

ART. V. — *Some Additions to the Perlidæ, Neuroptera - Planipennia, and Trichoptera of New Zealand.*

By E. J. HARE.

Communicated by G. V. Hudson, F.E.S.

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THE descriptions that follow are made from specimens kindly sent to me by Mr. G. V. Hudson, F.E.S., of Wellington, New Zealand.

PERLIDÆ.

Four new species are described below. Of these, probably two have been included hitherto, with a Tasmanian species, under the name of *Leptoperla opposita*, Wlk., and I have merely put into practice the opinion of McLachlan in separating them. No more revolutionary is the foundation of a new genus for the *Chloroperla cyrene* of Newman.

The number of species at present recognised in New Zealand is six.

Genus LEPTOPERLA, Newm.

Leptoperla fulvescens, n. sp.

♀. Reddish-brown. Antennæ rather longer than forewings; 1st joint stoutly cylindrical, 2nd oval; brownish-ochreous. Meso- and meta-thorax fuscous-brown; abdomen reddish, dark fuscous at extremity. Forewings greyish-ochreous, veins fulvous; discal area, and spaces surrounding veinlets of posterior half, pale, subhyaline. Hindwings subhyaline, iridescent, costa tinged with reddish-ochreous; neuration with an asymmetrical tendency. Legs reddish-brown. Caudal setæ reddish-ochreous, the under-surface of the proximal joints with a fringe of yellow hairs.

Length of body, 13 mm. Expanse of wings, 25 mm.

Hab.—Karori, Wellington.

Leptoperla maculata, n. sp.

Blackish-fuscous. Antennæ nearly as long as forewings, fuscous; 1st joint stoutly cylindrical, 2nd rounded. Forewings shaded with grey, veins dark brown; posterior veinlets surrounded by grey oval spots. Hindwings greyish, subhyaline. Legs dark fuscous, mixed, on posterior femora and tibiæ, with pale dull yellow. Caudal setæ slender, light fuscous, as long as abdomen. In the male the appendices are light brown and rather slender.

Length, 10–12 mm. Expanse of wings, 22–27 mm.

Hab.—New Zealand.

Leptoperla confusa, n. sp.

Differs from *L. maculata* as follows: Smaller and rather paler. Forewings: 1st sector terminally furcate; posterior veinlets arranged in dis-

tinct series, the grey markings about the veinlets of each series being confluent and not in the form of distinct spots. Hindwings: Veins 7 and 9 furcate. Legs reddish-brown, almost unicolorous.

Length, 8 mm. Expanse of wings, 19 mm.

Hab.—New Zealand.

Leptoperla hudsoni, n. sp.

♂. Fuscous. Antennæ shorter than forewings, dark fuscous. Head and thorax blackish-fuscous; abdomen rather paler. Forewings greyish-fuscous; posterior veinlets very distinct, outlined with dark fuscous; 1st sector terminally furcate. Hindwings greyish-fuscous. Legs reddish-brown; tibiæ paler and rather slender. Caudal setæ slender, as long as abdomen, fuscous.

Length, 8 mm. Expanse of wings, 17 mm.

Hab.—Karori, Wellington.

The New Zealand species of *Leptoperla* may readily be identified by the following artificial key:—

- | | | |
|----|---|------------------------|
| 1. | { First sector of forewings terminally furcate | 2 |
| | { First sector of forewings simple | 3 |
| 2. | { Posterior veinlets of forewings surrounded by grey spots .. | <i>L. confusa</i> . |
| | { Posterior veinlets of forewings merely outlined | <i>L. hudsoni</i> . |
| 3. | { Reddish-brown | <i>L. fulvescens</i> . |
| | { Blackish-fuscous | <i>L. maculata</i> . |

The characters afforded by the neuration seem to separate the genus into two natural divisions, but such a schism is inadvisable in practice in the present state of our knowledge.

The Tasmanian species (*L. opposita*, Wlk.) has the posterior veinlets of the forewings very numerous and distinct, and not surrounded by spots; and while the posterior femora have a distinct paler band, the knees are dark fuscous. It is also a larger insect than either *L. confusa* or *L. maculata*.

Genus HETEROPERLA, gen. nov.

Antennæ strong, 1st joint large and cylindrical, 2nd practically uniform with its successors. Labial palpi very short; 1st and 2nd joints minute; 3rd and 4th equal, ovate; 5th very small and rounded. Prothorax subquadrate, rather broader than head. Forewings: Upper branch of 1st sector and lower branch of 2nd sector furcate, cubital furcate at $\frac{1}{4}$, the posterior half of the forewings with 7 parallel veins; subcostal veinlets numerous. Hindwings broad, subtriangular; 1st cubital vein furcate, others simple. Caudal setæ short, incurved.

Distribution: New Zealand.

Type, *Heteroperla cyrene* (*Chloroperla cyrene*, Newm.; *Perla* (?) *cyrene*, Wlk. et McL.; *Stenoperla* (?) *cyrene*, Hutton).

This genus would, no doubt, have been created long ago but for the fact that there were no specimens available which were sufficiently well preserved for detailed examination. It seems to have no affinities with any other existing genus of *Perlidae*, except perhaps with *Stenoperla*, McL., with which, however, it is only very remotely connected.

NEUROPTERA-PLANIPENNIA.

Genus DREPANOPTERYX, Leach.

Drepanopteryx maori, n. sp.

♀. Brownish-fuscous. Antennæ brown. Forewings subhyaline, anterior half partly, and posterior half wholly, suffused with brown; six sectors, the 4th and 5th connected, the 6th connected with cubitus; ten gradate veinlets in inner series, thirteen in outer, each series marked by a dark-brown line angulated near costa; a dark-brown spot on upper branch of superior cubitus before 1st gradate series; termen not very deeply excised, with two white marginal spaces. Hindwings iridescent; costa brownish-fuscous, darker on pterostigma; outer gradate series and an irregular dorsal spot fuscous. Legs pale brownish-ochreous.

Length of body, 6 mm. Expanse of wings, 16 mm.

Hab.—Wainuiomata River, Wellington.

The nearest relation of this species appears to be the Australian *D. binoculus*, McL.

Drepanopteryx humilior, n. sp.

Light brownish-fuscous. Antennæ ochreous, ringed with brown. Forewings with apical margin only slightly excised; subhyaline, faintly clouded with greyish-brown; nine gradate veinlets in inner, thirteen in outer, series; veins marked with brown; numerous brown spots irregularly distributed, with a large brown spot on upper branch of superior cubitus before 1st gradate series. Hindwings hyaline, iridescent; subcosta shaded with fuscous, paler on pterostigma; a fuscous line along outer gradate series, and a light-fuscous dorsal suffusion. Legs pale ochreous. Abdomen ochreous beneath.

Length of body, 5 mm. Expanse of wings, 13 mm.

Hab.—Wainuiomata River, Wellington.

Quite distinct from the Queensland *D. humilis*, McL., which, in all probability, has never occurred in New Zealand, and should therefore be excluded from New Zealand lists.

TRICHOPTERA.

Genus HELICOPSYCHE, Hagen.

Helicopsyche zealandica, Hudson, n. sp.

Fuscous-brown. Antennæ slightly shorter than forewings, clothed with pubescence; 1st joint with longish hairs. Maxillary palpi stout, terminal joint curved, ascending; densely hairy. Wings with dense clothing of hairs: forewings with costa and dorsum nearly parallel; lower branch of sector and upper branch of superior cubitus closely approximated; greyish, with light-fuscous hairs mixed with golden, somewhat darker on longitudinal veins; termen and fringe mixed with black; hindwings rather narrow, with light-fuscous hairs; dorsal fringe very long, greyish-fuscous. Legs light brownish-fuscous, posterior tibiæ darker; spurs 2, 4, 4, the inner longer than the outer, and the median pair of posterior tibiæ close to terminal pair; tarsal joints pale-tipped.

Length of body, 5 mm. Expanse of wings, 12 mm.

Hab.—Wellington.

The species is structurally described here for the first time. I have adopted the name suggested by Mr. Hudson.

Genus *PHILORHEITHOUS*, gen. nov.[Greek, *ῥεῖθρον* = stream.]

1st joint of antennæ longer than breadth of vertex, densely hairy. Maxillary palpi with basal joint very short, 2-5 subequal. Labial palpi with 1st joint short, the 3rd longer than the 2nd. Forewings rather narrow, dilated before apex; subcosta and radius connected near base; a series of transverse veins connecting the longitudinal veins successively from radius to upper branch of superior cubitus closes a large discal area; a chitinous nodule on dorsum near base serves as frenulum. Hindwings obtusely elongate-triangular, with a closed discal area similar to that of forewings. Tibial spurs 2, 4, 4.

Distribution: New Zealand.

The type (*P. agilis*, Huds.) is described by Hudson ("New Zealand Neuroptera," p. 64) as follows:—

"? *agilis*, n. sp.

"The expansion of the wings is about $1\frac{1}{4}$ inches. The antennæ are rather stout, and about the same length as the forewings. Spurs 2, 4, 4. The forewings have the costa slightly arched at the base, and much arched before the apex; the termen is sharply excavated near the middle. The general colour of the forewings is pale brown, paler in the middle with a large almost white patch towards the tornus, partially bordered by a number of dark chocolate-brown markings. The hindwings are yellowish-brown, darker towards the apex. The body is dark brown."

In the same place is a description of the larva and of the remarkable habits of the imago.

Hab.—Wainuiomata River, Wellington.

Genus *HYDROPSYCHE*, Pict.*Hydropsyche auricoma*, n. sp.

Brownish-fuscous. Antennæ brownish-fuscous, segments tipped with pale ochreous. Head, prothorax, and mesothorax densely clothed with pale-golden hairs. Forewings greyish-yellow, with darker reticulations; four series of brownish-fuscous marks tending to form transverse bands. Hindwings greyish, slightly iridescent. Legs pale ochreous. Abdomen brownish-ochreous, darker above.

Length of body, 5 mm. Expanse of wings, 15 mm.

Hab.—Wellington.

Genus *HYDROBIOSIS*, McL.*Hydrobiosis occulta*, n. sp.

♂. Dark brown. Antennæ rather longer than forewings, dark brown, almost unicolorous; the basal joint, with the face and prothorax, clothed with golden-brown hairs. Forewings dark brown with dense golden-brown pubescence. Hindwings with pubescence scantier and dark brown. Legs light ochreous-brown. Abdomen without ventral teeth. Penis yellow; inferior appendices directed upwards and curved so as to meet over extremity of abdomen.

Length, 6 mm. Expanse of wings, 14 mm.

♀. Differs from ♂ as follows: Antennæ not longer than forewings; pubescence of forewings almost wholly dark brown.

Length, 6 mm. Expanse of wings, 17 mm.

Hab.—Wainuiomata River, Wellington.

Hydrobiosis ingenua, n. sp.

Brownish-fuscous. Antennæ as long as forewings, brown. Maxillary palpi pilose, fuscous. Ocelli dark brown, distinct. Head, prothorax, and mesothorax densely clothed with brown hairs. Forewings brownish-fuscous, hairs lighter; a pale-golden band before termen and a tuft of black hairs on superior cubitus at $\frac{1}{4}$. Hindwings greyish-fuscous, strongly iridescent. Legs greyish-ochreous, tibiæ and tarsi marked with fuscous, spurs brownish-ochreous.

Length of body, 6 mm. Expanse of wings, 14 mm.

Hab.—Wainuiomata River, Wellington.

ART. VI. — *Notes on some Rocks from Parapara, Bluff Hill, and Waikawa.*

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INTRODUCTION.

THE description of a few isolated rocks can seldom advance geological knowledge very greatly, and this paper must be regarded mainly as an attempt to draw attention to some interesting regions of the Dominion. The day has gone by when descriptions of new types of igneous rocks can attract more than local interest, and petrologists are more and more tending to use description only as a handle for the discussion of theoretical questions. The two outstanding subjects of discussion are,—

- (1.) The nature of igneous magmas, the history of their consolidation and their relations to neighbouring rocks, involving the theories of differentiation, admixture of igneous magmas, and assimilation of the walls of the magma-basins.
- (2.) The mode of formation of the crystalline schists.

New Zealand is a country so rich in rock-types, and so well provided with natural sections, that it is not vain to suppose that much material may be found which may throw important light on these philosophical questions. Two such districts are outlined in the sequel.