

In looking for *D. euphorbiæ*, the distribution of its food-plant, *Euphorbia paralias* (sea spurge), must be attended to. On the east coast it is very rare, though it grows on the Sussex coast, as well as at Shoeburyness, in Essex. In the Isle of Wight it is not native, but was sown by the late Dr. Bromfield a few years ago at St. Helens and Norton Spits. It grows sparingly in a few spots in Kent and Sussex. It is abundant about Hayling Island, and occurs on most of the sandy beaches in the south-west and west of England, as far north as Maryport, in Cumberland.

Euphorbia portlandica, on which it is also said to feed, is still more a western plant, usually growing with *E. paralias*, but reaching north to Wigtonshire.

E. cyparissias has so little claim to be considered indigenous, that its localities need not be mentioned; but I have little doubt that, if our south-western sandy coasts were properly hunted, *D. euphorbiæ* might again be found as plentifully as in the days of Mr. Raddon.

70, Adelaide Road, London.

THE NEUROPTERA OF MADEIRA.

BY DR. H. A. HAGEN.

[The following paper was drawn up for Mr. Wollaston, who intended that it should form part of a second volume of his "Insecta Maderensia": having, however, given up the idea of publishing this volume, he has placed Dr. Hagen's paper in my hands for publication here. The M.S. is in French, and in translating it, I have endeavoured to do so as literally as possible. Descriptions of the new species only are here given, with the exception of a few instances (*e.g.* the two species of *Myrmeleon*), in which, previous descriptions being imperfect, the author has requested that his own may be published in detail. The numbers correspond with those borne on the pins of the type specimens; these are now in the collection of the British Museum.—R. McLACHLAN.]

TERMITIDÆ.

Genus CALOTERMES, Hagen.

C. PRÆCOX, (Wollaston, M.S.) Hagen, Linn. Ent., 12, p. 51.

Madeira. I have seen two specimens, in bad condition.

This species is allied to *C. affinis*, a succinic insect. It belongs to the group of *C. castaneus*, of Burmeister, and differs from *C. affinis* in its broader head and thorax, the latter more dilated posteriorly, the sides more convex; also by the impressions in the anterior angles.

Nos. 1 and 2.

Genus TERMES, L.

T. LUCIFUGUS, Rossi.

Very common in Madeira.

Common in all the countries bordering the Mediterranean. Its habits have been observed by Bassinet, Bobe-Moreau, Joly, Lespés, and others. *Vide* details in Linn. Ent., 12.

Nos. 3, 4, and 6.

PSOCIDÆ.

Genus PSOCUS, Latreille.

P. MARMORATUS.

Albescens; fronte thoraceque fusco-maculatis; antennis albidis, pedibus albidis, femoribus basi fuscis; alis hyalinis, omnibus fusco-nebulosis.

Long. cum alis 2 millimetres; exp. alar. 4 mill.

Head with the eyes little prominent, milk white; front brown, bordered posteriorly with black; vertex with a brown spot on each side near the eyes, and clouded with brown behind the ocelli. Antennæ white, slightly hairy. Mesothorax brown, the three elevations encircled with white. Legs pale, the thighs brownest at the base. Wings hyaline; the superior with the pterostigma oblong, the cell on the posterior margin open, slightly curved, three slightly interrupted transverse brown bands, one at the base, one at the middle, and the third at the base of the pterostigma, broadest on the posterior margin; besides these, there is a brown cloud before the apex; the bands follow slightly the course of the veins they cross; posterior wings hyaline, with two brown clouds on the anterior margin, and two on the posterior.

Madeira.

P. marmoratus belongs to the group of *P. fuscopterus* of Latreille, but it is smaller, the posterior cell bordered by a less curved nervure, the head white. By the markings of the wings and the size it comes near *P. pupillatus* of Dale, but this last is darker, and the posterior cell is altogether wanting. Finally, *marmoratus* differs from all allied species by the dark clouds on the posterior wings.

No. 7.

P. PUPILLATUS, Dale; Walker, Cat. Brit. Mus., p. 493, 40.

Fusco-piceus, occipite maculato, pedibus pallidioribus; alis cinereis, maculis anticorum magnis fuscis albo marginatis.

Long. cum alis 2 mill.; exp. alar. 4½ mill.

Small, brown, two darker spots on the occiput, the sutures of the thorax paler. Legs (especially the posterior) slightly paler. Neuriation

singular, because the posterior areole is altogether wanting; pterostigma bordered by an elongated curve. Anterior wings ash-coloured, with some large round brown spots in the areoles, bordered with white, which causes them to appear pupillated.

Madeira, England, Prussia.

The colour of the wings, and the absence of the posterior areole, render this species easily recognizable.

No. 8.

P. ADUSTUS.

Fusco-piceus, occipite lineis incurvis, fronte rectis, albidis; pedibus testaceis; tarsis et tibiæ apice fuscis; alis pallide cinereis, anticis pterostigmate angusto, ovali, fusco, utrinque oblique flavido marginato.

Long. cum alis 5 mill.; exp. alar. 10 mill.

Rather smaller than *P. affinis* of Rambur. The male with the eyes rather large, the facets almost tuberculose. Colour very dark, of a brownish black; on the occiput there are indistinct orbicular whitish lines, and on the forehead there are eight straight lines (and some others rudimentary) of the same colour. Antennæ 6 millimetres in length, hairy and blackish. Thorax pitchy, with a pale band in the middle beneath, the sutures yellowish. Legs dull yellowish, the tarsi and the tips of the tibiæ becoming brownish. Wings pale ash-colour, the veins black, the radius brown; pterostigma narrow, elongated, bordered by a much flattened curve, blackish-brown, terminated on each side by a yellowish line. Neuration as in the group of *P. lineatus*, excepting that the pterostigma does not form a triangle, but an elongated oval, a structure which is seen in some succinic *Psoci*.

The female resembles the male, but the eyes are smaller, with the facets not prominent, the forehead larger, the antennæ less pilose. One specimen (No. 11) appears to be immature, the whitish colouring of the head predominating over the dark. On the middle of the occiput, near the eyes, and round the ocelli, there are some interrupted blackish lines, formed by elongated points. The markings of the wings form ill-described circles in the middle, with a larger ash-coloured spot. It seems to me that the forehead is still larger in No. 11 than in No. 12, but otherwise both are so similar, that I cannot discover any specific differences.

Madeira.

P. adustus belongs to the group of *P. lineatus*, but it differs by its pterostigma and by its colours from all living *Psoci*, and resembles the fossil *P. ciliatus*.

Nos. 10 ♂; 11 & 12 ♀.

P. PERSONATUS.

Fusco-piceus; occipite fasciis, fronte lineis incurvis, niveis; antennis articulo primo niveo, flagello pallido, apice obscuriore; pedibus testaceis, femoribus subtus niveis; alis pallide cinereis, anticis pterostigmate angusto, ovali, fusco, utrinque pallide marginato.

Long. cum alis 3-4 mill.; exp. alar. 7-8 mill.

Resembling *P. adustus* and of the same group, but smaller. The eyes of the male smaller, head darker, almost blackish, with the snow-white lines very conspicuous. These lines are arranged as follows: above on each side there is a broad straight band, slightly excised interiorly near the ocelli, and interrupted a little in front, bent outwards on the occiput in order to go near the eyes, where they are bifurcated; between these bands there are two small lines of the same colour behind the ocelli, and a point in front of them; the tubercles of the ocelli dotted with snow-white; forehead with six lines curved outwardly, the last on each side trifurcated on the outside. Antennæ very slightly pilose, yellowish, brown at the tips; the basal joint snow-white, the second brown. Thorax with a line above and the sutures whitish, abdomen spotted with the same. Legs dull yellowish, the tarsi brownish, the thighs whitish beneath. Neuration and colours of the wings as in *P. adustus*, but the pterostigma is bordered with white on the sides, and opposite to it on the posterior margin there is a little brown clouding.

Madeira.

I know no similar living species. In the female, which is slightly the largest, the two bands on the head are less remarkable, narrower, and the branches on the occiput enlarged. The lines on the forehead are rather less curved. Otherwise I find no difference from the male.

Nos. 9 ♂; 61 ♀.

(To be continued).

DESCRIPTION (NOT HITHERTO PUBLISHED) OF *CEUTHORHYNCHIDEUS MINIMUS*, WALTON.

BY E. C. RYE.

I am enabled, by the kindness of Mr. G. R. Waterhouse, to bring forward a description of this insect, which has hitherto been "*vox et preterea nihil*," and is now not represented by any known example.

The late Mr. John Walton, in a letter to Mr. Waterhouse, dated 9th September, 1860, thus characterizes the species in question:

THE NEUROPTERA OF MADEIRA.

BY DR. H. A. HAGEN.

(Continued from page 11.)

EPHEMERIDÆ.

Genus CLÖE, Burmeister.

C. DIPTERA, Linn., Pictet.

Pallide rufescenti-cinerea, segmentorum marginibus fusciscentibus, setis fusco-punctatis, alis hyalinis, costa (♀) flavescenti-fusca, albo-marmorata, posticis nullis.

Long. corp. 9-11 mill.; *exp. alar.* 24-26 mill.; *long. setar.* 12-13 mill.

Female imago. Rosy fawn-coloured; eyes blue. Vertex and prothorax with small reddish spots. Mesothorax with three slender lines of the same colour. Each abdominal segment with three spots above. Caudal setæ whitish, pointed with black. Feet whitish; the anterior with a red spot on the thighs, and with the tips of the tarsi blackish. Wings transparent, with the posterior margin slightly brownish, and all the costal region greenish-yellow, marked with small white spots. The posterior wings altogether wanting.

Madeira.

The female (No. 71) is of the ordinary size; the head, thorax, and the basal portion of the wings wanting. No. 72 (♀) is smaller, but I possess similar examples from various localities. This species is found everywhere in Europe, but I do not know the male with certainty, which differs considerably from the female according to M. Pictet.

Nos. 71 & 72 ♀.

C. MADERENSIS.

Oculis nigris; thorace nigro-fusco, nitente; abdomine luteo, apice obscuriori; setis luteis, vix annulatis; pedibus luteis, anticis nigro-fuscis; alis hyalinis, apice antice paulo infuscatis; alis posticis minimis.

Long. corp. ♂ $5\frac{1}{2}$ - $6\frac{1}{2}$ mill., ♀ $6\frac{1}{2}$ mill.; *exp. alar.* ♂ 12-13 mill., ♀ 13 mill.; *long. setar.* ♂ 12 mill., ♀ 10 mill.

Head with the antennæ of a blackish-brown. Eyes with the turban black, perhaps reddish during life, for the margins seem to be slightly reddish. Thorax entirely of a brilliant blackish-brown, without spots. Abdomen fawn-coloured, the apex slightly darker, brownish. Caudal setæ fawn-coloured, the articulations brown, but so slightly as to appear scarcely annulated. Feet fawn-coloured, the anterior pair blackish-brown. Anal appendages of the male arched. Wings perfectly trans-

parent; neuration brown, the pterostigmatal portion slightly smoky, with about six transverse irregular veinlets, anastomosing in the middle.

The female has the thorax paler and the abdomen darker, entirely brownish.

The female sub-imago entirely cinereous.

Madeira.

This species is allied to *C. Rhodani*, but the colours are different. It is very difficult to describe the *Ephemeridæ* with certainty from dry specimens, but it appears to me that the male No. 64, and the female No. 67 from Santa Cruz, are certainly the same species. The males Nos. 62, 63, & 65, and the females No. 68 from Arribenteo & No. 66, are I think also the same species, at least Nos. 63 & 66; No. 65 has the neuration rather more prominent, but the male, No. 62, is well intermediate. Thus I think that all form one species.

Nos. 62, 63, 46, & 65 male imagos; Nos. 66 & 67 female imagos; No. 68 sub-imago.

NOTE.—The male numbered 69, and the female sub-imago No. 70, belong to a species very closely allied, but probably distinct; any way, I think it more prudent to leave them for the present, for the male has lost its head and abdomen. It is larger and darker, especially the thorax, feet, setæ, apex of the wings, and the pterostigmatal region; the latter has five transverse, oblique, regular nervules, not anastomosing in the middle. The female sub-imago belongs probably to the same species, but it is necessary to know the female imago to be certain. In any case one should have several specimens to say with any degree of confidence if they form a distinct species or not.

ODONATA.

Genus LIBELLULA, Linn.

L. RUBELLA, Brullé.

L. Fonscolombii, Rambur, Selys; *L. erythroneura*, Schneider.

Madeira. No. 15, ♂.

M. Brullé's name has the right of priority. This species is found almost everywhere in Europe, except in the northern and eastern parts; towards the latter it is not found further than Mecklenburgh. I have seen it from Asia Minor, Syria, Egypt, Cape of Good Hope, and Senegal, and also from Java, if the label be correct. M. Brullé cites it from India.

L. STRIOLATA, Charpentier.

L. striolata, Selys "Revue," with the synonymy; *L. vulgaris* of 'l'Histoire des Isles Canaries.'

Madeira. I have seen several examples.

This species is common in almost the whole of Europe, excepting the east and north.

No. 13 ♂; 14 ♀.

NOTE.—*L. erythrea*, Brullé, = *L. ferruginea* of 'l'Histoire des Isles Canaries,' p. 82, is cited from the Canary Islands by M. Brullé. It is very possible that this species is found there, but I have never seen a specimen from thence.

L. Olympia of 'l'Histoire des Isles Canaries,' p. 83; I doubt much if this species (*L. cœrulescens*, Selys,) be found there. It is probably a neighbouring species, which I possess from Teneriffe, viz., *L. chryso-stigma* of Burmeister; perhaps synonymous with *L. barbara* of Selys.

I have not seen the *Gomphus* taken by M. Hartung in Madeira, and deposited in the collection of Professor Heer; it is probably *G. simillimus*.

Genus ANAX, Leach.

A. FORMOSA, Van der Linden.

Madeira. I have seen both the sexes.

Common in all Europe and Africa, as far as the Cape of Good Hope. See Selys "Revue," p. 394, for notes on the artificial introduction of this species into Sweden.* Perhaps it may have been introduced into Madeira?

Genus AGRION, F.

A. PUMILIO, Charpentier.

Madeira, and almost the whole of Europe.

The female variety is orange-yellow, with a spot on the epistoma, a transverse band on the middle of the head, a longitudinal band on the pro-thorax dilated posteriorly, an anterior narrow band of the same

* The following is a translation of the notes referred to (R. McL.):

Dr. Hagen possesses the following anecdote from Dr. Burmeister, on the actual presence of *A. formosa* in Sweden. "A professor of Stockholm has assured him of the presence of *A. formosa*, for many years in one locality in Sweden. A Frenchman dwelling in the country near a large pond, regretted not hearing the croaking of the frogs of his country. He had sent to him in the spring-time masses of eggs in marshy earth. By this means he introduced *Rana aculeata* into the Swedish fauna, and that pond has remained the sole place where this amphibian is to be met with. At the same time, without doubt, the eggs or young larvae of *A. formosa* were brought from France, for this pond is the only locality in Sweden where it is to be found. This narrative (adds Dr. Hagen) seems fabulous, but I have been able myself to verify in Sweden an analogous instance, having found in 1839, near Upsal, in the garden of Linnæus' country-house, living *Helia pomatia*; now we know with certainty that Linnæus caused this species (which is absent from the Swedish fauna) to be introduced."

breadth throughout, a humeral line, and the under-side of the abdomen on the posterior three-quarters of the third segment, all bronzy-green.

I do not know the *Agrion Maderæ* of De Selys Longchamps.

Nos. 17 ♂; 18 ♀; 19 ♀, var.

(To be continued).

NOTES ON BRITISH FORMICIDÆ.

BY FREDERICK SMITH, V.P.E.S.

The present communication will probably be regarded as being very nearly allied to an advertisement; it has, however, a definite entomological object in view, that of seeking to increase our knowledge of the British species of the *Formicidæ*.

In the year 1851, our list of ants numbered eighteen species; the list has since that period been swelled to nearly double that number, it having increased to thirty-two. I feel confident that several additions may be made, if Entomologists living in distant localities can be induced to collect sets of ants during the present season, at such times as the winged sexes are observed in the nests. The discovery of an additional species the other day at Sandown, near Deal, induces me to appeal to brother Entomologists, and to request that they will be kind enough to collect some of these insects at such times as I have indicated above; particularly the smaller species; always being careful to keep each species separate, and carefully labelled as to the situation in which they were found, with the date of the month, &c. Any one visiting Scotland would be sure, I believe, to add to our list by attending to my suggestions. Many, I dare say, imagine that we have only one species of hill ant—by which I mean ants that erect nests composed of bits of stick, leaves, straws, &c., like those of the well-known wood ant; I take three species from such nests, and we may expect to find at least three others. There are also two or three species that will probably be found under bark, or in the dead stumps of trees, and others that do not construct nests of their own, but are found living in perfect harmony in the nests of other species; these are usually minute insects; two are found in the nest of the wood ant on the Continent, we have only as yet obtained one of them in England. A good plan for finding them is to soak an old rotten board in water, and then to place it against an ant hill; if occasionally examined, the little parasitic ants may be expected to be found beneath the board, attracted by the moisture. Myrmecophilous *Coleoptera* will also be occasionally found.

I subjoin a list of the British ants, indicating the situation of the nest, the date when the species usually swarm, and the localities known for some of the rarer species.

1.—*Ulopa obtecta*, Fall.

Flavo-brunnea, pallida; abdomen nigricans, lateribus pallidis. Vertex medio longitudinaliter albidus, antice in ipsa acie plerumque brunneo binotatus. Pronotum pallido varium. Hemelytra crassissime (ut et totum corpus) punctata; nervi elevati inter fascias elevatas p. p. infuscati. Pedes flavobrunnei, fusco lineati, ♀.—♂ minor, obscurior.

Long. $1\frac{1}{4}$ - $1\frac{3}{4}$ lin.

Fall., Hem., 2, p. 66. Flor., R.L. 2, p. 140. Germ., Mag., 4, p. 55. *U. ericetorum*, Lep. et Serv., Encycl. Méth. *Cercopis ericæ*, Germ., Fn. 3, 24. *Cercopis reticulata* (?) Fab., S.R. p. 98; Ent. Syst. 4, 57, 46.

NOTE 1.—Curtis suggested that *C. reticulata*, Fab., must belong to his genus *Megophthalmus*. The Fabrician description is as follows: "C. pallido ferrugineoque varia, elytris pallidis, disco nigro reticulato."

NOTE 2.—The insect figured in Cuvier, Règne, Anim. Insectes. Atlas, pl. 99, fig. 2, as *U. obtecta*, Fall., is *Ptyelus* (*Lepyronia*) *angulatus*, Fab.

Common in many places at the roots of heath, on which it feeds. It lurks in the crevices of the ground, is very sluggish, and from its small size not easily detected. I have found it, even in winter, near London, at Darenth Wood, Esher, Weybridge, and Epping Forest. Also in the midland district; Bardon Hill, and Bradgate Park, Leicestershire.

(To be continued).

 THE NEUROPTERA OF MADEIRA.

BY DR. H. A. HAGEN.

(Continued from page 28.)

HEMEROBIDÆ.

Genus MICROMUS, Rambur.

M. APHIDIVORUS, Schranck.

Hemerobius angulatus, Steph.; *intricatus*, Wesm.; *villosus*, Zett.; *tendinosus*, Rbr.; *lineatus*, Goszy.

Madeira, and all Europe; Sweden, St. Petersburg, Germany, England, Sardinia; common everywhere, and easily recognisable.

Brullé cites *Hemerobius hirtus* as found in Madeira. Can this be *M. aphidivorus*?

Nos. 25, 26, ♂; 27, 28, ♀.

Genus HEMEROBIUS, Linn.

H. HUMULI, L.

Madeira.

At first I was not certain whether this specimen would not form a distinct species, closely allied to *humuli*. Now, I find it impossible to separate it. The colours, *facies*, and markings are absolutely identical. The differences consist in that the Madeiran example possesses four sectors in the anterior wings, while *humuli* has only three. But this difference should lose its value, because one finds in allied species (*e. g.* *H. nervosus*) similar variations. Also the first series of gradate nervules is interrupted at the commencement, as in *H. maculatus* of Wesmael. Having compared M. Wesmael's type, which is only a variety of *humuli*, this difference becomes of little importance; besides, *H. humuli*, being common in all Europe, and even in Asia, frequently offers very remarkable varieties.

No. 29.

H. NERVOSUS, Fabricius.

Madeira.

I had suspicions that these specimens would form a distinct species, allied to *H. nervosus*; especially because the wings are shorter, broader, and more rounded at the apex. I think it more prudent, however, to refer them to *nervosus*; which species, being very widely distributed in Europe, varies much, even in the shape of the wings; for I possess similar examples from different countries, and even from Prussia. Any way, it will be necessary to have a greater number of specimens in better condition, to enable me to be sure of the identity.

Nos. 30, 31, and 32.

Genus CHRYSOPA, Leach.

C. VULGARIS, Schneider.

Madeira.

The partition vein at the base of the wings, ending before the adjoining cell, strongly marks this species, which is found in all parts of the world.

I do not know the species indicated in "l'Histoire des Isles Canaries" by M.M. Barker, Webb, and Bertholet; these are *C. albus* and *C. flaviceps* of Brullé; the latter is spotted with black, but the determination is impossible.

Nos. 20-24.

Genus MYRMELEON, Linn.

M. ALTERNANS, Brullé, Hist. Isles Canar. Entomol. pl. 3, fig. 4.

Parvus, fuscus. Capite luteo; fronte fusca; occipite fusco-maculato; palpis luteis; antennis luteo-fuscis; thorace fusco-luteoque variegato; pedibus luteis; abdomine fusco, segmentorum dimidio basali flavo; alis hyalinis, venis fuscis; posticis fuscis, flavo-stictis.

Long. cum alis 28 mill.; exp. alar. 52-56 mill.

Smaller than *M. formicarius*, brownish; front entirely blackish-brown; occiput fawn coloured, spotted with brown, viz., two median geminated linear spots in front, two quadrangular spots on each side near the eyes, and two median linear geminated spots behind; antennæ rather short, obscure reddish, paler at the base, the apex moderately thickened; mouth yellowish fawn coloured; labial palpi longer than the maxillary, the third joint strongly thickened, but slender at the tip; pro-thorax short, traversed by two channels, rounded in front, slightly excised in the middle, yellowish fawn coloured, the middle broadly brownish, with a brown line on the sides; meso-thorax dark brown, with a yellowish line on each side, and a point near the base of the wings; abdomen long, thin, dark brown, the basal half of each segment pale yellow, the yellow extending slightly on the apical margin of the preceding segment; the body scarcely hairy; legs short, slender, fawn coloured; anterior tibiæ faintly spotted with brown, the spurs on these tibiæ a little shorter than the first joint of the tarsi; wings rather long, narrow, slightly acute at the apex, hyaline, slightly greyish, the neuration brown, finely varied with yellowish, especially on the longitudinal veins; pterostigma obsoletely marked with whitish.

Madeira.

This species agrees, in its neuration and legs, with the group of *M. capensis* of Rambur. This latter species is synonymous with *M. fuscatus* of Burmeister, and perhaps also with *M. alternans*. The difference consists solely in the darker and more varied coloration of *M. capensis*; in the place of brown there is black, with the palpi and legs spotted with the same colour, and less yellow on the abdomen. It is possible that these differences may be owing to the type of *capensis* being more mature. It is not at all impossible that *M. caninus*, F., from Guinea, may be identical with *alternans*.

Nos. 34, 35.

M. CATTA, Fabricius; Brullé; Walker, p. 406, 199 cum synon.

Fusco-niger; ore flavo; occipite flavo-maculato; antennis flavo-macula-

tis; thorace flavo-variegato; abdomine segmenti antepenultimi basi utrinque flavo-maculato; pedibus villosis, luteis, femoribus apice, tibiis apice, medio, basique, tarsi apice, nigro-maculatis; alis hyalinis, nervis fuscis flavostictis; linea obliqua ad marginem posteriorem aliaque apicali fuscis.

Long. cum alis 43 mill.; exp. alar. 70 mill.

In its size and coloration so much resembling *M. tetragrammicus*, that it is possible to confound the two species; but sufficiently distinct. Blackish-brown, with slight griseous pubescence; head small; front black; mouth yellow; labial palpi black externally, the terminal joint much swollen before the apex; antennæ longer than the thorax, moderately clubbed at the apex, black, the apex of the joints narrowly ringed with yellow, the basal joint yellow beneath; occiput swollen, yellow, with two rows of quadrangular black points, which anastomose and form two transverse lines; two geminated spots in the middle near the pro-thorax; pro-thorax broadly excised in front, greyish-brown, with a line in the middle, and a band on each side (separated into two) yellowish; meso-thorax similarly marked; the bands are interrupted on the thorax, and in a way separated into spots; abdomen long, thin, brown, with a yellow spot on each side of the base of the antepenultimate segment, and probably also on the preceding segment; legs weak, very pubescent or ciliated with greyish-yellow, the apex of the thighs, the tibiæ at the base, in the middle, and at the apex, annulated with black; spurs of the anterior legs as long as the four first of the tarsal joints; wings long, narrow, hyaline, with the neuration veined with yellow and brown, especially on the longitudinal veins, a short oblique brown line on the posterior border of the anterior wings, where the oblique branch of the fifth longitudinal vein unites with the margin; a similar spot before the apex; pterostigma white, marked with brown internally; posterior wings without spots, the nervures visibly ciliated.

Madeira. I have seen four specimens, and also the Fabrician type in Banks' collection.

M. catta pertains entirely to Rambur's group of *M. tetragrammicus*. Brullé (l. c. p. 83) cites *M. lituratus* of Olivier as found in Madeira, and suspects the example to be a variety with the abdomen more obscure, and the spots on the wings much less marked. But *lituratus*, Oliv., from the south of France, and from Greece, is probably a distinct species, equalling *M. nemausiensis* of Scriba and Burmeister.

Lastly, *M. hyalinus* of Olivier figured on pl. 3, fig. 5, as found in Madeira, is to me totally unknown. The figure is bad; perhaps it will belong to the group of *M. distinguendus* of Rambur.

Myrmecleon will be found in these islands; but I think we may pretty surely assert they are at any rate absent from England, and I doubt if we can lay the slightest claim to including them in our fauna; but the matter can scarcely be considered as settled until the south-west coast of Ireland has been thoroughly explored. Any way, I have no doubt they could be easily naturalised among us, if the larvæ were turned loose in a suitable locality, such as Weybridge or Bournemouth.

Many of the ant-lions do not make pitfalls. The number of described species known to inhabit Europe is about twenty-seven, belonging to five or six genera, and it is probable that the total number of species equals nearly three hundred.

In conclusion, I would remark that these interesting creatures have afforded me endless amusement and instruction, and I would earnestly recommend any entomologist visiting their native haunts, to bring over a supply, and become personally acquainted with their doings as I have done.

Forest Hill, London, 7th August, 1865.

THE NEUROPTERA OF MADEIRA.

BY DR. H. A. HAGEN.

(Concluded from page 62.)

PHRYGANIDÆ.

Genus LIMNEPHILUS, Leach.

L. CINCTUS, n.s.

Rufa-fuscus, fusco-villosus; antennis fuscis, pallide annulatis; pedibus testaceis, nigro-spinosis, anticis tibiis tarsisque nigro-annulatis; alis anticis ochraceis, margine postico et apicali latius dense fusco sparsis, disco parce fusco-maculato, pterostigmate parvo fusco; alis posticis nigro-cinereis, margine antico paulo infuscat, venis partim nigris.

Long. cum alis, 13 mill.; exp. alar. 21 mill.

Head of an obscure red, ciliated with brown, yellow in the vicinity of the eyes, a little elevated in the middle; tubercles as in *L. impurus*; antennæ blackish brown, annulated with fawn colour; palpi fawn-coloured; thorax dark brown; legs fawn colour, with black spines, the anterior tibiæ, and the base of the joints of the anterior tarsi, annulated with black; wings almost as in *L. impurus* (Rbr.), but the apex less broad and less obliquely truncated, neuration almost similar, the fourth apical cell slightly narrower at the base; in the posterior wings the

cubitus forks at the same height as the sector of the radius; the colours similarly placed, but the brown is darker; anterior wings yellowish, marked with numerous brown atoms, which are more or less confluent, especially towards the apex, the anal angle, and posterior margin, but fewer on the disk, where they leave a large pale space about the anastomosis, and a quadrangular spot nearer the base; pterostigma formed of several brown spots; the nervures with brown hairs at the base, and on the posterior portion; posterior wings smoky cinereous, the anterior border, and especially the pterostigma, brownish; the nervures in the anterior portion pale yellowish, blackish in the anal portion. (Abdomen wanting.)

Madeira.

The description remains incomplete, wanting that of the appendices. *L. cinctus* is allied to *L. impurus*, but is smaller.

No. 38 ♂, 39 ♀.

Genus STENOPHYLAX, Kolenati.

S. OBLITUS, n.s.

Pallidus; *vertice, thoraceque fuscis, antennis rufis, vix annulatis*; *abdomine pallide flavo*; *pedibus pallide flavis, nigro-spinosis, anticis paulo obscurioribus*; *alis anticis infuscatis, parce-fusco villosis, maculis parvis pallide flavis sparsis, venis fusco flavoque alternatim pictis*; *posticis hyalinis, venis ciliisque flavescentibus.*

Long. cum alis 12-16 mill. ; exp. alar. 21-26 mill.

Resembling *S. aspersus*, Rambur, but much smaller; pale yellow. Antennæ reddish, with the articulations slightly paler, as if annulated, basal joint slightly darker on the sides. Head elevated in the middle, and darker, ciliated with brown, two small tubercles between the antennæ in front, two other oval ones in front of the ocelli on the inner side, and two more on the occiput; in the middle, posteriorly, are two slightly elevated ridges, curved somewhat outwards. Meso-thorax brownish above. Legs yellowish, the anterior somewhat brownish. Wings elongated, the anterior dilated before the apex; of a reddish-grey, a colour which is produced by a brown shade, dusted with very numerous small pale irrorations; neuration brown, spotted with yellow; anal parts in the female with two triangular acute appendices; vulvar scale quadrifid, with the two intermediate divisions narrower; superior appendices in the male short, rounded at the apex, which is a little concave internally; inferior appendices forming a broad scale, the superior apex curved inwards and forming a tooth; intermediate

appendices curved outwards, cylindrical, but furnished beneath with a rounded scale; penis cylindrical, curved upwards, and slightly excised at the apex, a hook on each side.

Madeira.

This species resembles *S. aspersus* in its coloration, but is smaller, and the appendices are arranged in a totally different manner, to which *S. alpestris* alone offers any analogy; besides, the vulvar scale in the female being quadrifid, it is impossible to confound it with any known species of *Stenophylax*.

It bears much resemblance, in size and coloration, to *Limnephilus hirsutus* and allies.

Nos. 37 ♂, 36 ♀.

Genus HYDROPTILA, Dalman.

H. ATRA, n.s.

Capite et thorace atris; antennis unicoloribus atro-fuscis; alis brunneis, fusco-pilosis, griseo-fimbriatis; pedibus fuscis, tibiis posticis griseo-fimbriatis.

Long. cum alis 2½ mill.; exp. alar. 5 mill.

The head slightly inflated, with two rounded tubercles close to the occiput. Antennæ slightly more distant than is usual in the species of this genus, stout, as long as the body. Wings very narrow, pointed. Legs rather strong, the posterior pair long. The colour is wholly of a uniform, rather dark, blackish-brown; the wings brownish, with brown pubescence, and with long greyish-brown fringes; the feet dark brown, with greyish hairs on the posterior thighs. (The individual has lost its abdomen, but is otherwise in fair condition.)

Madeira.

No. 41.

Genus HYDROPSYCHE, Pictet.

H. MADERENSIS, n.s.

Nigra; vertice aureo-villoso; antennis fuscis, subtus pallide annulatis; palpis et pedibus anticis brunneis; tarsis intermediis et posticis, maculoque basali femorum posticorum, brunneis; alis anticis nigro-fuscis, dense aureo-maculatis; posticis nigro-cinereis, margine antico flavo.

Long. cum alis 10-14 mill.; exp. alar. 20-24 mill.

Body black. Head less broad than in allied species; eyes more prominent; the four tubercles flattened, the two posterior ones large and oval, the anterior smaller and uniform. Antennæ slender, as long

as the wings, slightly serrated towards the apex; brown, the upper side of the basal portion, and the whole of the under-side, annulated with whitish. Palpi long and brown. The upper side of the head and pro-thorax with golden yellow pubescence. The first pair of legs brown, the others yellowish, with brown tarsi; an indistinct brownish spot at the base of the posterior femora; the posterior tibiæ slightly ciliated externally; the intermediate tarsi of the female flattened, and slightly dilated. Anterior wings narrow, a little dilated towards the apex, which is oval; blackish-grey, sprinkled with rather brilliant golden-yellow quadrangular spots, which are often confluent; a series towards the costal margin, a broad maculated band before the apex, and a row of larger spots on the dorsal margin. Posterior wings grey, the basal two-thirds of the anterior margin yellowish. The superior appendices of the male soldered into a plate, which is bifid at the apex, roof-shaped, brown; inferior appendices long, turned upwards, biarticulated, basal joint long and straight, thickened towards the apex, the apical joint one-half shorter, curved, the apex slightly broadened and rounded; penis long, straight, cylindrical, slightly dilated beneath before the apex. In the female there are two quadrangular ciliated vulvar plates, and also two cylindrical appendices towards the apex.

Madeira.

I have seen fifteen examples (from Hartung's collection), males and females.

This species is apparently common. It belongs to the group of *H. atomaria*, and differs from allied species by the black colour of the body, and the brilliant golden-yellow of its spots.

Nos. 50-57 (55 and 56 ♀; the others males).

Genus TINODES, Stephens.

T. CINEREA, Hag. Stett. Zeit. t. 21, p. 283, 4.

Cinerea, luteo-hirta; corpore palpisque fuscis; antennis fuscis, anguste flavo-annulatis; penicillo inter antennis aureo; alis anticis cinereis, luteo-hirtis; posticis cinereis, cinereo-ciliatis; pedibus pallide flavis, tibiis posticis obscurioribus.

Long. cum alis 7 mill.; exp. alar. 12 mill.

Body brownish; vertex inflated; two rather large pyriform tubercles on the occiput. Head clothed with fawn-coloured hairs, golden between the antennæ. Palpi long and blackish-brown. Antennæ brown, annulated with fawn colour. Legs yellowish, the posterior tibiæ brownish. Wings narrow; the anterior clothed with yellowish

hairs; the posterior grey, with grey fringes. Anal appendices of the male pale; the superior long, narrow, straight, somewhat dilated at the base, and with long ciliæ; the inferior short and broad, in the form of an oval plate, with a thin and long superior branch, which is curved inwards; between the inferior appendices there are two supplementary appendices, long, forming a narrow plate, curved inwards at the apex; penis-cover triangular, roof-shaped; penis inflated beneath at the apex, with many rather long spines. Abdomen of the female ending in a triangular oviduct, which is acute and turned upwards.*

Madeira.

Nos. 45 and 46 ♂; 47 and 48 ♀.

T. GRISEA, Hag. Stett. Zeit. t. 21, p. 283, 5.

Cinerea, luteo-hirta; corpore palpisque fuscis; antennis flavis, fusco-annulatis; alis griseis, luteo-hirtis; posticis cinereis, cinereo-ciliatis; pedibus pallide flavis.

Long. cum alis 12 mill.; exp. alar. 20 mill.

Belonging to the same group as *T. cinerea*, and very similar to that species, but larger. Head slightly excised in front. Antennæ yellow; basal joint brown, second joint yellow, with a brown external basal spot, the remainder yellow, with the apical half of each joint brown. The oviduct as in *T. cinerea*. The hairs of the body are rubbed off. Notwithstanding the extreme resemblance to *T. cinerea*, I am convinced that it forms a separate species, for the size is too different, and the colours described justify a separation. It is necessary to see fresh specimens, especially of the male.

Madeira: one female.

No. 49.

Genus *POLYCENTROPUS*, Curtis.

P. FLAVOSTICTUS, n.s.

Nigro-fuscus, nigro-villosus; corpore supra nigro, subtus pallidiori; antennis palpisque fuscis; alis anticis nigro-fuscis, flavo-maculatis, posticis cinereis, cinereo-ciliatis; pedibus fuscis, posticis testaceis.

Long. cum alis 8 mill.; exp. alar. 17 mill.

Body blackish, pale beneath, ciliated with black, especially on the head. Vertex inflated, with two elongated, slightly curved, tubercles

(* This species is very closely allied to the British insect, that I consider *T. pusilla* of Curtis: so closely, indeed, that I do not feel sure if it be really distinct. In making a careful comparison of the appendices of the two species, I could not, however, find in *T. cinerea* the small inferior branch of the inferior appendage, to be seen in *T. pusilla*. The types of *cinerea* are gummed on card, and, from this cause, it is impossible to make so good an examination as could be wished; this may also partially explain the apparent darker colour of the wings.—R. McLACHLAN.)

in the middle, and two larger pyriform and oblique ones on the occiput. Antennæ brown, slender, nearly as long as the wings. Palpi brown. Wings narrow, with the apex dilated and elliptical; the anterior bright blackish-brown, sprinkled with round golden-yellow spots; the posterior grey, with long concolorous fringes. Legs brown, the posterior pair fawn-coloured. Superior appendices in the form of a short oblong plate, with a tubercle at the base. Between these appendices there is a flattened plate, almost quadrate; inferior appendices in the form of a broader plate, slightly turned inwards, somewhat denticulate on the superior edge.*

Madeira.

This large species is darker and brighter coloured than any known species. The antennæ are longer, and in this respect approach the genus *Plectrocnemia* of Stephens, but they are more slender, and the wings narrower, than in the single known species of that genus (*P. conspersa*).

Nos. 58-60 ♂.

Genus AGAPETUS, Curtis.

Sub-genus. *Femina tibiis tarsisque intermediis non dilatatis; minus villosa; alis granulatis.*

A. PUNCTATUS, Hag. Stett. Zeit. t. 20, p. 163, 5.

Fuscus, fusco-hirtus; corpore nigro-fusco; antennis palpisque fuscis; alis cinereis, punctatis, anticis luteo-hirtis, posticis fusco-ciliatis; pedibus luteis, tibiis, calcaribus, tarsisque fuscescentibus.

Long. cum alis 5 mill.; exp. alar. 9½ mill.

Body blackish-brown. Head and thorax with brown hairs, among which are several yellowish. Vertex inflated, two linear tubercles near the occiput, and two others which are punctiform, more in front near the ocelli. Antennæ as long as the wings, somewhat stout, pilose; the basal joint ovate, larger and stouter than the rest; the second orbicular, the others cylindrical. Palpi short, the third joint slightly dilated. Pro-thorax with a rounded tubercle on each side. Mesothorax with two linear convergent tubercles above. Wings narrow, the apex elliptical; the posterior a third shorter than the anterior, and narrower, with long brown fringes, the anal field wanting; the membrane of the anterior finely punctated (the hairy clothing is nearly

* *P. flavostictus* belongs to the first group of *Polycentropus*, as explained in the Ent. Mo. Mag. Vol. I., page 27; viz., that in which the discoidal cell is open in the posterior wings, with the two first costule anastomosing near the middle. The arrangement (but not the form) of the appendices is also, similar to that found in the British species of this group.—R. McLACHLAN.

rubbed off, and visible only at the apex of No. 43), Abdomen ovoid, slightly elongated in the form of a truncated cone. Legs yellowish; the tibiae, spurs, and tarsi brownish, pilose externally; the intermediate legs not dilated.

Madeira.

This resembles the European species, but differs in the non-dilated intermediate legs of the female. *A. ciliatus* has also the membrane of the wings slightly punctated. The colours of the body are as in *A. ciliatus*; those of the wings as in *A. comatus*, but the hairs of the posterior wings are darker.

No. 42-44 ♀.

Königsberg.

DESCRIPTION OF A NEW SPECIES OF *MORPHO* IN THE COLLECTION OF THE BRITISH MUSEUM.

BY A. G. BUTLER, F.Z.S.

MORPHO THETIS.

Upperside. Front wings rich chocolate-brown, basal half glossed with blue-green; crossed in the middle by a broad, oblique, variable metallic blue-green band, narrower above the cell; a large, oblique, marginal white spot on the anterior margin, above the end of the cell; a sub-marginal row of six white spots along the outer margin, diminishing in size towards the anal angle, the second from the apex, much larger than the others.

Hind-wings rich chocolate-brown, crossed beyond the middle by a broad, oblique, variable, blue-green band, broader above than below, but, at its widest part, only two-thirds of the width of the band of the front wing; a small red spot, bordered with black, at the anal angle; cilia pale ochreous.

Body brown, head and pro-thorax spotted with yellow. Underside. Front wings dull chocolate-brown, interior margin broadly clay-coloured, glossed with violaceous; crossed beyond the middle by an oblique, irregular, deeply dentated, narrow band, pale ochreous above, brighter in the middle, violaceous near the anal angle where it terminates; beginning at the anterior margin, and strongly incurved just below the end of the cell, more disconnected from below the cell to the inner margin, intersected by the nervures; two irregular pale green bands within the cell, the outer one nearly crossing it; a single

Bibliography of the Neuropterida

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