

the antennæ: *labial palpi* long; the basal joint elongato-triangular, the second and third slender, long, and nearly equal: *eyes* prominent, subglobose.

Thorax—*prothorax* hidden, provided with long hairs; *meso-* and *metathorax* scarcely hairy, shining; the former long, narrowed posteriorly, with a broad concave space in the middle above; the metathorax is much narrower, also with a concave median space, in the centre of the posterior portion of which is a triangular metascutellum.

Legs moderately long and slender, pubescent, the tibiæ with also stronger and spine-like hairs mixed with the pubescence; *tarsi* long; *spurs* 2, 2, 4, furnished with spine-like, closely adpressed hairs, similar to those on the tibia itself; the two pairs on the posterior tibiæ are very long, and placed near together, the sub-apical pair being situated at about five-sixths of the distance from the base.

Wings—*anterior wings* narrow at the base, the apex widely dilated, the apical margin oblique; costa at the base provided with an inturned lobe, which is fringed with strong hairs; a small obtuse lobe at the base of the dorsal margin; fringes very short; the whole of the membrane is thickly clothed with scales (very short inflated hairs) above, least dense at the base and apex; parallel with the apical margin, but at some distance from it, is an impressed furrow in which the scales are very dense; near the anal angle this furrow meets a longitudinal pouch, extending somewhat obliquely along the dorsal margin, and running into the base of the wing; neuration indistinct; subcosta straight; radius parallel with the subcosta, and appearing to end in a fork on the costa (but this fork is somewhat uncertain); the two branches of the ramus discoidalis ending in long forks, the upper one connected with the radius by a transverse veinlet; discoidal cell small, closed; a transverse veinlet connects the lower fork with the upper branch of the ramus thyriifer; this latter appears to end in two forks; the lower branch long and simple; the ramus clavalis and cubital veins are concealed in the pouched fold: *posterior wings* shorter than the anterior, obtusely rounded at the apex, broad, the dorsal margin towards the base with a very long fringe; the membrane is without scales, but is rather thickly clothed with procumbent hairs; subcosta and radius scarcely separated; ramus discoidalis ending in two long forks; the upper branch connected with the

radius by a transverse veinlet; discoidal cell somewhat similar to that in the anterior wings; an oblique transverse veinlet uniting its lower edge with the ramus subdiscoidalis, which ends in a long fork; the first costula ends in a fork, the others are simple.

Abdomen short and slender; a forked lobe proceeds from the middle of the last segment above; the penultimate segment is furnished beneath with a broad and obtuse lobe extending beyond the apex; appendices complicated. (♂.)

This singular genus is very marked in its characters. In the scales of the wings it shows an affinity with *Mormonia*, but in its general characters it comes nearer *Silo* and *Pycnocentria*. The hairy (or spiny) tibial spurs are peculiar.

OLINX FEREDAYI, n. sp.

Fusco-castanea: antennæ flavæ, fusco-annulatæ, articulo basali infra nigro-fimbriato: vertex utrinque palpique maxillares pallide ochraceo-penicillati: alæ anticæ posticæque fuliginosæ, griseo-flavo-squamulosæ, illæ sulco flavo-auriantiaci-squamuloso: pedes flavo-ochracei: abdomen fuscum, segmento ultimo dorsali in lobum bifidum producto, segmento antepenultimo ventrali lobo lato obtuso instructo. (♂.)

Long. corp. $2\frac{1}{2}$ ''' ; exp. alar. 9'''.

Head—antennæ yellow, each joint (except the basal) slightly fuscous and thickened at its apex; basal joint beneath with a fringe of strong black hairs; from each side of the *vertex*, near the margin of the eyes, proceeds a fringe of long, inturned, silky, pale-ochreous hairs, forming a tuft between the basal joints of the antennæ; tuft of the *maxillary palpi* also pale ochreous; *labial palpi* of the same colour; *eyes* fuscous. (Plate II. fig. 2D.)

Thorax—*prothorax* clothed with long pale-ochreous hairs; *meso-* and *metathorax* shining pale castaneous.

Legs pale yellowish-ochreous, clothed with like-coloured pubescence; on the anterior tibiæ and tarsi, and intermediate tibiæ, are adpressed blackish spine-like hairs, which also clothe the spurs on these tibiæ; the spurs on the posterior tibiæ are only slightly covered with the ordinary pale and procumbent pubescence; all the tarsal joints are furnished beneath with sparse short spines, and the claws are very short.

Wings—*anterior wings* smoky; the scales greyish-yellow; the sub-apical furrow appears very conspicuously yellow, in consequence of the scales being there so much denser; the fringe of the inturned lobe at the base of the costa is black; neuration darker: *posterior wings* pale smoky, scarcely subhyaline, the costal edge faintly yellowish; fringes smoky cinereous. (Plate II. fig. 2.)

Abdomen blackish fuscous; appendices yellow; the lobe from the last dorsal segment ends in two nearly parallel branches, each of which is obtuse; lobe of the antepenultimate ventral segment very broad and obtusely rounded, the sides nearly parallel; the app. sup. are either very small and concealed, or are wanting; app. inf. long, curved upwards, obtuse, and fringed with blackish hairs; from beneath the dorsal lobe proceed two slender spines (app. intermed.?), the apices of which are abruptly turned outwards; beneath these are two needle-shaped and slightly curved penis-sheaths; the penis itself is short, obtuse, and dilated at the apex (♂). (Plate II. figs. 2 B, C.)

Christchurch, Canterbury (*Fereday*), 1 ♂.

Genus PYCNOCENTRIA, *M'Lachlan*.

PYCNOCENTRIA EVECTA, n. sp.

Nigro-fusca: antennæ flavæ, pallide fusco-annulatæ, articulo basali infra longe nigro-fimbriato: alæ anticæ griseæ, dense aureo-pilosæ, posticæ fuliginoso-griseæ, longe griseo-fimbriatæ; pedes flavi; tibiæ tarsique nigricanti-hirsuti: abdomen rufo-brunneum; appendices flavæ; segmento ventrali antepenultimo maris lobo lato obtuso instructo.

Long. corp. 2-2½"; exp. alar. 7-8".

Head—antennæ yellow, obscurely annulated with fuscous; basal joint fuscous, with a tuft of golden hair at the apex above, and beneath with a fringe of strong black hair; vertex blackish, clothed with blackish and golden-yellow hairs intermingled, springing from a rounded tubercle on each side; maxillary palpi of the ♂ thickly clothed with golden hairs, among which are a few blackish ones; in the ♀ the blackish hairs predominate; eyes deep black.

Thorax—prothorax clothed with golden-yellow hairs; meso- and meta-thorax nearly hairless, blackish fuscous.

Wings—anterior wings pale-greyish, very densely clothed with short, golden-yellow hairs, in which are intermingled a few blackish ones; the depressed fold-like line in the ♂ not conspicuously darker; fringes grey, mixed with blackish: posterior wings smoky-grey, with dark blackish-grey pubescence, iridescent; fringes grey.

Legs yellow; tibiæ and tarsi, especially the two anterior pairs, clothed with blackish hairs.

Abdomen reddish brown; appendices yellow. In the ♂ the antepenultimate ventral segment bears a broad flattened obtuse lobe, which is brown at its base, and yellow at the apex; from the last dorsal segment protrudes a small, elongately triangular, subobtuse, yellow lobe; the app. sup. are very small and indistinct; app. inf. long, curved up against the lateral margins of the last segment, the tips being slightly directed downwards; there are also two fine needle-shaped penis-sheaths, and the penis itself appears to be short and truncated. In the ♀ there is no ventral lobe; the apex of the abdo-

men is truncated, containing a nearly circular cavity. (♂ ♀.) (Plate II. fig. 3.)

Christchurch, Canterbury (*Fereday*); 3 ♂, 1 ♀.

PYCNOCENTRIA AUREOLA, n. sp.

P. evectæ affinis, sed abdomen maris haud lobatum.

Long. corp. $1\frac{3}{4}$ – $2\frac{1}{2}$ ''' ; exp. alar. 6–9'''.

Head—*antennæ* yellow, with fuscous annulations; the basal clothed above with pale primrose-yellow hairs, beneath with black hairs; *vertex* blackish, clothed with pale primrose-yellow hairs springing from a rounded flattened tubercle placed on each side, the hairs from each being directed inwards; *maxillary palpi* clothed with golden-yellow hairs; *labial palpi* fuscous; *eyes* blackish brown.

Thorax—*prothorax* with few pale-yellow hairs; *meso-* and *metathorax* blackish fuscous, hairless.

Wings—*anterior wings* grey, clothed with golden-yellow hairs, but with two or three hairless spaces (perhaps accidentally rubbed) on the disk and apical portion, which appear darker than the clothed parts; the longitudinal impressed fold absent or scarcely evident; fringes blackish and yellow intermingled: *posterior wings* dark smoky grey, with dense blackish-grey hairs; the subcostal fold evident, but not conspicuous; fringes grey.

Legs yellow, the tibiae and tarsi with adpressed blackish hairs.

Abdomen fuscous above, reddish fuscous beneath. In the ♂ there is no ventral or dorsal lobe; app. sup. long, narrow, the apex being obtuse, slightly dilated and turned downwards, yellow; app. inf. more slender, and equal in length to the app. sup., curved strongly inwards; penis long, reddish testaceous, on each side with a needle-shaped sheath, the points of which approximate. (♂.) (Plate II. figs. 4 & 4A.)

Christchurch, Canterbury (*Fereday*); Auckland (*Edwards*), 3 ♂. 1 ♀; the latter in bad condition and without abdomen.

This species bears much resemblance to *P. evecta*, but may be at once distinguished by the appendices.

HELICOPSYCHE.

In the collection of the British Museum are three types of heliciform cases of Trichoptera from New Zealand, in numerous examples. One of these forms is remarkable for its minute size and greatly depressed whorls; it is composed of very fine grains of sand, cemented together so neatly that the exterior surface is nearly smooth; another (possibly a more mature form of the first) is much larger, with the whorls rather more prominent, constructed in the same manner; a third is still larger, the whorls

more elevated and separated, and the exterior surface covered with coarser sand-grains, giving it an irregular appearance.

I have not adopted the generally followed practice of describing in detail and *naming* these forms, as the name given to the insect must always take precedence of that bestowed upon the case of its larva.

I know no insect from New Zealand sufficiently allied to *H. borealis*, Hagen, from North America (the only species yet bred from an heliciform case), to be considered generically identical therewith. Supposing these curious cases to be the work of several genera of *Sericostomidæ*, it then seems probable that the species of my genus *Pycnocentria* may manufacture the New-Zealand forms; but this is mere conjecture.

As the European *H. Shuttleworthii*, of Bremi, was the original type of *Helicopsyche*, it follows that that generic term should be retained for the insect (should it not have been described) constructing that case, and that the species from America and other parts of the world, if generically differing from the European, must receive new names.

Family LEPTOCERIDÆ.

Genus TETRACENTRON, *Brauer*.

TETRACENTRON AMABILE, n. sp.

Fuscus, griseo-hirsutus; antennæ fuscae, anguste albido-annulatæ: alæ anticæ elongatæ, angustatæ, ad apicem oblique truncatæ, albido-cinereæ, fusco nebulosæ et irroratæ; posticæ latæ, subhyalinæ, griseo-flavo pubescentes: pedes albido-cinereæ; tarsi tibiisque anterioribus fusciscentibus: abdomen fuscum; maris appendicibus superioribus triangularibus, fimbriatis; inferioribus crassis, sursum directis.

Long. corp. 4-5"; exp. alar. 12-13".

Head—antennæ very slender, longer in the ♂ than in the ♀, fuscous, the base of each joint beyond the basal with a narrow whitish ring; basal joint wholly fuscous, with grey hairs; *vertex* fuscous, clothed with grey hairs; *face* very densely clothed with grey hairs; *palpi* fuscous, with grey hairs; the maxillary very long, first and fourth joints nearly equal in length, second very long, third longer than the first or fourth, but much shorter than the second, fifth very slender, and about as long as the third; *eyes* fuscous, slightly brassy.

Thorax pale fuscous; *mesothorax* very long, a broad depressed channel in the centre, on each side of which is a raised longitudinal line, posteriorly with a large round raised lobe, flattened on the top, scutellum triangular, almost hairless, there being only a few long greyish

hairs on each side of the central depression, and shorter ones on the flattened surface of the posterior lobe; *metathorax* slightly paler than the mesothorax, small, hairless; the anterior margin deeply notched, the metascutellum triangular; the breast is rather densely clothed with grey hairs.

Wings—*anterior wings* very long and narrow, the apical margin oblique, whitish cinereous, with numerous fuscous irrorations; the region of the anastomosis, an oblique spot on the costa slightly before the apex, and the apical margin also fuscous, the latter interrupted by a conspicuous white spot above the anal angle, which colour there invades the fringe, which is otherwise fuscous; a pale yellowish-white longitudinal streak on the middle of the disk, ending at the anastomosis: these markings, as well as the cinereous ground-colour, are all produced by the arrangement of the variously-coloured short hairy clothing; the discoidal cell is long and closed, the cellula thyridii very long and also closed (a probable transverse veinlet between the lower branch of the ramus discoidalis and the ramus thyriifer is indicated in the figure by a dotted line, as I am unable to clearly make it out); ramus thyriifer simply furcate in the ♂, twice forked in the ♀ (as in *Leptocerus*): *posterior wings* subhyaline, rather thickly clothed with short yellowish pubescence, especially towards the apex; fringes short, yellowish; neuration darker. (Plate II. figs. 5 & 5A.)

Legs whitish cinereous; the anterior tibiae and all the tarsi fuscous; all the coxae dark fuscous; the underside of the tarsi with numerous short spines; spurs fuscous, rather short, but the inner one the longer in all the pairs.

Abdomen fuscous. In the ♂ the terminal dorsal segment has a circular notch in the middle of its margin; app. sup. forming two short and broad, somewhat triangular plates, furnished with long hairs on the margins and at the tip; app. inf. stout, scarcely pointed, directed upwards, brown; between them is the penis, which is short and thickened, with an appearance of a spine-like tooth at its apex. In the ♀ are two superior valves, resembling the app. sup. of the ♂; these are placed one on each side of a short oviduct; beneath, the last segment is slightly concave and shining. (♂ ♀.) (Plate II. figs. 5B, C.)

Christchurch, Canterbury (*Fereday*); 2 ♂, 3 ♀.

Genus LEPTOCERUS, *Leach*.

LEPTOCERUS (?) ALIENUS, n. sp.

Fuscus, cinereo-pilosus: antennae albidæ, nigro-annulatæ: alæ anticae elongatæ, angustatæ, ad apicem paullo dilatatæ, rotundatæ, cinereæ, venis longitudinalibus fusco-punctatæ; posticæ fuliginosæ, feminae ramo subdiscoidali in furcas duas terminato.

Long. corp. $3\frac{1}{2}$ ''' ; exp. alar. 11'''.

Head—*antennæ* whitish cinereous, each joint after the two basal ones black in its upper portion; towards the apex they are almost entirely black, the basal portion of each joint retaining a narrow cinereous ring: *vertex* and *face* thickly clothed with long cinereous hairs: *maxillary palpi* fuscous, clothed with cinereous hairs; first joint short, second and third very long and equal, fourth short, fifth longer than the fourth.

Thorax—*mesothorax* longly ovate, dull black, a depressed space in the centre filled with cinereous hairs; *metathorax* small, blackish fuscous, hairless.

Wings—*anterior wings* long and narrow, scarcely dilated towards the apex, densely clothed with pale cinereous hairs, and with blackish dots placed pretty regularly on the veins; two elongate blackish spots on the dorsal margin, a large apical blotch obscurely blackish; fringes cinereous and blackish; neuration similar to that of the European species (♀): *posterior wings* smoky grey, rather densely hairy; neuration fuscous; the discoidal cell is closed; the upper branch of the ramus discoidalis forked at the end, the lower simple; the ramus subdiscoidalis is twice forked at the end, as in the ramus thyripher of the anterior wings (♀) of European species.

Legs pale yellowish cinereous, with fuscous coxæ.

Abdomen brownish, the last segments beneath form an impressed, shining, flattened space; above are two small obtuse, hairy, yellow appendices. (♀.)

Christchurch, Canterbury (*Fereday*); 1 ♀ in very good condition.

So far as the general characters and the neuration of the anterior wings are concerned, this species presents no apparent generic difference from the European species of *Leptocerus*; but it will have been seen that the neuration of the posterior wings is somewhat aberrant; and from that cause I have referred it doubtfully to this genus.

GENUS SETODES, Rambur.

SETODES UNICOLOR, n. sp.

Griseo-fusca: *antennæ* griseo-ochraceæ: *alæ anticae* griseo-flavæ, punctis nonnullis fuscis; *posticae* pallide griseæ, subhyalinæ, iridescentes: *pedes* griseo-ochracei: *abdomen* griseo-ochraceum; *maris segmento ultimo* pallide fimbriato; *appendicibus superioribus* parvis, *latis inferioribus* approximatis, elongato-triangularibus.

Long. corp. $2\frac{3}{4}$ ''; exp. alar. $9-10\frac{1}{2}$ ''.

Head—*antennæ* greyish-ochreous, a black mark at the sutures, basal joint with greyish-yellow hairs; *vertex* and *face* clothed with greyish-yellow hairs: *palpi* greyish-ochreous, thickly clothed with greyish-yellow hairs; *maxillary* with the first and fourth joints nearly equal

in length, second and third very long, fifth nearly equal to the third: eyes black.

Thorax greyish; mesoscutellum somewhat blackish.

Wings—*anterior wings* very long and narrow, greyish-yellow, densely pubescent, the anastomosis somewhat marked with fuscous, and there are also fuscous dots on the dorsal and round the apical margins (these dots are visible only in well-conditioned individuals); fringes concolorous with the membrane, except at the anal angle, where they are blackish fuscous; neuration indistinct; subcosta ending at about half the length of the wing from the base; radius ending at one-fifth of the length from the apex; discoidal cell and cellula thyridii very long; upper branch of the ramus thyriifer simple; anastomosis irregular (*vide* Plate II. fig. 7): *posterior wings* pale greyish, subhyaline; fringes grey, very long towards the base of the dorsal margin; neuration pale.

Legs pale greyish-ochreous; the coxæ brownish; tibiæ and tarsi with minute blackish spines on the underside; anterior tibiæ with one short spur.

Abdomen dull greyish-ochreous, with a greyish tinge, the dorsum darker.

In the ♂ the upper edge of the last segment is fringed with rather long pale hairs; the app. sup. are small and broad, scarcely extending beyond the lateral margins; app. inf. forming two elongately triangular valves placed close together. (♂.)

Christchurch, Canterbury (*Fereday*); 5 ♂.

Belonging to the same group (for neuration) as the European *S. ochracea*.

Family HYDROPSYCHIDÆ.

Genus POLYCENTROPUS, *Curtis*.

POLYCENTROPUS PUERILIS, n. sp.

Fusco-niger, aureo nigroque pilosus. Antennæ flavæ, fusco-annulatæ.

Alæ anticæ latæ, fuscæ, sparsim pallideque flavo-punctatæ: posticæ fuliginosæ, cellula discoidali aperta, furcis apicalibus 2^a et 5^a instructis, costulis haud in medio conjunctis. Pedes sordide testacei. Abdomen fuscum; maris segmento ultimo dorsali lobo elongato, angustato, deorsum incurvato, in medio instructo; appendicibus intermediis aciculiformibus; superioribus latis cochleariformibus; inferioribus elongatis.

Long. corp. 2''' ; exp. alar. 6½–7'''.

Head—*antennæ* pale yellow, with narrow fuscous annulations; *vertex* black, thickly clothed with blackish hairs, intermingled with a few golden ones; *front* produced, with a flattened triangular process; *palpi* fuscous.

Thorax—*prothorax* clothed with blackish and golden hairs intermingled;

mesothorax fuscous, hairless at the sides, but with a central median depression filled with brown hairs; *metathorax* fuscous, hairless.

Wings—*anterior wings* rather broad, the apex broadly elliptical, fuscous, thickly clothed with short brown hairs, and thinly sprinkled with pale whitish-yellow dots, some of which on the dorsal margin and at the apex are larger than the others (these dots are few in number and not conspicuous); fringes brown, with one or two whitish spaces; discoidal cell elongate; apical forks 1, 2, 3, 4, and 5 all present; the first one short, second long, reaching the anastomosis; third and fourth longer than the first, nearly equal; fifth as long as the second, but scarcely reaching the anastomosis: *posterior wings* broader than the anterior, smoky subhyaline, with smoky-grey pubescence and fringes; discoidal cell open; apical forks 2 and 5 present; the first two costulæ not connected by a veinlet. (Plate II. fig. 8.)

Legs dingy brownish testaceous; spurs darker brown.

Abdomen fuscous, somewhat ochreous beneath. In the ♂ there is a narrow elongate testaceous lobe from the apical margin of the last dorsal segment, curved downwards, beneath which are the needle-shaped app. intermed.; app. sup. broad and spoon-shaped, yellow, fringed with long hairs; app. inf. forming two long finger-shaped yellow lobes, clothed with fuscous hairs. In the ♀ there are two lanceolate and acute hairy inferior valves. (♂, ♀.) (Plate II. figs. 8A, B.)

Christchurch, Canterbury (*Fereday*); Auckland (*Edwards*): 2♂, 3♀.

The examples from Auckland are in very bad condition; they are darker-coloured than those from Christchurch, but are specifically identical.

The genus *Polycentropus*, as restricted by me in the 'Trichoptera Britannica,' now admits of a wider grouping of the species, according to the neurulation, than I there proposed; and it is probable that some of the yet insufficiently characterized Ceylonese and American species will yet add more new features in this respect.

I give the following table as an extension of the grouping formerly adopted:—

A. Discoidal cell open in the posterior wings.

a. Apical forks 1, 2, and 5 present in these wings; the first two costulæ united by a short veinlet.—Type *P. flavomaculatus*, Pictet.

b. Apical forks 2 and 5 present; the first two costulæ not united.—Type *P. orientalis*, M'Lachlan*.

* I somewhat incorrectly stated (Trans. Ent. Soc. London, ser. 3, vol. v. p. 273) that the neurulation of *P. orientalis* was arranged altogether after the manner

- B. Discoidal cell closed in the posterior wings; apical forks 2 and 5 present; costulae not united.—Type *P. subnebulosus*, Stephens.

Genus HYDROBIOSIS, n. g.

Head—*antennae* slender, as long as the wings; basal joint shorter than the head, stout: *vertex* transverse, hairy: *ocelli* present: *eyes* prominent, large: *maxillary palpi* long and pubescent; the two basal joints short and stouter than the others, the second being the longer; third and fourth long and slender, nearly equal in length; fifth not so long as the two preceding, united, and still more slender: *labial palpi* very small, the three joints nearly equal.

Thorax—*prothorax* concealed; *mesothorax* large, slightly hairy, the lateral angles prominent, the scutellum raised and elongate, with a depression on each side; *metathorax* narrower than the widest portion of the mesothorax, the lateral lobes somewhat rounded.

Legs long and slender; tibiae and tarsi not dilated in the ♀, slightly provided with spines in both sexes; tarsi slender, the joints with short spines at the apex; claws rather long; spurs 2, 4, 4; the pair on the anterior tibiae are small, the two pairs on the intermediate and posterior tibiae long and straight, nearly equal, the subapical pair placed at about four-fifths of the length from the base.

Wings—*anterior wings* elongate, the costal and dorsal margins nearly parallel, the apex longly elliptical; clothed with woolly pubescence, and with longer hairs on the veins; fringes short; *neuration* not very distinct; subcosta straight, joining the costa a little beyond the middle; radius running parallel with the subcosta into the apical portion of the costa, and ending in a long fork, somewhat bent before the point of furcation, connected with the subcosta at about the middle of the wing by a transverse veinlet; discoidal cell short and triangular, closed; apical forks 1, 2, 3, 4, and 5 all present; fork 1 very long; a transverse veinlet unites the upper branch of the ramus discoidalis, at the point of furcation, with the radius; another unites the lower edge of the discoidal cell with the ramus thy-rifer; another, placed much further towards the base, closes

of that of *P. flavomaculatus*, inasmuch as the apical fork No. 1 is not present in the hind wings; *P. orientalis* agrees with *P. puerilis* in this respect.

the cellula thyridii; and one also unites the fork of the ramus clavalis with the cubitus; pterostigma concave beneath: *posterior wings* shorter and broader than the anterior, folded, rounded at the apex; fringes long on the dorsal margin; hairy clothing slight, hence the wings are subhyaline; neuration more distinct; subcosta and radius running close together; apical forks 1, 2, 3, and 5 present; no closed discoidal cell; a transverse veinlet unites the upper branch of the ramus discoidalis with the radius; a second unites the lower branch of this ramus with the ramus subdiscoidalis; and a third is placed below this, much nearer the base of the wing.

Abdomen slender in the ♂, more robust in the ♀; the last ventral segments with projecting teeth; appendices very complicated.

(♂ ♀.)

This genus is allied to *Psilochorema*, but is nevertheless quite distinct.

HYDROBIOSIS FRATER, n. sp.

Fusca: antennæ fuscæ, flavo annulatæ: vertex nigricante cinereoque pilosus: ocelli magni, flavi: alæ anticæ nigro cinereoque lanuginosæ; pterostigmate saturatiore; venis nonnullis pallido striatis; maculis indistinctis albidis; maris margine dorsali basin versus nigro-cristato: posticæ subhyalinæ, fimbriis nigrificantibus: pedes testacei; tibiis anterioribus intermediisque in medio annulo pallido notatis: abdomen fuscum, infra pallidius, maris dentibus tribus ventralibus.

Long. corp. ♂ $2\frac{1}{2}$ ", ♀ 3"; exp. alar. ♂ $7\frac{3}{4}$ – $8\frac{1}{2}$ ", ♀ $10\frac{1}{2}$ –11".

Head—antennæ fuscous, with narrow yellowish annulations, the basal joint with cinereous hairs; vertex blackish fuscous, clothed with blackish and cinereous hairs intermingled, as is also the face; ocelli large, yellowish; eyes brown, with blackish markings; palpi fuscous, with hoary pubescence.

Thorax—*prothorax* with blackish and cinereous hairs; *mesothorax* blackish-fuscous, with a tuft of blackish hairs on each wing-shoulder; *metathorax* blackish-fuscous, almost hairless, the metascutellum forming a depressed elliptical space.

Wings—*anterior wings* thickly clothed with long woolly, cinereous and blackish hairs intermingled, the former predominating; these hairs are principally placed on the veins in two series, those on one vein crossing those on the opposing ones; a space on the middle of the dorsal margin is wholly pale cinereous, and there is an appearance of a like-coloured narrow transverse fascia before the apex; tufts of longer black hairs along the dorsal margin in the ♂ only; apical fringes forming alternating spaces of blackish and whitish cinereous hairs; pterostigma elongate, fuscous; neuration fuscous, the first

apical cellule extending to, and slightly into, the discoidal cell; second about half the length of the first; third shorter than the second; fourth longer than the second, but shorter than the first; fifth longer than the fourth: *posterior wings* pale-smoky subhyaline; fringes blackish, but becoming whitish cinereous towards the base of the dorsal margin; first apical fork short; second longer, about half the length of its footstalk; third slightly longer than the first; fifth as long as the second. (Plate II. fig. 9.)

Legs testaceous; *coxae* fuscous; *anterior* and *intermediate tibiae* fuscous externally, with a narrow median pale ring; *spurs* reddish-testaceous.

Abdomen fuscous, yellowish beneath, and with yellow appendices; in the ♂ there are three ventral teeth,—one very small at the apex of the segment before the antepenultimate, and a larger one at the apex of the antepenultimate and penultimate segments; in the ♀ there is a tooth-like tubercle at the apex of the antepenultimate and penultimate segments; the ♂ has a broad, obtuse, and flattened up-curved lobe proceeding from the margin of the last dorsal segment: *appendices* of the ♂ very complicated; app. sup. long and hairy, slender at the base, dilated and notched at the apex; app. inf. long and short, obtuse, curved upwards, the apex directed slightly downwards, beset with short tooth-like spines on the inner side; penis directed abruptly downwards, very deeply divided at the apex. In the ♀ the apex of the abdomen is obtuse, the dorsal and ventral margins of the last segment forming an open pouch, in which are indistinct obtuse appendices*. (Plate II. fig. 9A.)

Christchurch, Canterbury (*Fereday*); 6 ♂, 2 ♀.

HYDROBIOSIS UMBRIPENNIS, n. sp.

Fusca: antennæ flavæ, fusco-annulatæ; ocelli magni, valde conspicui, flavi: alæ anticæ brunneæ, albido lanuginosæ; pterostigmate fusco; venis longitudinalibus nonnullis pallido striatis; fimbria apicali flavido-punctata; maris margine dorsali basin versus nigro-cristato: pedes pallide testacei; tibiis tarsisque anterioribus intus fusciscentibus, pallido-annulatis: abdomen supra fuscum; infra flavidum; maris dente ventrali uno.

Long. corp. ♂ 4"', ♀ 5'''; exp. alar. ♂ 11"', ♀ 12-13'''.

Head—antennæ yellow, with indistinct fuscous annulations, basal joint with whitish hairs in the ♂, and testaceous in the ♀; *vertex* fuscous, the raised posterior edge, and a rounded tubercle on each side within the lateral ocelli, paler, more reddish; a line of whitish hairs along the middle, and blackish hairs on the sides, but the middle hairs are sometimes testaceous in the ♀; *ocelli* very large and conspicuous,

* I believe I possess a species from Melbourne (New Holland) closely allied to this; but the examples are not in a state that will admit of a description being drawn up from them.

pale-yellow; *eyes* black, with curved gilded lines; *face* with whitish and blackish hairs intermingled; *palpi* yellowish, fuscous externally, with yellowish pubescence.

Thorax—*mesothorax* dark castaneous, the disk nearly hairless, but with blackish hairs on the wing-shoulders; *metathorax* rather paler, the metascutellum depressed and obovate.

Wings—*anterior wings* brown, with blackish and whitish hairs (placed principally on the veins) intermingled, but the clothing is much less dense than in *H. frater*; in both sexes there are tufts of black hair along the cubitus near the base, a row of yellowish dots round the apical margin, and the fringe is also yellowish opposite to these spots, otherwise it is brown and concolorous with the membrane; pterostigma darker, elongate; neuration pale-yellowish, testaceous; the first apical cellule extending to the anastomosis; second shorter, thus having a short footstalk; third, only one-third the length of its footstalk; fourth and fifth as long as the second: *posterior wings* pale-smoky subhyaline, with smoky pubescence, the margins with a yellowish reflection; fringes mostly greyish-yellow, but intermixed with blackish; neuration very distinct; the first apical cellule extending almost from the transverse veinlet to the radius; second very long, reaching nearly to the base of the principal fork of the ramus discoidalis; third about as long as the first.

Legs pale testaceous; the *anterior tibiae* and *tarsi* slightly fuscous externally, with paler rings.

Abdomen fuscous above, yellowish beneath, with scattered yellowish hairs; the ♂ has but one ventral tooth, which is long, and placed on the apical margin of the penultimate segment; the ventral surface ends in a large valve, truncated when viewed from beneath the sides, slightly concave, and emitting the app. inf., which are spine-like and curved round in a semicircular manner; the apex of the dorsal surface ends in a tuft of hairs, beneath which proceeds a long lobe curved at its extremity; on each side of this lobe is a small slender appendice, which may be called the app. intermed.; the app. sup. are long and slender, curved downwards at the tips, which are slightly dilated and rounded; beneath the lobe are seen two pairs of sheaths, the upper pair being needle-like, very slender, and much twisted, the lower pair shorter, abruptly turned outwards at the tip; these sheaths probably conceal the penis, which is not evident in my dead specimens. In the ♀ there is a tooth on the penultimate ventral segment, as in the ♂, but it is smaller; the last ventral segment is deeply notched in the middle of the apex; the parts protruding from the ill-defined cavity formed by the last dorsal and ventral segments are not clearly definable. (Plate II. figs. 9C, D.)

Christchurch, Canterbury (*Fereday*); 2 ♂, 4 ♀.

Genus *PSILOCHOREMA*, *M'Lachlan*.*PSILOCHOREMA CONFUSUM*, n. sp.

Fuscum: antennæ flavæ, indistincte fusco-annulatæ, articulo basali aureo-hirsuto: alæ anticæ pallide fuscae, flavo nigroque lanuginoso-pubescentes; fascia transversa ante apicem signaturisque nonnullis pallidis, inconspicuis; maris venis venulisque valde irregularibus; posticæ fuliginoso-subhyalinæ: pedes pallide flavi; tibiis tarsisque anterioribus intermediisque extus fusciscentibus: abdomen fuscum, infra segmentis flavido-marginatis; maris appendicibus inferioribus elongatis, subgracilibus, decussatis, torquatis; feminae segmento penultimo ventrali penicillo instructo.

Long. corp. 2^{'''}; exp. alar. 7^{'''}.

Head—antennæ yellow, very indistinctly annulated with fuscous; basal joint with golden-yellow hairs; vertex testaceous, fuscous, thickly clothed with golden-yellow hairs; palpi fuscous; ocelli yellow.

Thorax—prothorax indistinct, clothed with golden-yellow hairs; meso- and metathorax fuscous (the hairy clothing is rubbed off in my examples).

Wings—anterior wings pale-brown, with pale-yellow woolly clothing, mixed with black, especially on the cubitus; an indistinct, whitish, wavy transverse fascia before the apex, and some markings on the disk (this pale fascia and markings are not caused by the clothing of the wings, but are pale spaces in the membrane itself); fringes pale golden-brown; pterostigma elongate, darker; neuration extremely irregular and aberrant in the ♂ in both pairs of wings, regular in the ♀ (I despair of being able to draw up an intelligible description of the veining of the wings of the ♂, and refer the reader to the figures on Plate II. fig. 10; the discoidal cell is there represented as closed by a dotted line; there is little doubt that the veinlet closing this cell is really present, but I have not been able to see it very clearly; it is certainly very fine): posterior wings smoky-grey, subhyaline, iridescent; fringes grey.

Legs pale-yellow; anterior and intermediate tibiae and tarsi, especially in the ♀, somewhat fusciscent externally.

Abdomen fuscous; the apical margin of each ventral segment broadly dingy-yellowish; appendices yellow. In the ♂ is a short straight lobe from under the middle of the apical margin of the last dorsal segment; app. sup. apparently wanting; app. inf. very long and slender, bent in the middle almost at right angles, the apical portion being directed outwards; at the base of these appendices, viewed from beneath, are two valve-like lower sheaths, placed close together. In the ♀ the last dorsal segment is produced in the middle into a broad obtuse lobe; the penultimate ventral segment bears a tuft of hairs

in the middle, but no tooth; the valves seem to be short and truncated (♂ ♀) (Plate II. fig. 10B).

Auckland (*Edwards*); 1 ♂, 1 ♀.

My two examples are both in wretched condition. The species is slightly smaller than *P. mimicum*, and very distinct both in neurulation and appendices; in fact the genus appears to be one in which the neurulation of the ♂ is the most given to assuming irregular and almost undescribable conditions.

Catalogue of Trichopterous insects known to inhabit New Zealand.

(Marked thus * are in the British Museum; thus † in my own collection.)

Family SERICOSTOMIDÆ.

Genus *ÆCONESUS*, *M'Lachlan*.

(*Æconessus*, M'Lach. Trans. Ent. Soc. Lond. ser. 3, vol. i. p. 303 (1862).

1*. *Æ. MAORI*, M'Lach. *loc. cit.*

Auckland (*Colonel Bolton*).

On Plate II. fig. 1, I have given an outline of the somewhat extraordinary neurulation of this insect. To the previously published description should be added, that the radius in all the wings is confluent with the first apical sector before the apex, as in *Calamoceras*, *Ganonema*, *Asotocerus*, &c.; the space between the subcosta and radius in the fore wings forms a sort of long and narrow pouch; in the hind wings these two veins are united for the greater part of their length into one thickened nervure.

Genus *OLINX*, *M'Lachlan*.

2†. *O. FEREDAYI*, M'Lach. *suprà*, p. 198.

Christchurch, Canterbury (*Fereday*).

Genus *PYCNOCENTRIA*, *M'Lachlan*.

3*. *P. FUNEREA*, M'Lach. Trans. Ent. Soc. Lond. ser. 3, vol. v. p. 252 (1866), pl. xviii. fig. 1, neurulation and appendices.

Auckland (*Colonel Bolton*).

4†. *P. EVECTA*, M'Lach. *suprà*, p. 199.

Christchurch, Canterbury (*Fereday*).

5†. *P. AUREOLA*, M'Lach. *suprà*, p. 200.
Auckland (*Edwards*); Christchurch, Canterbury (*Fereday*).

HELICOPSYCHE.

Three types of heliciform cases; *vide suprà*, p. 200.

Family LEPTOCERIDÆ.

Genus TETRACENTRON, *Brauer*.

6†. *T. SAROTHRUPUS*, Brauer, Verh. zool.-bot. Ges. Wien, xv. p. 418 (1865); Reise der 'Novara,' Neurop. p. 12, tab. 1. fig. 5, neuration and palpus.

Auckland (teste *Brauer*); Christchurch, Canterbury (*Fereday*).

7†. *T. AMABILE*, M'Lach. *suprà*, p. 201.
Christchurch, Canterbury (*Fereday*).

Genus PSEUDONEMA, *M'Lachlan*.

8. *P. OBSOLETUM*, M'Lach. (*obsoleta*), Trans. Ent. Soc. Lond. ser. 3, vol. i. p. 305 (1862).

New Zealand, without further indication of locality; probably from Otago.

Brauer (Reis. Nov.) hints at the apparent close connexion of this insect with his *Tetracentron sarothropus*. I am unable to gain access to the type for further examination. If it be the same as *Tetracentron*, then the spurs must have been accidentally injured; for the type of *Pseudonema* has but 2, 2, 3, whereas *Tetracentron* has 2, 2, 4.

Genus NOTANATOLICA, *M'Lachlan*.

9*†. *N. COGNATA*, M'Lach.

Leptocerus cognatus, M'Lach. Trans. Ent. Soc. Lond. ser. 3, vol. i. p. 306 (1862); *N. cognata*, M'Lach. Trans. Ent. Soc. Lond. ser. 3, vol. v. p. 258.

Auckland (*Colonel Bolton*); Christchurch, Canterbury (*Fereday*).

On Plate II. fig. 6, will be found a representation of the appendices; the species is closely allied to the Australian *N. magna*, but differs in the position and form of the app. sup., and in the more slender app. inf.

10*. *N. CEPHALOTES*, Walker.

Leptocerus cephalotes, Walk. Brit. Mus. Cat. Neuropt. pt. 1. p. 73

(1852); *N. (?) cephalotes*, M'Lach. Trans. Ent. Soc. Lond. ser. 3, vol. v. p. 258.

"New Zealand" (*Sinclair*; *Colenso*); no special locality mentioned.

This insect is a true *Notanatolica*. The two examples in the British Museum are not in a condition for intelligible description; but they are apparently distinct from *N. cognata*.

Genus LEPTOCERUS, *Leach*.

11†. *L. (?) ALIENUS*, M'Lach. *suprà*, p. 202.

Christchurch, Canterbury (*Fereday*).

Genus SETODES, *Rambur*.

12†. *S. UNICOLOR*, M'Lach. *suprà*, p. 203.

Christchurch, Canterbury (*Fereday*).

Family HYDROPSYCHIDÆ.

Genus HYDROPSYCHE, *Pictet*.

13*†. *H. FIMBRIATA*, M'Lach. Trans. Ent. Soc. Lond. ser. 3, vol. i. p. 309 (1862).

Auckland (*Colonel Bolton*; *Edwards*).

14†. *H. — ?*

Auckland (*Edwards*).

A single damaged specimen in my collection; it has the *facies* of the European *H. lanceolata*.

Genus POLYCENTROPUS, *Curtis*.

15†. *P. PUERILIS*, M'Lach. *suprà*, p. 204.

Auckland (*Edwards*); Christchurch, Canterbury (*Fereday*).

Genus HYDROBIOSIS, *M'Lachlan*.

16†. *H. FRATER*, M'Lach. *suprà*, p. 207.

Christchurch, Canterbury (*Fereday*).

17†. *H. UMBRIPENNIS*, M'Lach. *suprà*, p. 208.

Christchurch, Canterbury (*Fereday*).

Genus PSILOCHOREMA, *M'Lachlan*.

18*†. *P. MIMICUM*, M'Lach. Trans. Ent. Soc. Lond. ser. 3, vol. v. (1866), p. 274, pl. xviii. fig. 4 (neurulation, palpi, and appendices).

Auckland (*Colonel Bolton*; *Edwards*); Christchurch, Canterbury (*Fereday*).

19†. *P. CONFUSUM*, M'Lach. *suprà*, p. 210.
Auckland (*Edwards*).

Family RHYACOPHILIDÆ.

Genus *PHILANISUS*, *Walker*.

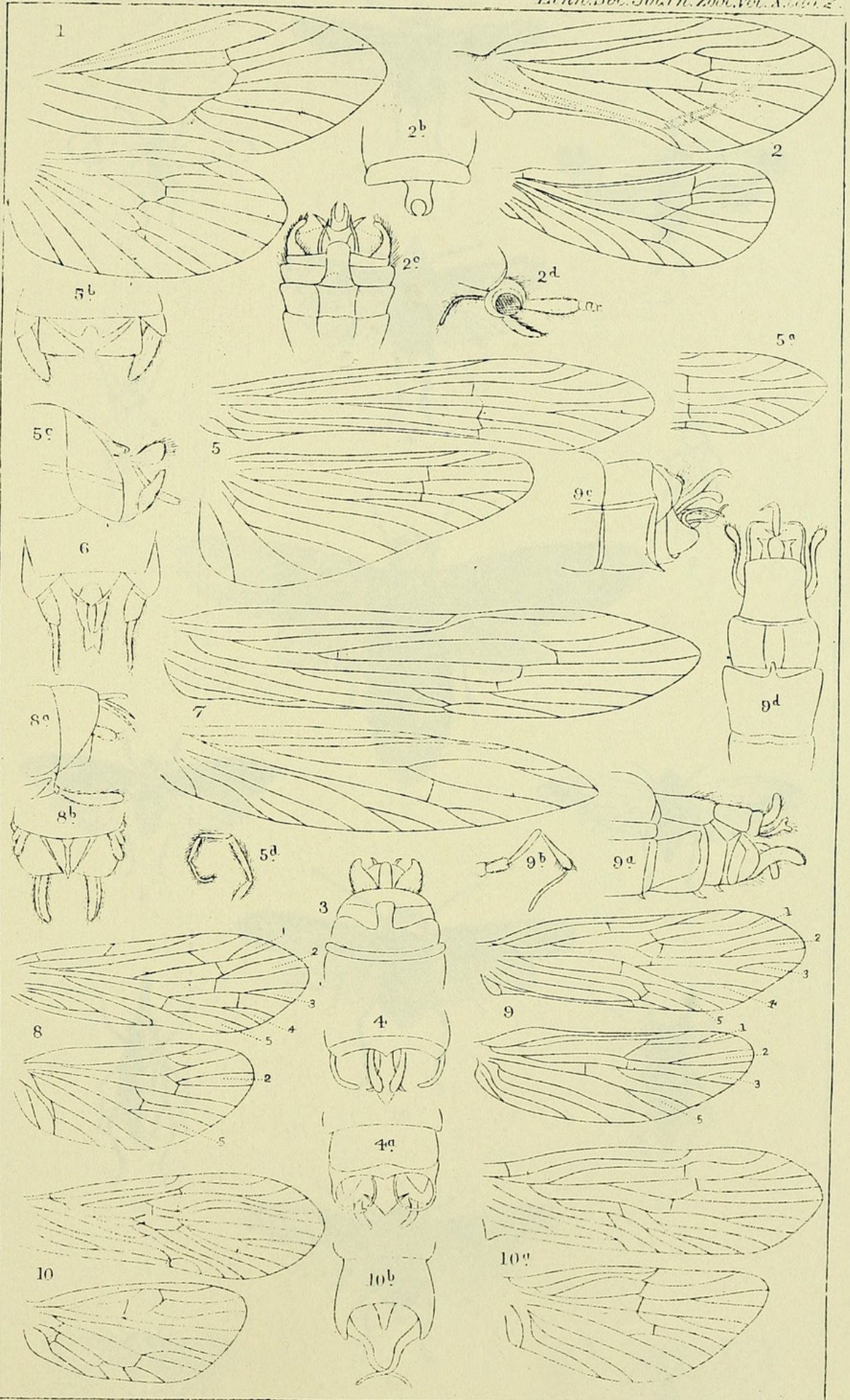
(*Anomalostoma*, Brauer.)

20*†. *P. PLEBEJUS*, Walk. Brit. Mus. Cat. Neurop. pt. 1. p. 116 (1852);
Anomalostoma alloneura, Brauer, Verh. zool.-bot. Gesel. Wien, xv.
p. 422 (1865); Reise der 'Novara,' Neurop. p. 16, tab. 1. fig. 6
(details).

Auckland (*Colonel Bolton*; *Edwards*; *Brauer*); no special locality mentioned (*Dr. Hooker*; *Capt. Ross*).

EXPLANATION OF PLATE II.

- Fig. 1. *Æconesus Maori* (♂), neuration of wings.
2. *Olinx Feredayi* (♂), neuration of wings; 2*b*, forked lobe from middle of last dorsal segment; 2*c*, appendices, seen from beneath; 2*d*, head and palpi, from side.
3. *Pycnocentria evecta* (♂), appendices, from beneath.
4. *P. aureola* (♂), appendices, from above; 4*a*, appendices, from beneath.
5. *Tetracentron amabile* (♂), neuration of wings; 5*a* (♀), neuration of apex of anterior wing; 5*b* (♂), appendices, from above; 5*c*, from side; 5*d*, maxillary palpus.
6. *Notanatolica cognata* (♂), appendices, from above.
7. *Setodes unicolor*, neuration of wings.
8. *Polycentropus puerilis* (♂), neuration of wings; 8*a*, appendices, from side; 8*b*, from above.
9. *Hydrobiosis frater*, neuration of wings; 9*a*, appendices of ♂, from side; 9*b*, maxillary palpus; 9*c*, *H. umbripennis*, appendices of ♂, from side; 9*d*, from beneath.
10. *Psilochorema confusum* (♂), neuration of wings; 10*a* (♀), neuration of wings; 10*b*, appendices of ♂, from above.
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McLachlan, Robert. 1868. "On some new Forms of Trichopterous Insects from New Zealand; with a List of the Species known to inhabit those Colonies. (continued)." *The Journal of the Linnean Society of London. Zoology* 10(44), 197–214. <https://doi.org/10.1111/j.1096-3642.1868.tb02232.x>.

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