig. 1. BORIOMYIA SUBNEBULOSA (fore-wing).

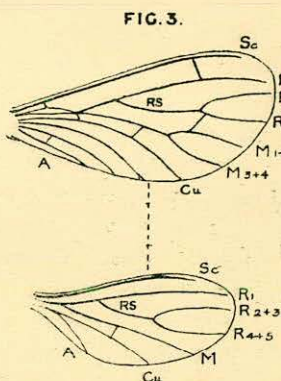
Sc.=Subcosta. R_1 . =Radius. $R_{2, 3, 4, 5}$. =Marginal segments supplied by branches of Radial sector. (Note that in this case these branches arise directly from the trunk of the Radius). M_{1+2} , M_{3+4} =Marginal segments supplied by branches of the Media. Cu.=Segment supplied by Cubitus. A.=Segment supplied by Anal vein. r.=recurrent costal veinlet. c.=cross-vein between R_5 and M_{1+2} .

Fig. 2. MICROMUS PAGANUS (fore-wing).

gr.=gradate veinlets, outer series. Other lettering as in Fig. 1.

Fig. 3. CONIOPTERYX TINEIFORMIS (wings of R. side).

RS.=Radial sector. Other lettering as in Fig. 1.



to R_1 , and appear to arise as branches of R_1 . Somewhat similarly the branching of M. and Cu. in many cases undergoes marked specialization.

Lastly, the cross-nerves in some families tend to become arranged in a regular step-like series or number of series. This step-like arrangement is spoken of as a 'gradate series.'

The venation of the hind-wing is usually more reduced than that of the fore-wing, and unless the contrary is definitely stated, the account given in the definitions of families refers to the fore-wing.

II. NOTES ON THE GENERA AND SPECIES.

1. Family OSMYLIDAE.

Larva lives in water, or in damp vegetation near water. Adult of moderate size, with ocelli. Wings rather falcate. Sc. confluent with R_1 near apex. Rs. with four branches usually pectinate (occasionally specimens occur in which these branches keep their presumably primitive dichotomous arrangement), with accessory branches developed distally to R_2 . Unspecialized cross-veins numerous in basal two-thirds of distal area; towards the margin two 'gradate series' developed. Costal area broad; costal veinlets forked. Antennae about one-third of wing-length.

Osmylus chrysops, Linn.

The largest and most beautiful member of the order found in Britain. The adult insect is to be found in May and June, and haunts streams in wooded districts. I have seen it fairly abundant on a small, well shaded stream near Eastleigh, in Hampshire.

Records for the west are scanty; doubtless they will be added to in the future.

I have seen one specimen from the banks of the Teign, taken by Dr. R. C. L. Perkins, and one from Stourton (1-VI-1914. G. B. Coney).

The size of this insect (expanse 44-47 mm.) and the falcate wings with their brownish-black mottling make this species unmistakable.

2. Family SISYRIDAE.

Small insects, with aquatic larvæ which live in fresh-water sponges. Adults without ocelli. Sc. and R. fused distally; Rs. in fore-wing, with four branches which have roughly a pectinate arrangement. Few cross-veins, mostly specialized

to form a sub-marginal 'gradate series.' Coupling apparatus reduced but recognizable. Costal area narrow; the costal veinlets not forked. Antennae about half the wing-length, setose.

This family is now regarded by several authorities as probably derived from an ancestral form allied to the *Osmylidae*.

There are three British species of the family:—

1. *Sisyra fuscata*, Fabr. Expanse 12—14 mm. Uniformly dark brown, wings unmottled, antennae wholly black. Common throughout the summer, near water.

2. *S. terminalis*, Curtis. Very similar to the last, but has the tips of the antennae whitish; and is apparently not so common.

3. *S. dalei*, MacLachlan. "Wings pale, testaceous, sub-hyaline, shining; neuration testaceous. In the anterior wings the transverse veinlets, the axilla of one or two furcations, and a spot on the anterior margin towards the base fuscous; hence these wings have a slightly dotted appearance."

3. Family HEMEROBIIDAE.

Small insects, with terrestrial larvae. In the adult ocelli are absent. Sc. not confluent with R_1 , apically. In the fore-wing branches of Rs. (R_2 — R_5) switched on to R_1 , so that Rs. is largely or entirely suppressed. In larger forms supplementary branches are developed from R_1 , distal to R_2 . No unspecialized cross-veins. Costal area broad, costal veinlets forked. Coupling apparatus usually distinguishable. Antennae shorter than the wings, setose.

The branches R_2 — R_5 have been almost invariably spoken of in this family as 'radial sectors,' so that it is commonly stated that three or more 'radial sectors' are present (e.g. in *Borio-myia*). It must be remembered however that these 'radial sectors' are by descent branches of the original single radial sector.

British genera.

A. Supplementary branches distal to R_2 present in fore-wing.

a. First costal veinlet recurrent.

1. Fore-wing falcate

Drepanopteryx.

2. Fore-wing apex not falcate

Megalomus.

inner one continued as a blotch towards the base, the outer one formed of two irregular blotches. Margins and veins spotted and interrupted with black. Four 'sectors.' Posterior wing with apex spotted with black in the form of three irregular blotches. Said to be frequent in summer and generally distributed (*MacLachlan*).

M. aphidivorus, Schr. Rather smaller than *paganus*. Anterior wings testaceous, with two narrow transverse brown fasciae following the gradate veinlets, intersected by three similar longitudinal fasciae running into the apical margin; the membrane with numerous short transverse brown streaks. Five 'sectors.' Very rare, and has only been met with singly.

It is almost impossible to give a dichotomous table for the species of *Boromyia*, *Hemerobius*, and *Symphorobius*, and I am handicapped for want of examples of many of the species. I give, therefore, short notes on the species which I can record from our area, and on a few others which may be expected to occur. This account is largely drawn from *Withycombe's* notes.

Boromyia concinna, Stephens. Expanse 13—23 mm. A supplementary branch of R_1 developed distal to R_2 , so that this species has four distinct 'radial sectors.' Veins regularly dotted with black, wings brownish-yellow. Female with up-turned ovipositor. Adult emerges in May and June. Usually found on pine trees.

B. quadrifasciata, Reuter. Expanse 18—23 mm. Wing colour grey; usually three 'radial sectors' only. Four more or less distinct dark transverse fasciae on fore-wings. Found on conifers. Adult emerges in May and June.

B. subnebulosa, Stephens. Expanse 14—18 mm. Three 'radial sectors.' Colour of wings dark grey or fuscous. Cu_1 is strongly mottled with dark about the middle of its length. Hind-wings paler. A very common species. *Withycombe* says it occurs from February to November; and notes that it occurs on all kinds of plants.

B. nervosa, Fabr. Very like the last, but usually of a more variegated appearance. Females of the two species frequently indistinguishable; males can be readily distinguished by the structure of the genitalia.

In *nervosa* these appendages are regularly curved, sub-cylindrical, rather like the trunk of an elephant when viewed from the side; in *subnebulosa* they are broad at the base, produced downwards into a narrow, rather angularly bent spine-like process on either side, the tip of which is barbed as MacLachlan says, rather like a fish-hook.

B. mortoni, MacLachlan from Rannoch. Is not known to me.

Genus *Hemerobius*.

There are some ten British species known. At least five of these are not common in the south of England; two only are so far recorded from our area. I have found *H. micans* very common in beech hedges in May and June, whilst *H. lutescens* appears to be common near Weston-super-Mare.

We may confidently expect other species to be recorded in the future. I have given below, very briefly, the characterization of the species most likely to occur.

Hemerobius micans, Olivier. Expanse 12—16 mm. Colour yellow. Wing membrane without markings, hyaline. Neuration yellowish-white, spotted with blackish. Deciduous wood, especially beech. April to October, common.

H. nitidulus, Fabr. Expanse 14—16 mm. Colour generally castaneous. Wings uniformly brown. Neuration closely dotted with darker spots, pterostigma reddish-brown. Pine woods, April till late autumn.

H. humuli, L. Expanse 14—16 mm. Colour yellow with some fuscous. Wings pale yellow, neuration spotted black which is continued on to the wing membrane as pale sagittate markings. In the basal third of the fore-wing a distinct black spot at the cross-vein connecting M_{3+4} and Cu_1 , where these approach close to one another. Common in deciduous woods, May to October.

H. lutescens, Fabr. Expanse 14—16 mm. Colour pale yellow marked with fuscous. Fore-wing with distinct black spot on basal third between M_{3+4} and Cu_1 . Neuration spotted with black. Common on beeches, April to October. Very similar to the last, but male genitalia very distinct.

H. stigma, Stephens. Expanse 14—16 mm. Colour reddish

or blackish-brown. Neuration of fore-wings dotted with dark fuscous. A black spot on membrane of fore-wing at the cross-vein connecting M_{3+4} and Cu_1 , but not so well marked as in the last species. Membrane generally more mottled with blackish than other species. Common all the year round, except in very cold weather; on conifers only. Winter form greyish.

Genus *Symphorobius*.

Two 'radial sectors' on fore-wing.

S. pygmaeus, Ramb. Expanse 8—10 mm. The smallest British Hemerobiid. Wings dark brown in colour. Veins dark brown with whitish interruptions. Confined to oak, usually uncommon, but occasionally locally abundant. (Wings figured by Morton *loc. cit. supra* under the name of *S. elegans*).

S. elegans, Stephens (= *striatellus* Klapálek). Expanse 10—12 mm. Wings and venation wholly dark fuscous. "On beeches generally, but never commonly." June—August. (Venation figured by Morton *loc. cit.* as *striatellus* Klapálek). Three 'radial sectors' present. (Species referred by some authors to *Hemerobius s. str.*).

S. pellucidus, Walker. Expanse 10—12 mm. Wings very pale greyish, iridescent; anterior wings with gradate veinlets clouded with darker grey.

S. inconspicuus, MacLachlan. Expanse 10—12 mm. Wings uniformly pale smoky fuscous; venation uniformly dark fuscous. Very like *S. elegans*, but distinguishable readily by its venation. Taken on furze and pine in June and July.

4. Family CHRYSOPIDAE.

Moderate-sized or rather small insects. Larvae terrestrial. Adult without ocelli. Sc. and R. fused apically. Rs. with pectinate branches R_2 — R_5 , and with additional supplementary branches distal to R_2 . Few unspecialized cross-veins. Costal veinlets not forked. Media forked, in fore-wing the two branches (as can be determined by examination of the trachial percursors of the wing-veins in the larva) of M. first diverge, and then rapidly converge again to enclose a small cell, the 'third cubital cell' of MacLachlan, the 'intra-median' cell

of Tillyard; and then again part company. M_1 for part of its length running into a bend of part of R_5 ; the line so formed is continued by successive bends of R_4 , R_3 , etc. (only to be clearly distinguished in the larval wing tracheation), and is called by Tillyard a 'Banksian' line.

Body green or brown. Eyes brilliant golden-colour. Eggs with long pedicel.

Probably the only members of the order that are at all familiar to the general public. They are variously known as 'lace-wing flies,' 'golden-eyes' or less poetically as 'stink-flies.' This last name is due to the possession by these otherwise attractive insects of stink-glands which lie on either side of the prothorax and open just behind the head dorsally.

There are two British genera, *Chrysopa* with thirteen species, *Nothochrysa* with two.

A. Intra-median cell more or less ovate

Chrysopa.

B. Intra-median cell quadrangular

Nothochrysa.

Key to species of *Chrysopa*.

A. Cross-vein from R_s . to M . distal to intra-median cell

1. *C. vulgaris*, Schneid.

B. Cross-vein from R_s . to M . lying above intra-median cell.

a. Colour blue-green. Second joint of antennae black or fuscous.

2. Expanse 24—30 mm. Wings bluntly rounded; sub-costal vein green. Tarsal claws dilated externally. Common in deciduous woods.

C. perla, Linn.

3. Expanse 28—30 mm. Wings rather narrow; sub-costal vein black; tarsal claws not dilated. Rare in coniferous woods.

C. dorsalis, Burm.

β . Colour green, second joint of antennae concolorous with basal.

a. Head without a black spot between antennae base.

* Costal margin of fore-wing slightly excised.

4. Expanse 34—48 mm. Basal joint of antennae relatively small. Colour in life rather yellowish-green.

C. flava, Stephens.

** Costal margin of fore-wing not excised.

5. Expanse 34—42 mm. Basal joint of antennae large. Colour in life bright green. Maxillary palpi marked with fuscous, especially the terminal joint. Neuration except for four or five cubital veinlets at the wing-base wholly pale.

C. vittata, Wesmael.

6. Head immaculate, antennae and palpi concolorous with head. Costal margin of wings strongly ciliate. Expanse 22—30 mm. Venation of anterior wings, except longitudinal veins and sectors, blackish. On posterior wings the costal veinlets and some of the gradate veinlets black. Subgenital plate of male very long.

C. alba, L.

7. Expanse 24—31 mm. Head yellow, maxillary palpi annulated with black, the terminal joint wholly black. Rest of body green. Costal veinlets of fore-wing black at each end, green in the middle, of hind-wing wholly black.

C. flavifrons, Brauer.

8. Expanse 22—30 mm. Head with a black spot on each side on the genae, and also on the sides of the clypeus. Palpi annulated with blackish.

C. tenella, Schneider.

b. A black spot between basal joints of antennae.

* A black dot at extreme base of costal in anterior wings.

9. Wing expanse 24—34 mm. Palpi annulated with black, abdomen wholly green or with black line on either side.

C. prasina, Burm.

10. Similar to the last but ventral surface of abdomen black.

C. ventralis, Curtis.

** No black dot at base of costa.

11. Expanse 28—40 mm. Body uniformly green, head with two semi-lunate spots below antennae (often absent), two on the genae below the eyes, and one on either side of the clypeus.

C. septempunctata, Wesmael.

γ. Colour green, second joint of antennae black or fuscous.

12. Ungues dilated at base *C. abbreviata*, Curtis.

13. Ungues simple *C. phyllochroma*, Wesmael.

Genus *Nothochrysa*.

1. Expanse 30—36 mm. Colour dark brown, with head orange-brown. Wings relatively short and rounded. On conifers.

N. capitata, Fabr.

2. Expanse 38—42 mm. Very dark brown; head reddish-orange. Wings relatively long, the anterior obtuse at the apex, the posterior rounded. Very rare.

N. fulviceps, Stephens.

5. Family CONIOPTERYGIDAE.

Minute insects. Larva terrestrial. Adult covered with a waxy bloom. Ocelli absent. Venation much reduced, in many cases the hind-wings much smaller than the fore-wings. Not more than two costal veinlets. Cross-veins very few.

For this family I am able to record but two species from the area. Altogether seven are recorded from Britain, one of them (*Conwentzia pineticola*, End.) is doubtfully distinct. One was recorded for the first time in 1922 at Oxshott. It is likely that if sought for more species will be found in the south-west.

The wing expanse of British species ranges from 5 to 8 mm.

A. External lobe of maxilla one-jointed. (Coniopteryginae).

A₁. Hind-wing very much reduced. Genus *Conwentzia*.

a. Cross-vein from R₁ to Rs. in fore-wing, meeting Rs. after the latter has forked. Antennae 38—43 joints. *C. psociformis*, Curtis.

β. Cross-vein from R₁ to Rs. in fore-wing, meeting Rs. before the latter forks. Antennae about 30 joints. *C. pineticola*, Enderlein.

- B₁. Hind wing not very greatly reduced.
- a. Media of hind-wing not forked. *Coniopteryx*.
 - a. Wing-expanse about 5.5 mm. Cross-veins from Sc. and R and from R to Rs. run in one straight line. Tip of abdomen orange-pink in life. *C. pygmaea*, End.
 - b. Wing-expanse 6.7 mm. Cross-veins from Sc. and R and from R to Rs. *usually* separated. Tip of abdomen yellow in life. *C. tineiformis*, Curtis.
 - β. Media of hind wing forked.
 - a. In both pairs of wings the cross-vein between Cu₁ and the media joins the latter distal to its fork. *Semidalis* sp. *aleurodiformis*, Stephens.
 - b. In both pairs of wings the cross-vein between Cu₁ and the media joins the latter proximal to its fork.

Parasemidalis sp. *annae*, End.

- B. External lobe of maxilla three-jointed, eversible ventral sacs on abdominal segments 1—5 in imago (Aleurop-teryginae).

One British genus and species.

Helicoconis lutea, Wallengren.

Conwentzia psociformis, Curtis.

I beat three specimens from a short holly hedge in my garden at Uffculme on two separate days in May, 1923. A common species found especially on oak, but frequently on other trees as well.

Coniopteryx tineiformis, Curtis.

A single specimen from hedge of beech and crab-apple, Uffculme, July, 1923. I can find no cross-vein between R and Rs. on either fore-wing.

III. COUNTY RECORDS.

SOMERSET RECORDS.

Osmylus chrysops. Batcombe, 12.VI.14, Mr. G. B. Coney (noted C hereinafter). Stourton, 1.VI.14 (C).

- Sisyra fuscata*. Shapwick, 5.VIII.16, Col. T. Jermyn (J).
Boriomyia subnebulosa. Crook's Peak, 14.V.14, Rev. S. O. Ridley (R). Weston-s.-Mare, several, IV.VII and IX (J). Kewstoke, 20.IV.14 (J). Street, 16.VIII.23, Miss E. M. Lee (L).
Boriomyia nervosa. Crook's Peak, 12.V.14 (R).
 „ *concinna*. Weston-s.-Mare, 19.V.16 (J).
 „ *quadrifasciata*. Weston-s.-Mare, 1916 (J).
Hemerobius micans. Brockley Combe, 13.VII.16 (J).
 „ *humuli*, L. Street, May, 1923 (L).
 „ *lutescens*. Crook's Peak, 24.V.15; 15.VI.14 (R). Weston-s.-Mare, 29.IV.14; 17.V.14; 19.VIII.16 (J). Brockley Combe, 13.VII.16 (J).
Psectra diptera. Breach Wood, Langport, June, 1843, J. C. Dale.
Micromus paganus. Weston-s.-Mare, 17.V.14 (J).
Chrysopa perla. Ashcott, 31.V.17 (J). Stourton Wood, 1.VI.14 (J). Shapwick, 14.VI.14 (J). Street, 19.VI.23 (L).
 „ *vittata*. Weston-s.-Mare, 17.V.14 (J).
 „ *flava*. Weston-s.-Mare, 11-29.VI.14 (J).
 „ *alba*. Stourton Wood, 3.VI.18 (C). Weston-s.-Mare, Cleeve Combe, Dulverton, 28.VI.11-14.VII.11 (J).
 „ *flavifrons*. Cannington, 29.VII.15, Mr. H. Slater. Weston-s.-Mare, 21.VI.21-7.VIII.21 (J).
 „ *tenella*. Weston-s.-Mare, 11.VII.14 (J).
 „ *septempunctata*. Weston-s.-Mare, 28.VI.14 (J). Street, 23.VIII.23 (L).
 „ *ventralis*. Shapwick, 14.VI.14 (J). Weston-s.-Mare, 6.VII.23 (J).
 „ *abbreviata*. Berrow, 9.VII.14 (J).
Nothochrysa capitata. Weston-s.-Mare, 11.VI.14. Burnham, 30.VI.23, Capt. R. D. Troup; 4.VII.23 (J). Street, 29.VII.13 (L).

DEVON RECORDS.

- Osmylus chrysops*. R. Teign, Dr. R. C. L. Perkins.
Boriomyia subnebulosa. Uffculme, April, 1922 and October, 1923 Dr. F. F. Laidlaw (F.F.L.).

- Hemerobius micans*. Uffculme Down, May and June, 1923 (F.F.L.).
Micromus paganus. Uffculme, May, 1923. Blackborough, May, 1923 (F.F.L.).
M. variegatus. Christow, May, 1921. In Coll., Exeter Museum.
Chrysopa vulgaris. Uffculme, October, 1922 (winter form) (F.F.L.). Maiden Down, July, 1923. On herbage away from trees (F.F.L.).
Chrysopa alba. Sheldon, June, 1923 (F.F.L.).
 „ *perla*. Gaddon Down. Uffculme, June, 1923 (F.F.L.).
Conwentzia psociformis. Uffculme, May, 1923 (F.F.L.).
Coniopteryx tineiformis. Uffculme, July, 1923 (F.F.L.).

GLOUCESTER RECORDS.

- Osmylus chrysops*. Tributary of the Trym. Blaise Castle Woods, Westbury-on-Trym. July (?). H. Womersley (W).
Boriomyia subnebulosa (W).
Hemerobius micans (W).
Micromus variegatus. Nailsea (W).
Chrysopa perla (W).

My acknowledgments are due to those who have been kind enough to supply me with the means for drawing up the above lists, and are herewith heartily tendered.

Mr. C. W. Bracken, F.E.S., has called my attention to a paper reprinted from the *Transactions, Devonshire Association*, XI (1879), 386-421, by E. Parfitt, entitled "The Fauna of Devon: Neuroptera." It is unfortunately too late for me to use Mr. Parfitt's numerous records in the body of the present article; which is the more to be regretted as his list is a very full one, and includes *Megalomus hirtus*, L.

Note.—I have not included in this account the alder-flies (*Sialis*) or snake-flies (*Raphidia*). I prefer to regard them as belonging to a distinct sub-order of the Neuroptera, viz. the Megaloptera.

Notes on some new and rare Fungi and Oycetozoa in West Somerset.

BY NORMAN G. HADDEN.

THE Fungus Flora of the district is undoubtedly very rich and would well repay careful investigation. Amongst many rare and interesting species which have been noted since 1917 may be mentioned :

Marasmius pruinatus Rea. Unknown previously, and described and figured in 'Trans. Brit. Mycological Soc.,' v, 435.

Lasiobolus macrotrichus Rea. Unknown previously ; described and figured in 'Trans. Brit. Mycological Soc.,' v, 440.

The large and handsome *Boletus sulphureus* Fr. has occurred plentifully on heaps of coniferous sawdust in the district ; hitherto it had only been noticed in the Highlands and in Norfolk, where it appeared on sawdust of timber which had come from the Highlands.

The very curious Earth-Stars may be found every year ; the most common being *Geaster fimbriatus* Fr. which appears under larch trees with the first autumn rains. *G. rufescens* Pers. occurs in similar situations but is rarer, and *G. Bryantii* is more frequent in mixed plantations. The very striking *G. fornicatus* Fr. has been found in the grounds of Dunster Castle.

The Rust Fungi (*Uredineæ*) are exceptionally well represented in the district, 117 species having been recorded. Since a list of the *Uredineæ* of West Somerset was published in the 'Journal of Botany,' Feb. 1920, the following have been recorded :

Puccinia tumida Grev. On *Bunium flexuosum*. Oare.

P. Valantice Pers. On *Galium saxatile*. Exmoor.

P. Absinthii DC. On *Artemisia Absinthium*. Porlock Weir.

P. Pringsheimiana Kleb. Aecidia on Gooseberry. West Porlock.

P. Molinie Tul. On *Molinia cærulea*. Acmead and Horner.

Pucciniastrum Agrimonie Tranz. On *Agrimonia eupatoria*. Porlock.

P. Galii De Toni. On *Sherardia arvensis*. West Porlock and Lynch.

Melampsora Euonymi-Caprearum Kleb. Aecidia on *Euonymus europæus*. West Porlock and Newbridge.

An interesting Smut, *Ustilago Vaillantii* Tul., appears on the anthers of *Scilla bifolia* in my garden every spring. The mycelium is perennial in the bulb and infected plants are unable to produce seed. It is probably not native in Somerset, but occurs on the anthers of *S. verna* on the Cornish coast.

The mild and damp climate of West Somerset is very favourable for the development of that most fascinating group of organisms, the Mycetozoa. Strictly speaking they do not belong to the Fungi at all but are an aberrant group of Protozoa, though most conveniently studied with the Fungi which they resemble.¹ About 184 species have been found in Britain and of these as many as 114 have already been recorded from the Porlock district. Among the most noteworthy are :

Badhamia nitens v. *reticulata* G. Lister. On living ash trunk in Ashley Combe.

B. affinis Rost. Also on ash trunk in Ashley Combe.

Physarum luteo-album Lister. Second record for Britain.

P. nucleatum Rex. Third British record.

Diderma ochraceum Schroet. Abundant on wet moss near Yarnor Moor every autumn. First English record.

D. asteroides Lister. West Porlock and Worthy wood.

Diachæa cerifera G. Lister. First British record.

Leptoderma iridescens G. Lister. Porlock Parks.

Clastoderma Debaryanum Blytt. First British record.

1. A small collection of Somerset Mycetozoa has been placed in the Herbarium of the Museum at Taunton Castle, together with a copy of the British Museum *Guide to the British Mycetozoa*, in which a mark has been placed against every species known to occur in Somerset.

Cribraria pyriformis Schrad. On old sawdust heaps.

Orcadella operculata Wing. Weir Wood.

Trichia favoginea Pers. Porlock Weir woods.

Hemitrichia minor G. Lister. First English record.

H. minor v. *pardina* Minakata. Second British record.

Arcyria Oerstedtii Rost. On old sawdust heap.

Perichaena corticalis v. *liceoides* Lister.

Dianema corticatum Lister. First record for south of England.

Tetramyxa parasitica occurs on *Ruppia rostellata* on Porlock marsh. New to Britain and apparently only recorded from Denmark.