

The Calyptrate Diptera of New Zealand, Parts VIII and IX.*

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PART VIII.

IN the present paper, which may be my final one of this family for the country, I present descriptions of a large number of new genera and species and also a preliminary key to the genera of New Zealand. Press of other work has delayed the completion of this paper and changed conditions here may interfere with a continuation of my studies on the family.

I have, I hope, been able to lay the foundation of a more reliable system of identification of these important insects for more complete work by resident students interested in them, but it must be distinctly understood that I have absolutely no field information on the material upon which this paper is based, and that I am not at all satisfied that there will be found to be the same cleavage between genera now included herein when more species are discovered, as they undoubtedly will be. It is very difficult to distinguish satisfactorily many of the rather closely related concepts in this country, and later on with the accession of more data it may be that a more conservative attitude towards them will be adopted and a number of what I now call genera may be lumped together on the basis of characters not made use of by me as indices to groupings.

To put it rather bluntly, my main object has been to make it possible for any entomologist who has a fair knowledge of insect anatomy and the terms used in descriptions of these insects to indentify at least a large percentage of the species. That, in my opinion, is or should be the ultimate object of such studies as this; and the more pretentious aim of presenting what one might claim to be a natural system of classification is, on the basis of such a collection as is available to me, impossible of attainment. I do think, however, that the great majority of the New Zealand species have been derived from one or two common ancestors, and that comparatively few of the existing genera are closely related to even those of Australia.

I have to thank Prof. R. Speight of the Canterbury Museum for sending to me the Hutton types, Dr David Miller for the loan of his collection, forwarded to me by Mr. E. S. Gourlay, and also several correspondents who have in the past sent me material in the family which has considerably aided me in the preparation of this paper.

* Pts. i-vii in *Records Canterbury Museum* (1926-32).—D. M.

Genus *WATTIA*, novum.

A peculiar genus with some of the characters of *Doddiana*, Curran, particularly the fused abdominal tergites and yellow general colour. It differs from it in the presence of setulae on the parafacials, in having the first posterior cell of the wing closed and with a short petiole, and in having the second segment of the arista over one-third as long as the third.

Genotype, the following species:—

***Wattia ferruginea*, n.sp.**

Female entirely ferrugineous yellow and dull, the antennae more orange-yellow, all parts more or less noticeably yellow dusted, the mesonotum with traces of four darker ferrugineous vittae, the dust on the abdomen variable according to the angle from which it is viewed, the wings yellowish, veins darker apically, and with narrow yellow margins on the paler parts.

Length, 7 mm.

Head in profile as Fig. 1. Frons at vertex two-fifths of the head width, widened to anterior margin, its length in centre about equal to its width at verticals, the orbits at middle fully half as wide as the interfrontalia, the vertex rounded, vertical transverse, the outer pair about half as long as the inner, postverticals shorter and finer than the ocellars, about equal to several setulae on the occiput and not longer than the uppermost one of the series of four or five rather widely spaced upper postocular setulae, the ocelli slightly in front of the verticals. In addition to these characters the interfrontalia has some scattered setulae, the uppermost of the inner marginal orbitals is reclinate, the two at the anterior extremity of that series are almost transversely placed, and the outer proclimates are three in number, the two upper bristles more or less outwardly sloped. The face is flat and the eyes are bare.

Thorax with the bristles strong and the hairs very sparse. Dorsocentrals 3 + 3 acrostichals 2 + 3, the posterior pair of presuturals well in front of the suture; prealar rather long but not very strong; presutural intraalar short and fine, the postsuturals 3; sternopleurals 3, very closely placed; three bristles on the lower edge of the propleura, and one stigmal; scutellum with eight marginal and two discal bristles, the apical pair of former much shorter than the one on each side of them and parallel; postscutellum extending to apex of scutellum; no fine hairs below lower squama; pteropleural long and strong; prosternum small and bare. There are no erect hairs or bristles on the scutellum and the anterior margin of the mesonotum has a number of strong erect setulae, the small bristle in line with each series of the dorsocentrals the strongest. Propleura bare in centre.

Legs strong, with strong bristles, the tarsi of all pairs longer than their tibiae. Fore tibia with three or four bristles on the anterodorsal and posterodorsal surfaces and two on the posterior; mid-tibia with two anteroventral and posteroventral and four or five anterodorsal and posterodorsal bristles, the anterodorsal series much the longest and strongest; hind femur with a dorsal and an anterodorsal series

of bristles on apical half or more, a widely-spaced series of uneven bristles on the anteroventral surface; hind tibia with about half a dozen bristles on the anterodorsal and posterodorsal surfaces and three or four short anteroventral bristles.

Wings rather narrow, third vein setulose at base below and from base to inner cross vein above, first posterior cell with a short petiole, ending slightly before wing tip, the angle of fourth vein sharp, the section of vein beyond it much bent in just above the angle (Fig. 2); inner cross vein about four-sevenths from base of discal cell; outer cross vein about two-fifths from bend to inner cross vein; sixth vein complete. Costal thorn undeveloped.

Abdomen ovate, evenly rounded above, the sutures between the tergites distinct only at the lateral curves; first visible tergite without apical central bristles, second with two or three pairs of discals and an apical central pair, third with two pairs of discals and a complete apical series, fourth with a discal transverse series and a weaker apical series; the segments all with bristles at the lateral curves. Second sternite with a pair of apical bristles.

Lower squama lobate, its inner margin lying against the side of the scutellum and its apex quite broadly rounded.

Holotype, Wanganui (M. N. Watt).

I dedicate this genus to Dr. M. N. Watt, who sent me the type specimen several years ago.

This is one of the few endemic New Zealand genera of the family known to me in which there are no setulae or hairs below the lower squama on the postnotum. I am placing in this same genus some additional specimens which I have distinguished as species on the following characters:—

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| 1. Costal spine lacking; apical pair of scutellar bristles about half as long as the next pair; apical part of wing venation as Fig. 2. | | <i>ferruginea</i> , n.sp. |
| Costal spine well developed; apical pair of scutellars lacking or very short. | | 2 |
| 2. Apical pair of scutellars present; apical part of wing venation as Fig. 3. | | <i>petiolata</i> , n.sp. |
| Apical pair of scutellars lacking; apical part of wing venation as Fig. 4. | | <i>sessilis</i> , n.sp. |

***Wattia petiolata*, n.sp.**

Female similar to *ferruginea* in general colour and structure, the antennae bright orange-yellow, and the thorax without definite vittae on dorsum.

Differs in having the apical pair of scutellar bristles very small and cruciate, the presutural area with three pairs of acrostichals, the lower costal spine fully as long as the inner cross vein and the upper one distinct though much smaller, the petiole of the first posterior cell of the wing much longer (Fig. 3), both cross veins with rather evident brown clouding, and the dust on the abdomen less evident.

Length, 8.5 mm.

Male. A male specimen which I take to belong to this species is darker in colour, the thorax being almost fuscous, and the parafacials much narrower and with finer bristles. The third antennal segment is also much wider than in the female, being almost half as wide as long. The abdomen is narrower, more nearly cylindrical, with longer and stronger bristles on the dorsum, and numerous erect finer bristles on the tergite in front of the hypopygium. The hypopygium is of moderate size, with long tapered forceps which are directed forward between the processes of the fifth sternite. The outer cross vein is almost straight, but otherwise the characters are as in the female.

Length, 6 mm.

Holotype ♀, Mt. Arthur, 4,500 ft., 21.xii.21 (A. L. Tonnoir); allotype, Arthur's Pass, 3,200 ft., 1.i.23 (J. G. Myers).

***Wattia sessilis*, n.sp.**

Female. A smaller and darker species than either of the other two in this sex, with the thorax except the scutellum fuscous and slightly grey dusted and the abdomen glossy brownish yellow, the sides below greyish dusted.

Structurally different from *ferruginea* as noted in the above diagnosis and in having the parafacial bristles more numerous and stronger, the scutellum with six long strong marginal bristles and no short pair between the apical pair of these, the mesonotum with but two pairs of presutural acrostichals, and the first posterior cell closed only at its apex (Fig. 4).

Length, 6 mm.

Holotype, Cass, Nov., 1924 (A. L. Tonnoir).

I may be in error in my association of the male above described, which may belong here, or to a fourth species.

Genus GENOTRICHIA, novum.

Similar to the preceding genus in general characters, differing in having the sutures between the abdominal tergites all distinct throughout their width, the outer cross vein of the wing not beyond midway from inner to the bend of fourth, and the first posterior cell with a longer petiole and different course of fourth vein beyond the preapical angle. The head is very much like that of *Wattia*, but the third antennal segment is more widened at apex. In other respects similar to that genus.

Genotype, the following species.

***Genotrichia tonnoiri*, n.sp.**

Male. Head dirty testaceous yellow, frontal orbits, ocellar spot, and occiput above blackened; antennae black, apex of second segment reddish. Profile as Figure 5. Frons at vertex almost half as wide as head, widened anteriorly, with the same bristling as in *Wattia* except that there are no incurved setulose hairs or bristles on the interfrontalia such as are always present in that genus. Second segment of the arista at least half as long as third. Palpi testaceous, with some setulose hairs on their lower sides.

Thorax glossy black, humeral angles and lateral margins of the mesonotum with grey dust, no vittae evident. Bristling as in *Wattia* except that the scutellum has a pair of incurved bristles at base slightly above the edge, and beyond these four long strong bristles on each side, the central pair, or apicals, shortest.

Legs brownish yellow, femora variably infuscated, tarsi black. Armature as in *Wattia*.

Wings greyish hyaline, veins brown, paler at bases. Third vein setulose as in *Wattia*, but the setulae longer and stronger, the costal spine well developed, and the apical venation as in Figure 6.

Abdomen glossy black, brownish below at apex, cylindrical, bristled as in *Wattia*, with all sutures quite distinct even in centre.

Squamae yellowish hyaline. Halteres brown.

Length, 6.5 mm.

Holotype: Mt. Arthur, 5,000 ft., 23.xii.21 (A. L. Tonnoir).

I have also what appears to me to be a second species of this genus which is described below. Possibly some workers on the family would consider that it should be given generic segregation, but I feel I am unable to do this because of a lack of material in both sexes and particularly because of the paucity of information as to the conditions under which these isolated specimens were taken.

***Genotrichia minor*, n.sp.**

Female. Similar in general colour to the genotype, but the coxae are much paler, being, like the femora, fulvous yellow, and though the femora apically and the tibiae are more brownish, neither is as dark at any part as the tarsi. The head is the same in markings, the lower half of the occiput being yellow as in *tonnoiri*, but the antennae are not as dark, the second segment being largely reddish and the base of third segment also largely of that colour.

The head is much less strongly bristled, the parafacials having only two or three fine bristly hairs present, most noticeably so below, the antennae are smaller and the third segment is less widened at apex, while the arista is shorter, with the second segment much less than half as long as third.

The scutellum has the bristles much less evenly developed, but in the same number, and the abdomen lacks the pair of discal bristles on the second visible tergite.

The setulae on the third wing vein are carried well beyond the inner cross vein, in fact to level of the outer one, which latter is about twice as far from the preapical angle of fourth as it is from the inner cross vein instead of but slightly nearer to the latter than to the angle. The angle of fourth vein has also a spur vein and the sixth vein is traceable to the margin though it falls short of it in *tonnoiri*.

Length, 3.75 mm.

Holotype: Cass, 28.xi.24 (A. L. Tonnoir).

There is probably some sexual dimorphism in these two genera, but I believe I am correct in my specific decisions.

Genus *ARTHURIA*, novum.

Another genus of the same general structure as the two already dealt with, the head being very similar in armature and the arista with the second segment elongated. The abdomen has the tergal sutures complete, and a pair of discals of the second and third visible tergites as in *Genotrichia*. The main distinctions are to be found in the lack of but one or two setulae at the extreme base of the third vein both above and below, one of those above being generally rather long, and the presence of four instead of but three sternopleural bristles. In all the available specimens the outer cross vein of the wing is slightly nearer to the inner cross vein than to the angle of fourth, the petiole of the first posterior cell is long, and the sixth vein is complete. As in the other two genera there are no hairs below the lower squama. A character that appears to link this genus with the *Voria* group is the pair of upwardly directed apical bristles of the scutellum, this being different from the rule in the two preceding genera in which when these bristles are present they are directed backward. A unique feature of the genus is the entire lack of short hairs on the central stripe of the abdominal dorsum between the paired bristles. The two genera already dealt with have these hairs present.

Genotype, the following species:—

***Arthuria dimorpha*, n.sp.**

Male. Glossy black, antennae and palpi black, tibiae brownish yellow, wings and squamae brownish hyaline, the veins brown, slightly clouded.

Head in profile as Figure 7. Parafacials and genae greyish dusted. Width of frons at vertex nearly half that of head, widened in front, its length in centre less than its width at vertex, the frontal orbits at level of anterior margin of interfrontalia about two-thirds as great as latter, bristled as in the other two genera, the interfrontalia without hairs or bristles. Eyes bare.

Thorax with the same bristling as in *Wattia*, including one or more bristles at centre of mesopleura above, and the long pteropleural, but with an additional sternopleural between the upper two, and the apical pair of fine bristles on the scutellum upcurved. Humeral angles and pleura slightly grey dusted.

Legs as in *Wattia*.

Wing with the apical venation as in Figure 8. Costal thorn distinct.

Abdomen glossy black, ovate, and almost cylindrical, the sutures distinct, and the armature as in *Wattia*, the fourth visible segment with long bristles on entire dorsum, becoming shorter apically. Inner edges of the processes of fifth sternite with some fine bristly hairs directed apically.

Female. Differs from the male in having the second antennal segment reddish, the palpi and legs except their tarsi brownish to fulvous yellow, and the thorax and abdomen more, or less evidently grey dusted.

The antennae are not as wide, and the second aristal segment is about half as long as third.

In some specimens there is a distinct spur vein at the bend of fourth.

Length, 4-5.5 mm.

Type Male; allotype and 3 paratypes, Mt. Alpha, 3,600 ft., 19.xi.21; paratype females, Mt. Arthur, 4,500 ft., 21-26.xii.21 (A. L. Tonnoir); Purakanui (D. Miller).

The sexual dimorphism in this species is very marked, both in the colour of the palpi and legs and in the difference in size of the antennae.

Genus UCLESIELLA, novum.

This genus belongs to that artificial group in which the ultimate section of the fifth wing vein is more than half as long as the preceding section and the outer cross vein is markedly nearer to the inner than to the bend of the fourth vein. In this last character it is similar to *Arthuria minor*, but in the latter the ultimate section of the fifth vein is markedly less than half as long as preceding one. Aldrich a few years ago reviewed all the known genera with the wing characters of the present genus and the key he presents does not enable me to place it in any already described concept.*

If we are to accept this placement the genus will run down to *Uclesia*, Girschner, which is reported from Europe and Western North America. But the parafacials are not merely haired but strongly bristled, and the gena is not more than half the eye height as is shown in the accompanying figure (Fig. 9). Aldrich has described the American species, which is largely yellow, and though it has some distinct parafacial bristles there are some hairs below the lower squama which is not so in the present genus. The ultimate section of the fifth vein in his species is also as long as the penultimate while in the genus now described it is not much over half as long.

Genotype, the following species:—

***Uclesiella irregularis*, n.sp.**

Male, Female. Black, glossy, the face and parafacials slightly grey dusted, most noticeably so in the female, the thorax almost without dusting in the male, slightly grey dusted in female, more noticeably so on the pleura. Antennae and palpi black. Legs black. Wings slightly smoky, veins fuscous and slightly margined with darker colour than the remainder of the cells. Squamae white. Halteres fuscous.

Male. Head in profile as Figure 9. Frons almost as in the next preceding genus, the orbits narrow above, widened to above antennae where either is wider than the interfrontalia, the latter without hairs; ocellars strong, proclinate and divergent; postverticals short and fine, erect and parallel. Eyes bare.

Thorax with 2 + 3 dorsocentrals and acrostichals; sternopleurals 3, closely placed; mesopleura with one or more central bristles above; prealar very small, the bristle behind it very long; scutellum with six

* *Trans. Amer. Ent. Soc.*, 52, 7 (1926).

marginal bristles, the basal and apical pairs shortest, the apicals cruciate, the disc with a number of erect fine bristles; pteropleura without a differentiated bristle, with some setulose hairs. No hairs below the lower squama.

Legs stout, tarsi slightly longer than their tibiae, the bristles strong and in the usual arrangement of this section.

Abdomen cylindrical, tapered slightly at base and apex, the suture between the first two tergites complete and better developed than either of the other two, the third suture very faint, but traceable, centrally. Second and third visible tergites each with a pair of strong discal bristles, second with a pair at apex in centre, third with a widely spaced apical series, fourth with two transverse series that are not as long as those on the preceding segments, and a series of setulae on apex that are directed backward. The hypopygium concealed.

Wing with the apical venation as in Figure 10, the ultimate section of the fifth vein about two-thirds as long as the preceding section, and the lower costal spine longer than the inner cross vein. First vein not bristled, third with bristles from base to about middle of first posterior cell on upper side, and with two or three fine setulae at extreme base below.

Female. Differs from the male in having the third antennal segment narrower, the second segment of the arista about one-third as long as the third, the abdomen more tapered apically, and the fore tarsi a little thicker.

Length, 3.5-4.5 mm.

Holotype Male, allotype, and two paratypes, Otira, 9.ii.22 (A. L. Tonnoir). One much damaged male from Ohakune, taken by M. Harris, appears to be this species.

This genus has much the appearance of *Calcageria*, Curran, but the latter has the first wing bristled above, no strong genal bristles, and the first tergite of the abdomen with a pair of strong apical bristles. Both genera have erect discal bristles, the pteropleural bristle not differentiated, and hairs on the centre of the abdominal dorsum between the discal bristles.

It may be pertinent to note here that *Heteria*, Malloch, has some of the characteristics of this group, but it differs from all of those dealt with above in having the basal segment of the arista much elongated, usually as long as the second; in all those included above the basal segment of the arista is not or hardly longer than thick.

Genus PLAGIOMYIA, Curran.

1927. *Ent. Mitt.*, 16 (5), 442.

This genus was erected by Curran for the reception of *Calcager turbidum*, Hutton. In his description Curran compared it with *Metaplagia*, Coquillett, distinguishing it therefrom by the wide facial depression. The other characters given consist of the equally long second and third antennal segments, the haired parafacials, the elongate second segment of the arista, and the presence of three pairs of proclinate outer orbital bristles, etc. The other characters than

those just mentioned are such as we find in *Uclesiella* and *Calcageria* except that the first vein is bare as in the former while in *Calcageria* is bristled centrally above. No mention was made of the lack of discal abdominal bristles nor of the peculiar apical venation of the wing (Fig. 11) and he was in error in stating that the ultimate section of the fifth vein is as long as the penultimate section. The ultimate section of the fifth vein in Hutton's type male now before me is not over two-thirds as long as the penultimate one. It is upon the lack of discal abdominal bristles that I base the distinction of the genus from any of those already dealt with in this paper.

KEY TO THE SPECIES.

1. Parafacials microscopically haired above, bare below middle; third antennal segment shorter than second (Fig. 12); second visible tergite in male with a pair of weak short bristles in centre of apex, the female lacking these, and both sexes with a complete apical series on third tergite; tarsi longer than usual, those of female most noticeably so, the fore pair much longer than their tibiae and the fourth segment longer than the fifth. *longipes*, n.sp.
- Parafacials longer haired, and to almost lower level of the eyes; fourth segment of all tarsi shorter than the fifth. 2
2. Gena over half as high as eye (Fig. 13); third antennal segment about 1.5 times as long as second in male. *alticeps*, n.sp.
- Gena not half as high as eye. 3
3. Third antennal segment distinctly longer than second (male about twice, female about 1.5), the second not noticeably pale at apex (Fig. 14); second visible abdominal tergite of both sexes without apical central bristles, those on apex of third and fourth in male quite strong, of female very fine and weak. *longicornis*, n.sp.
- Third antennal segment not longer than second in either sex. 4
4. Male with a pair of strong apical central bristles on second visible tergite of abdomen. *turbidum* (Hutton)
- Male without a pair of strong apical central bristles on second visible tergite of abdomen. *achaeta*, n.sp.

***Plagiomyia turbidum* (Hutton).**

A shining black species with distinct grey dust on head, thorax, and abdomen. Antennae black, second segment red at apex; palpi black. Mesonotum with four black vittae. Bases of abdominal tergites rather broadly pale grey dusted. Legs black. Wings brownish hyaline, darker along costa basally, veins dark brown, not clouded. Squamae white. Halteres fuscous.

Frons much as in *Wattia*, but the outer bristles on each orbit consist of one upper outwardly curved bristle and from three to five anterior proclinate bristles, the latter sometimes very unequal in lengths. Interfrontalia with a few minute hairs close against each orbit, none on centre. Parafacials with numerous fine hairs which extend downward to level of uppermost setulae on the facial ridges, the latter ceasing at lower third. Genal bristles rather strong, three or four in number. Third antennal segment about equal in length to second, the latter with numerous short bristles on upper side.

Dorsocentral and acrostichal bristles 3 + 3, prealar rather short, presutural intra-alar well developed, postsutural intra-alars and sternopleurals 3, pteropleural very short or undeveloped; scutellum with three marginals, the apical pair cruciate, the discal setulae long and erect, the apical pair longest.

Legs stout, strongly bristled, all tarsi at least as long as their tibiae, the fore pair of female slightly widened, fifth segment on all pairs longer than fourth.

Wing venation slightly variable, but generally as in Figure 11, the section of costa between apices of second and third veins slightly more direct or straightened than usual; ultimate section of fifth vein very faint, over two-thirds as long as penultimate one; setulae on third vein extending to well beyond inner cross vein above, and confined to node below.

Abdomen ovate, more flattened above than in any species already dealt with in this paper, all tergites with lateral bristles, first without, second with a pair of apical central bristles, third and fourth with complete apical series, fourth with no discals and with a series of bristly hairs on apical edge that extend backward. Both pairs of the hypopygial forceps of male tapered to apices and slightly bent forward at tips, the superior pair more slender than inferior pair. Fifth sternite of male with a number of long bristly hairs on lower edges of the processes.

Length, 6-7 mm.

I have before me Hutton's type male from Christchurch and a male and female from the same locality taken by Dr. Tonnoir. Additional localities are as follows: Cass, Ohakune, Spreydon, Nelson, and Mt. Grey.

***Plagiomyia achaeta*, n.sp.**

Male. Similar in all respects to *turbidum*, except in having the antennae without distinct red apex to the second antennal segment and no pair of strong bristles in centre of apex of the second visible tergite of the abdomen of the male.

Length, 6 mm.

Holotype, Mt. Arthur, 5,000 ft., 23.xii.21 (A. L. Tonnoir).

It is possible that this is merely a dark and small variety of *turbidum*, as in some females the second visible tergite of that species lacks the apical central pair of bristles, and it is not unreasonable to expect that occasional males may vary in the same manner from the typical form.

***Plagiomyia longipes*, n.sp.**

Female. Similar to *turbidum* in general characters, colour, etc., differing from it in having the parafacials narrower in profile, more evenly brown dusted and with smaller hairs and more confined to the upper half (Fig. 12), the antennae with the third segment shorter, no pair of apical central bristles on the second abdominal tergite, and the fourth tarsal segment on all legs longer than the fifth. Otherwise almost identical.

Length, 6-7.5 mm.

Holotype, Mt. Arthur, 4,500 ft., 21.xii.21 (A. L. Tonnoir).

***Plagiomyia alticeps*, n.sp.**

A more densely grey dusted species than any of the others, the head except the antennae being entirely so, the mesonotum showing but faint traces of the dark vittae, and the basal tergal grey dusted fasciae of the abdomen much wider, while the genae seen from behind against the light are rather bright red.

Structurally it differs from the others in the higher genae and the longer third antennal segment as well as the different arrangement of the orbital bristles (Fig. 13). The genal bristles are undeveloped and there are many more fine bristles on the vibrissal region than usual.

The abdomen has a strong apical central pair of bristles on the second visible tergite as in *turbidum*, but there are more numerous setulose hairs at the apex of the fourth tergite that give the abdomen a rather tufted appearance.

The setulae on the upper side of the third wing vein are also weaker, and they do not extend to the inner cross vein.

Length, 7 mm.

Holotype, Male, Ohau Beach, 23.x.16, No. 1177 (D. Miller):

***Plagiomyia longicornis*, n.sp.**

A smaller species than any of those already dealt with in the genus, with much the same general characters and colouration as *turbidum*, differing noticeably in the entirely black and much longer third antennal segment (Fig. 14). The male also lacks the apical central pair of bristles on the second visible abdominal tergite, and in both sexes the outer cross vein is closer to the inner than to the bend of the fourth vein. The male hypopygium is similar, and in one male there is a long spiral thread-like organ protruding much as in the male of *Voria*.

Length, 4-5.5 mm.

Holotype and allotype, mounted on same pin and evidently taken *in copula*, Nelson, 7.xii.21 (A. L. Tonnoir). Paratypes, Nelson, February, 1929, one female labelled "running on ground, apparently unable to fly" (A. L. Tonnoir); one female, Ohakune, 30.x.19 (Harris).

The female that could not fly is immature and that no doubt accounts for this unusual feature.

One specimen from Okarahia, taken by Mr. Tonnoir, is larger than the holotype, but does not materially differ as far as I can determine, though the outer cross vein is closer to the angle of the fourth vein than to the inner cross vein.

Another male from Mt. Arthur lacks grey dusted fasciae on the abdomen, but it is structurally similar to the holotype and may be greasy.

Genus *Calcageria*, Curran.

1927. *Ent. Mitt.*, 16, No. 6, p. 442.

This genus was distinguished from *Calcager*, Hutton, in the following manner: "Similar to *Calcager*, Hutton, but the eyes bear very sparse, short hair, the parafacials are strongly bristled, the

apical cell ends farther from the apex of the wing, and the last section of the fourth vein is hardly bowed inwards."

Genotype, *Calcageria incidens*, Curran.

I have before me four species, the types of this genus and *Calcager*, and what I take to be two new species, and a careful examination of these, all of them represented by more than a single specimen, causes me to believe that it will be either necessary to merge the two existing genera or to erect at least one additional genus. The presence of strong setulae or bristles on the upper surface of the first wing vein was not listed as a generic character for *Calcageria* by Curran, possibly because there may have been some doubt in his mind as to the importance of this as a generic character, but it has been used in the family as a generic criterion, and it appears to be of considerable value in some groups. It is undoubtedly, in my opinion, more important than the hairs of the eyes or the trivial distinctions in the venation of the wings made use of by Curran in his generic diagnosis. I have elected to make use of the bristled first vein as the distinguishing character herein, and separate two species on the characters given in the following diagnosis:—

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| A. | One or more of the parafacial bristles as long as the arista; palpi entirely testaceous yellow; at least the hind tibia reddish yellow centrally; fifth wing vein without bristles on upper surface. | <i>incidens</i> , Curran |
| AA. | None of the parafacial bristles nearly as long as the arista; palpi fuscous, all the tibiae black; fifth wing vein almost invariably with one or more bristles on upper surface near base. | <i>varians</i> , n.sp. |

***Calcageria incidens*, Curran.**

This species is black, rather densely grey dusted, with the basal two segments of the antennae and the palpi testaceous to fulvous yellow, and the tibiae more or less distinctly reddish yellow or brownish yellow centrally. Thorax with grey dust, the mesonotum with four black vittae, abdomen glossy black, the base of each tergite rather broadly pale grey dusted. Wings brownish hyaline, veins fuscous. Squamae brownish hyaline. Halteres brown.

Head of female as Figure 15 in profile. Eyes with some scattered pale hairs of moderate length but difficult to see unless at certain angles against the light. Frons wider in front than its length in centre, the triangle and orbits grey dusted and the interfrontalia reddish brown, the latter with one or two hairs on each side centrally; outer proclinate bristles on each orbit usually three, the upper one or the central one weakest.

Dorsocentrals 3 + 3 acrostichals 3 + 2, prealar short, postsutural intra-alars 3, presutural intra-alar well developed, pteropleural very short, sternopleurals 3; scutellum with 3 laterals on each side, the apical pair rather short and cruciate, the disc with a number of erect bristles.

Legs stout, tarsi slightly longer than their tibiae and rather thick, the fourth and fifth segments subequal, bristling strong and arranged as in the other genera.

Wings rather small, the apical venation as Figure 16, first vein strongly setulose centrally above, third setulose from base to well beyond inner cross vein above and at extreme base below, inner cross vein beyond middle of the discal cell, outer nearer to inner than to angle of fourth, ultimate section of fifth vein about three-fourths as long as penultimate.

Abdomen subcylindrical, tapered at apex, the sutures entire, the one between first and second visible tergites most distinct. First visible tergite without a pair of apical central bristles, the second and third with these bristles and a strong and usually a very weak pair of discals, fourth with a preapical series of strong and a discal series of much shorter bristles and the usual backwardly directed series of bristles and hairs on the hind margin.

Length, 6.5–7 mm.

Localities, Ruapehu and Kaikoura. Originally described from Wellington and Auckland. Type in Berlin.

***Calcageria varians*, n.sp.**

A darker species than *incidens*, with the antennae, palpi and legs entirely black.

Structurally the species differs markedly from the genotype as follows: the frons is a little narrower, each orbit has but two proclinate outer bristles, both long and strong, the parafacials are narrower, with more closely placed and much weaker and shorter bristles, the genae are not as high and have no strong bristles behind, the abdomen is more nearly cylindrical with longer dorsal bristles, and the first visible tergite has a long, strong, erect pair of bristles at apex in centre. There are two rather remarkable features of the species which in one or two specimens do not conform to the general rule, but they are sufficiently constant to make them worth recording. The first is the presence of but a single erect bristle near the apex of the scutellum on its upper surface. Usually bristles occur in pairs in this family, and most others, especially on the thorax and abdomen, and this is a remarkable exception. The other character is the presence of one or more bristles on the upper surface of the fifth wing vein near the base of the discal cell. In 12 out of 14 specimens this character holds. It is also the case that the outer cross vein is usually nearer to the bend of the fourth than to the inner cross vein, but there is some variation in this character so that one cannot depend upon it in individual examples.

Length, 6.5–7.5 mm.

Holotype and allotype, Cobb Valley, 10.xii.22. Paratypes, Dun Mountain, 19.i.31, 14.ii.26 (E. S. Gourlay); Mt. Grey, April, 1920 (Lindsay); Otira, 20.xi.19 (Miller); Nelson, October 17, Aniseed Valley, 1–4.xii.23, Cass, 1.xii.24 (A. L. Tonnoir).

Genus CALCAGER, Hutton.

I have before me the type-specimen of the genotype, *apertum* Hutton, kindly sent to me for examination by Dr. R. Speight. I also have a number of specimens of the species that agree closely with it, and am able to determine that there is some variation in certain

characters within the species. It is unfortunate that I have males only of *apertum*, and females only of the other two species I am placing in the following key.

KEY TO THE SPECIES.

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|--|---|
| 1. Cross veins of the wings not clouded; basal two segments of antennae, and the palpi, orange-yellow, the tibiae mainly reddish yellow; postsutural dorsocentrals 3; costal spine well developed; setulae on third vein continued to about level of the outer cross vein. . . | <i>Calcageria incidens</i> ,
var. <i>nuda</i> nov. |
| Cross veins and fourth vein at preapical angle conspicuously clouded with fuscous. | 2 |
| 2. Costal thorn long; legs entirely black, palpi usually so; postsutural dorsocentrals 4. | <i>apertum</i> Hutton |
| Costal thorn undeveloped; tibiae largely reddish yellow; palpi orange-yellow; postsutural dorsocentrals 3. . . | <i>dubium</i> , n.sp. |

Calcager apertum, Hutton.

A rather large shining black species, with white dust on head, thorax and abdomen, the basal two antennal segments usually reddish yellow and the palpi fuscous. In exceptional specimens the antennae are darker and in one specimen the palpi are brownish yellow. The thorax has four black vittae, and the bases of the abdominal tergites are silver white dusted, the fascia on the fourth tergite usually drawn out into a point in centre. The conspicuous clouds on the two cross veins and the preapical angle of the fourth are characteristic of this species and the next one in this group, and remind one of certain African species of the genus *Sarcophaga*.

The third antennal segment is rather variable in length as compared with the second, usually equal to the latter in length, it may be in some specimens quite noticeably longer. The second segment of the arista is also variable in length, but is always at least three times as long as thick. The proclinate outer orbitals are strong and usually in three or four pairs. There are usually two or three rather strong posterior genal bristles, and the parafacials are furnished with numerous moderately long setulose hairs. The eyes are quite densely pale haired.

This is the only species of the group I am dealing with in this paper that has four pairs of postsutural dorsocentral bristles. The scutellum has a number of long erect discal bristles, the pair nearest apex the longest.

Legs normal, with the usual strong bristles.

Wings as usual rather small, hardly attaining the apex of the abdomen, with the apical venation similar to that of *Calcageria*, though the outer cross vein is rarely proximad of midway from inner to angle of fourth, and the fourth beyond the angle is more markedly incurved immediately above the angle. There are rarely more than one or two bristles beyond the inner cross vein on upper side of third vein, and the ultimate section of the fifth vein is hardly half as long as the penultimate one.

Abdomen cylindrical, tapered to apex, with the sutures all distinct, though the second and third do not have the apices of the tergites overlapping. Bristles long, the first visible one lacking apical

central pair, the others all with apicals, the second and third usually with two unequal pairs of discals. Apex of fourth tergite with the usual apical backwardly projecting fringe of hairs and bristles.

Length, 7–8.5 mm.

Type locality, Christchurch. Other localities: Goulard Downs, 7.ii.22 (R. J. Tillyard); Ruapehu, 7.i.22 (Fenwick); Arthur's Pass, 6.i.23, 4,000 ft. (D. Miller); Day's Bay, 24.iii.22 (J. G. Myers); Cass, 1.xii.24, and Christchurch, 17.ii.22 (A. L. Tonnoir). The specimen in which the palpi are brownish yellow is a male from Kaituna, 19.ii.22 (A. L. Tonnoir).

***Calcager dubium*, n.sp.**

A female specimen which closely resembles *apertum* except in being smaller, more densely dusted on the head and thorax, with the dust more brownish, the palpi entirely orange-yellow, and the tibiae largely reddish-yellow. The basal two antennal segments are bright orange-red, and the wings are marked as in *apertum*.

The third antennal segment is narrower than in *apertum*, but this is a female character, and at least 1.5 times as long as the second; the parafacials have a series of unequal bristles, the longest being about as long as the arista and very much stronger than any of those in the specimens of *apertum* now before me. Each orbit is armed with three strong proclinate outer bristles.

The thorax has but three pairs of postsutural dorsocentrals, but is otherwise much as in the genotype.

Abdomen broader than in the male, more ovate and depressed, with the bristles shorter. The second tergite has two pairs and the third one pair of discals.

Wings much as in *apertum*, but the outer cross vein is nearer to the inner than to the angle of fourth. Neither of the two costal thorns is developed spine-like.

Length, 6.5 mm.

Holotype, Flora Camp, 3,000 ft., 5.i.30 (E. S. Gourlay).

***Calcageria incidens*, var. *nuda* nov.**

Several females that may belong to a distinct species are classed tentatively as a variety of *incidens* under the above name. They agree very closely with this species but lack the bristles on the upper surface of the first wing vein, which character I have accepted as of generic value.

There are no outstanding characters for their separation from *incidens* apart from this one and there being only females of both available it is impossible for me to make a hypopygial comparison to check my findings.

Length, 5–6 mm.

Holotype, and two paratypes, Otira, 9.ii.22, one, Kaikoura, 23.ii.22 (A. L. Tonnoir); one, Arthur's Pass, 23.xii.22, 3,500 ft. (J. G. Myers).

It may be deduced from the data presented above that generic limits in this family are rather uncertain. Undoubtedly if the characters utilized as generic criteria are variable or even subject to sexual dimorphism errors in placement will occur, and in determining specimens in the laboratory the taxonomist can go only as far as his available material permits, having no means of checking up his findings against field observations and particularly if he has no record of habits and no immature stage material to guide him. It is possible that there are two species in the collection which I now refer tentatively to as varieties of one, but there is no reason why I cannot treat them meanwhile as above.

Genus CALOTACHINA, novum.

This genus belongs to that group in which there are no fine hairs below the lower squama, the parafacials are strongly haired on their entire length, the arista has the second segment much elongated (Fig. 17), and the third segment of the antennae broad and much longer than the second. The first posterior cell of the wing is open and the fourth vein has a spur vein on its inner side between the angle and its apex. This last character may not be normal. The abdomen has well developed discal bristles. The sixth wing vein ceases at a short distance from the margin of the wing.

Genotype, the following species.

Calotachina tricolor, n.sp.

Male. Head with the ground colour entirely obscured by a dense coating of dust except on the interfrontalia and orbits, the former fuscous and slightly white dusted when seen from the side and in front, the frontal orbits pale brown to brassy dusted, with slight white reflections at various angles, face, lower half of parafacials and the genae white dusted, the occiput yellow dusted, less noticeably so centrally above. Antennae reddish orange, upper and lower edges and apex of third segment fuscous to black margined; aristae black; palpi orange-yellow. Lower and central hairs on occiput pale yellow, all the others and the bristles black. Eyes nude, hardly higher than the gena, the latter rather narrow. Frons at vertex fully half as wide as head and wider than its central length, much widened to anterior margin, the orbits at centre over half as wide as the interfrontalia, with numerous bristles and long hairs; interfrontalia with some hairs along each side. Profile as Figure 17.

Thorax brown, the pleura with yellowish grey dusting that almost obliterates the ground colour, humeri and lateral margins of mesonotum with a stripe of dense greyish white dust, disc of mesonotum fuscous, with an olivaceous tinge, showing indications of four vittae, the lateral edge of the outer one on each side and a spot in centre of hind margin rufous brown, the suture and some shadings on disc with whitish dust; scutellum rufous brown, dull. Dorsocentrals 2 + 4, acrostichals 2 + 3, the posterior presutural pair well in front of suture; prealar long; presutural intra-alar lacking, post-sutural pairs 3; pteropleural long and strong; scutellum with four pairs of laterals, the apical one cruciate and not much shorter than the next pair, the disc with one or two pairs of fine bristles and numerous hairs, none of them erect.

Legs tawny yellow, with paler dust. The bristling strong and similar to that of the genera already dealt with herein. The fore tibia with a series of bristles on the anterodorsal and another on the posterodorsal surface, the bristles becoming longer as they approach the apex. All tarsi at least as long as their tibiae.

Wings hyaline, veins yellow basally, becoming brown apically, all more or less suffused with yellow to dark brown, the inner cross vein with a spot-like brown mark, the outer one and the apical section of fourth beyond the curve with a pale brown margin. Costal thorn lacking, third vein with some fine bristles on node above and below; apical venation as Figure 18.

Abdomen brownish yellow, with a fuscous triangle on each side of the central line on second and third visible tergites, the central line reddish brown, the disc of first visible tergite almost entirely fuscous, the fourth with a fuscous mark in centre, all tergites reddish brown on each side at apex of the lateral curve and the second to fourth inclusive each with a conspicuous patch of greyish white dust on each side in front; the venter entirely yellowish grey dusted. First visible tergite with a pair of strong central apical bristles and on each side with some much weaker bristles that are rather far apart so that the apical series is not strikingly developed, second tergite with two pairs of discals and a complete apical series, third with a pair of central bristles in front and behind these a rather irregular transverse partial double series and a complete apical one, fourth tergite bristled from near base to apex, fifth with numerous shorter bristles. Third and fourth sternites each with numerous bristles apically, fifth with moderately long processes that are not abnormal in either armature or structure.

Length, 13 mm.

Holotype, Mt. Arthur, 2.iv.25 (A. Philpott).

Genus *MICROHYSTRICIA*, novum.

This genus is somewhat similar to the preceding one, but the parafacials are very strongly bristled and haired, the posterior pre-sutural intra-alar bristle is well developed, there are at least 4 sterno-pleural bristles, an additional weak one being present between the two strong upper bristles, and the first posterior cell of the wing has a long petiole, the general appearance of the venation being similar to that shown in Figure 3 except that the petiole is longer, almost entirely straight, the apical part of the fourth vein is less sloped outward at its anterior extremity, and the outer cross vein is less bent.

Microhystricia gourlayi, n.sp.

Head black, with light grey dusting, the interfrontalia more brownish than the frontal orbits; in greasy specimens the lower half of the occiput is brownish yellow as well as some part of the face. Basal two antennal segments reddish yellow, third segment and the aristae black, palpi brownish yellow. Profile of male as Figure 19. Frons even wider and shorter than in *Calotachina*, with the bristles and hairs stronger and longer, the parafacials with

numerous strong bristles and long setulose hairs; either orbit at widest point as wide as or a little wider than interfrontalia, the latter with a number of long incurved hairs along each side. Eyes with moderately long sparse hairs, less distinct in the female.

Thoracic bristles stronger and longer than in *Calotachina*, dorso-centrals 3 + 4, acrostichals 3 + 3, the posterior pair closer to the suture than in *Calotachina*, the posterior intra-alar in front of suture well developed; sternopleura with four or more bristles, the upper two strong bristles with a weak one between them and one or more usually distinguishable near the lower anterior bristle. Scutellum with 8 marginal bristles, the apical pair much weaker than the next one on each side and divergent, not cruciate, the discal hairs and bristles stronger than in the preceding genus.

Legs brownish yellow, very strongly bristled, the arrangement similar to that of *Calotachina*.

Abdomen concolorous with legs, the dorsum with a black central stripe that is widest at base, tapers apically, and in the male does not attain the apex. First visible tergite without the apical central pair of bristles, second and third each with about three pairs along the central line, between those on the third usually a number of much shorter erect bristles, the fourth with long bristles on entire dorsum that are longer at base, gradually becoming slightly shorter to apex, the lateral curve of all tergites with strong bristles. Third and fourth sternites each with a few long apical bristles, fifth with the processes neither abnormal in form nor armature.

Wings brownish hyaline, veins brown, yellowish at bases. Third vein with three or four bristles at extreme base, those above stronger than those below; sixth vein ceasing a short distance from the wing margin.

Length, 8-9 mm.

Holotype Male, and one male paratype, Balloon Hutt, 4,300 ft., 8.i.30 (E. S. Gourlay). Allotype and one male paratype, Mt. Peel, 26.ii.21 (A. Philpott).

I dedicate this species to the collector, who has taken some interesting species of this family now before me.

Genus *HEXAMERA*, Brauer and Bergenstamm.

1889. *Zweifl. K. K. Mus. Wien*, 4, 132.

This name must be used in place of *Protohystricia*, Malloch, which genus I erected for *Tachina signata*, Walker, unaware of the fact that Brauer and Bergenstamm had previously erected a genus for *Hystricia orientalis*, Schiner. The genus as previously stated in this series of papers is readily distinguished from any other met with in New Zealand by the presence of some setulose hairs on the hind side of the basal section of the stem vein of the wing. I have seen but two distinguishable species, the genotype and *huttoni*, Malloch.

Genus AVIBRISSINA, Malloch.

I describe below a new species of this genus, largely by comparisons with the genotype which it resembles closely in most characters including the colour.

Avibrissina laticornis, n.sp.

A larger and more robust species than *brevipalpis*, with the epistome more rounded and shining yellowish brown, and the disc of the scutellum largely of that colour. One of the most striking distinctions from the genotype lies in the different structure of the antennae. In *brevipalpis* the third segment is about 2.5 times as long as the second and about three times as long as wide; in *laticornis* the third segment is about 1.25 times as long as the second and not twice as long as wide, its width being but slightly less than that of the parafacial at centre. The palpi are also distinctly shorter. The post-sutural dorsocentrals in the type specimen are 4 in number instead of 3. The first and second visible abdominal tergites each have a complete transverse apical series of strong bristles, while in the genotype the first has sometimes a central pair separated by a wide space from the bristles at the lateral curves, and the second has always a central pair with the same separation from the lateral bristles. In *brevipalpis* the fifth abdominal sternite is large and has a slight but distinct emargination on the inner edge of each process near its apex, but in the new species though I have not dissected the type specimen the processes of the fifth sternite are slightly produced into a short rounded protuberance at their inner apical angle.

Length, 12 mm.

Holotype, Male, 11.ii.12, Old Man Range, No. 915 (Miller).

The presence of complete series of apical bristles on the first and second visible abdominal tergites is a rather exceptional character in the New Zealand species, but another genus described herein also has this character and is quite similar in some other features. It is extremely difficult to determine just what to use as generic criteria in the New Zealand representatives of the family and only intensive field investigations into the life-histories will eventually determine the exact relationships of the species.

Genus ENGYCERA, novum.

This genus is distinguished from any other known to me from New Zealand by the slender second antennal segment which is usually as long as or longer than the third segment, the latter being much wider and almost truncate at the apex. The frons of the male is not, or but little, wider than the third antennal segment in front of the ocelli, that of the female is over one-third of the head width, the male lacking, the female having proclinate outer orbitals. Eyes densely haired; parafacials with some sparse hairs to below middle. First posterior cell of the wing with a moderately long petiole, ending at least as far in front of wing tip as length of petiole; third wing vein with some very fine short hairs basally; sixth vein incomplete; outer cross vein much nearer to the angle of fourth than to the inner cross vein.

Genotype, *Engycera politiventris*, n.sp.

KEY TO THE SPECIES.

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|------------------|---|
| 1. Males | 2 |
| Females | 3 |
2. Abdomen entirely glossy black, without any trace of grey dust; small species, averaging 7 mm. in length; postsutural dorsocentrals always 3; second segment of arista hardly longer than thick, third segment swollen on not more than its basal third. .. *politiventris*, n.sp.
- Abdomen shining black, with quite dense grey dust, most distinct at bases of the tergites, the fourth visible tergite almost entirely dusted, when seen from in front against the light the dust apically brownish; larger species, averaging 11 mm. in length; postsutural dorsocentrals almost invariably 4, the second one from suture sometimes rather short and fine; second segment or arista about three times as long as thick, third segment swollen to the middle, there rather abruptly tapered and ending in a fine hair. .. *monticola*, n.sp.
3. Abdomen glossy black, almost without a trace of dust; postsutural dorsocentrals invariably 3. .. *politiventris*, n.sp.
- Abdomen shining black, very distinctly greyish white dusted at bases of the tergites; postsutural dorsocentrals 4 or 5. .. *monticola*, n.sp.

***Engycera politiventris*, n.sp.**

A deep black species, with silver grey dust on the head except the interfrontalia, whitish grey dust on the thorax, the mesonotum with four black vittae, abdomen glossy black, legs black, the tibiae more or less brownish yellow centrally, antennae black; palpi fuscous, sometimes yellowish basally; wings greyish hyaline, none of the veins distinctly clouded, the longitudinal veins yellowish basally; squamae white; halteres yellow.

Male. Head in profile as Figure 20. Frons not as wide in front of the ocelli as the third antennal segment; behind each eye and extending downward to middle of eye there is a series of exceptionally long erect fine bristly hairs, between each pair of which there is a much shorter hair. Third antennal segment a little shorter than second, slightly emarginate above near apex, the apical upper angle not very sharp. Hairs on parafacials carried to lower level of eyes and fine, those on the gena long and setulose though none of them bristle-like. Palpi long and but slightly dilated at apices, fine haired.

Thorax with the bristles well developed, the three pairs of postsutural dorsocentrals long and equal, the acrostichals 2 + 3; sternopleurals 3; one outstanding though not very long pteropleural; scutellum with three pairs of marginals, the apical one cruciate, the hairs on sides not carried to apex of venter.

Legs rather slender, the bristles strong, tarsi slender, the claws long, slender, and almost straight to apex. Fore tibia with several rather long anterodorsal bristles, the one nearest apex the longest; mid tibia with a strong ventral bristle; hind femur with long bristles on anteroventral and basal half of the posteroventral surface.

Wings normal, apical venation as Figure 21; a few very fine hairs on basal part of the third vein, confined to node below, but varying in extent above, though never extending to inner cross vein.

Abdomen narrowly ovate, the sutures all distinct. First visible tergite usually with a strong pair of apical central bristles, all the others with strong apical and discal bristles, strongest and most numerous on the fourth visible tergite. Fifth sternite with a pair of rather large rounded lobes that are usually pressed together and form a sort of keel, their surfaces with a few setulose hairs, but none along the margin.

Lower squama widened behind, the inner edge straight and lying against the margin of the scutellum, not bulged upward basally, the apex quite broadly rounded.

Female. Similar to the male in general characters, but the frons is nearly one-third of the head width at vertex, much widened to anterior margin, each orbit at middle is as wide as the interfrontalia and has at least two strong proclinate outer bristles.

The abdomen is wider, and the first visible tergite has rarely the apical central pair of bristles present.

Length, 6.5–7.5 mm.

Holotype, Male, allotype, and 4 paratypes. Purakanui, 1907 (D. Miller). Paratypes, Dun Mt., 2,000 ft., 15.iii.21 (A. Philpott); Barewood, 1908 (D. Miller); Tahunanui, 14.i.28 (E. S. Gourlay); and Roxburgh, 1909 (D. Miller).

***Engycera politiventris*, var. *setosa*, nov.**

This variety is identical with the typical form, but the third antennal segment of the male is broader, with a sharper upper apical angle, the parafacials are not as copiously haired nor do the hairs descend as far, and the genae have the hairs less numerous and amongst them there are a number of rather well-developed bristles.

Length, 6.5–7.5 mm.

Holotype, Male, and 3 paratype males, Mt. Grey, 20.ix.28 (E. S. Gourlay); allotype, Tahunanui, 10.iii.28 (E. S. Gourlay); paratypes, Aniseed Valley, 21.iii.22 (A. L. Tonnoir), Nelson, 28.ix.23 (A. L. Tonnoir), Dun Mt., 3,000 ft., 20.x.21 (A. Philpott), and two without data.

***Engycera monticola*, n.sp.**

A much larger and more robust species than the genotype, with the dusting more conspicuous, and present on the abdomen where the bases of the tergites are quite densely greyish white. The tibiae are usually reddish yellow, and the sides of the segments of the basal half of the abdomen are frequently quite noticeably red. This last character is rarely evident in the males of the genotype and when there is any red visible it is confined to the second visible tergite.

Male, Female. Structurally different from *politiventris*, besides the larger size, in having the frons in both sexes wider, the third antennal segment not over two-thirds as long as the second, the arista thicker, with the second segment longer, the parafacials haired only on upper half, and the postsutural dorsocentrals usually at least 4 in number. There is usually more than one pair of discal bristles on the second visible tergite. The general features of the fifth sternite are the same.

The wings are more yellowish basally, and the hairs on the third vein are always confined to the node both above and below.

Length, 11–12 mm.

Holotype Male and allotype, Mt. Grey, Canterbury, 15.iv.17 and 29.xii.16 respectively (Lindsay). Paratype males, Cass, 1.xii.24 (A. L. Tonnoir); Mt. Grey, Nov., 1917 (Lindsay); Obelisk, 10.iv.20 (D. Miller), and one without data from the last collection.

It would appear pertinent to note here that though this genus has the second antennal segment longer than the third that it is not at all closely related to the Tribe Tachinini, of which this has long been accepted as a character. The hind coxae in Tachinini are furnished with some hairs on their posterior margin above the bases of the hind femora, while in the above new genus there are no such hairs present. The European genus *Eriothrix* Meigen, has much in common with the new one, but in it the third antennal segment is distinctly longer than the second, and the parafacials are bare. The venation of *Eriothrix rufomaculatum* Degeer, is almost identical with that of *Engycera politiventris*.

***Engycera pallipes*, n.sp.**

I have one female in rather damaged condition that appears to be distinct from *monticola*.

It is of the same general size and habitus, but differs markedly in having the basal two segments of the antennae, the palpi, the legs, except a streak on upper surface of the fore femora basally, and the entire tarsi brownish yellow. The scutellum is also largely brownish yellow.

Structurally the two species are quite similar, but the third antennal segment is fully two-thirds as long as the second, the frons is distinctly narrower and the orbits less numerous bristled, with the series along the inner margin more differentiated. The fore tarsi are less widened, though it may be that this character will vary slightly in different specimens of the same species. The first posterior cell of the wing is closed at the margin and has no petiole, but again this character may be variable, though I hardly expect to the same extent as is shown in the type specimens of the two species under consideration. The abdomen has the first visible tergite shorter and without any apical central bristles, and the fourth instead of having a median and apical transverse series of bristles has the entire dorsum rather numerous bristled, with no definite central transverse series.

Length, 12.5 mm.

Holotype, Seaward Moss, 10.ii.10, no collector's name.

Genus PERRISSINA, novum.

A genus rather similar to the old concept *Exorista* of Europe, with the eyes densely haired in both sexes, the parafacials bare below the lowest frontal bristle and the frons much wider in the female than in the male, the former with, and the latter without, proclinate outer orbital bristles. It differs from typical species of the European group in having some fine short hairs below the lower squama, no hairs on the sides of the prosternum, the posterior presutural intra-

alar bristle lacking, and the frons of the female less than one-fourth of the head width at the vertex, widened to anterior margin. The ocellars are present in both sexes though much stronger in the female than in the male; the female has the uppermost bristle on each orbit slightly reclinate and divergent, and the male has no differentiated upper reclinate bristle, the inner margin of each orbit being furnished with a series of bristles that are strong at bases of the antennae and run into mere short fine hairs above, extending to near the anterior ocellus. The proboscis is short, the palpi are long, and the third antennal segment is at least twice as long as the second. Other cephalic characters may be seen in Figure 22, representing the head in profile. First posterior cell open, ending distinctly before wing tip, the outer cross vein much nearer to the bend of fourth than to the inner cross vein.

Genotype, *Perrissina crocea*, n.sp.

KEY TO THE SPECIES.

1. Face, at least on parafacials, the third antennal segment, palpi, and extreme apex of fourth visible abdominal tergite bright orange-yellow; abdomen dark metallic blue, undusted; claws of fore tarsi of the male densely covered on sides with microscopic pile which gives them a thickened appearance except their extreme tips, which are bare, the widest part just before the apical bare section, the claws of each pair equally formed; mid tibia of male without a ventral bristle. *crocea*, n.sp.
- Face dark, with whitish to brownish dust, most dense on the parafacials; palpi in males and third antennal segment largely or entirely fuscous; apex of fourth visible tergite not narrowly orange-yellow nor the general colour of the abdomen not dark metallic blue and undusted; outer claw of each fore pair in the male peculiarly twisted and enlarged near apex, the inner one normal, the hairing though dense not as evident as in *crocea*. 2
2. Parafacials densely greyish white dusted; abdomen of the male with the basal segments broadly semipellucid yellow on sides; squamae pale brownish yellow; scutellum partly brownish yellow; mid tibia of the male and female with a submedian ventral bristle; first visible tergite of male with a central apical pair of bristles, the second and third each with two or more pairs of discal as well as apical central bristles. *albiceps*, n.sp.
- Parafacials usually brown dusted except on upper third or less, the abdomen always much less extensively yellow on sides, and the squamae dark brown. 3
3. Abdomen bluish black, broadly ovate, when seen from behind against the light with distinct white dusting on bases of the tergites and a rather broad dark central vitta; parafacials velvety brown dusted, the paler changeable patch opposite the bases of the antennae merely yellowish, not white as in the other species; mid tibia of the male without a submedian ventral bristle; abdominal bristling of male as in *albiceps*; basal costal scale fuscous. *brunniceps*, n.sp.
- Abdomen shining bluish black, narrowly ovate, with hardly perceptible pale dust on the dorsum and usually distinctly reddish brown in part on the sides; parafacials either whitish dusted on almost their entire extent or with a distinct white patch opposite the base of antennae; mid tibia with a sub-median ventral bristle; basal costal scale yellow. 4

4. Narrowest part of frons about as wide as the third antennal segment; second visible tergite of the abdomen without discal bristles; parafacials white dusted, less distinctly below bases of antennae. *xanthopyga*, n.sp.

Narrowest part of frons not as wide as third antennal segment; second visible tergite with a pair of distinct discal bristles; parafacials white dusted opposite base of antenna, brown dusted below. *variceps*, n.sp.

Perrissina crocea, n.sp.

A metallic blue species, with the thorax greyish white dusted, the mesonotum with two submedian lines that are paler dusted than the remainder of the disc when seen from the side and undusted when seen from behind, the most conspicuous feature of the colouring consisting of the bright orange-yellow parafacials, third antennal segment, palpi, and basal scale of the wing. The two pairs of thoracic spiracles have their flaps rather duller orange-yellow, and the abdomen has no trace of dust, while the tip of the fourth visible tergite is orange-yellow.

Male. Head black, the face yellow, with rather dense yellowish grey dust, the parafacials orange-yellow, with rather slight whitish dust, variable according to the angle from which the head is viewed; antennae with the basal two segments brownish yellow, the third bright reddish orange; arista black; palpi orange-yellow; central occipital hairs yellowish white, the others and all the bristles black. Frons black, the orbits changeable grey dusted. Frons at narrowest point not as wide as third antennal segment, widened to anterior margin; profile as Figure 22a. Face slightly depressed, without a distinct central carina.

Thorax sometimes quite extensively brown on the pleura and always with a small amount of brown on the lateral margin of the mesonotum behind the wing bases; all hairs and bristles black. Dorso-centrals usually 3 + 4, acrostichals 2-3 + 3, prealar long, one or two long bristles on the pteropleura, sternopleurals 1-2 + 1; scutellum with 8 marginal bristles, the apical pair long.

Legs variable in colour, in mature specimens largely fuscous, in others mainly reddish brown. Fore femur with two dorsal and a posteroventral series of bristles and many long hairs on posterior surface; fore tibia with a series of fine short anterodorsal setulae and two posterior submedian bristles; outer claw of fore tarsus as Figure 22b. Mid tibia without a submedian ventral bristle, with one anterodorsal and four or more short posterior bristles; the claws similar to the fore pairs. Hind femur with long fine bristles on basal half of the posteroventral and all of the anteroventral surface; hind tibia with one anteroventral, two posterodorsal, and three anterodorsal bristles as well as some setulae between the latter.

Wings slightly smoky, especially costally, veins fuscous, base of costa and the basal scale bright orange-yellow. Extreme base of third vein with a few hairs.

Abdomen broadly ovate. First visible tergite deeply excavated in centre, with a pair of apical central bristles, second tergite with a pair of discal and a pair of apical central bristles, third with a

pair of discal and a complete apical series of bristles; fourth with numerous bristles on almost the entire disc. Fifth sternite with the processes orange-yellow and of moderate size, without any exceptional form or armature; superior hypopygial forceps with long rather densely haired backwardly projecting extensions.

Squamae dark brown. Knobs of halteres yellow.

Female. Similar in general colour and structure to the male, differing in having the frons at vertex a little less than one-fourth of the head width, widened to anterior margin, the orbits with two proclinate outer bristles and one reclinate and slightly backwardly-curved bristle at upper fifth, the hairs on the eyes not as long, the abdomen more broadly ovate and without apical central bristles on the first and second visible tergites and no discals on second and third. The mid tibia has the submedian ventral bristle present and the fore tarsi have the apical three segments slightly widened, and the claws small and equal.

Length, 10–12 mm.

A puparium mounted with the Male type specimen is shining chestnut-brown in colour, with the surface finely transversely striate, the metathoracic spiracular protuberances developed in the form of short horn-like projections much as we find in many Muscidae of the more typical genera, and the posterior spiracular discs small, in an apical depression (Fig. 23), with three straight slits.

Holotype, Male, Nelson, 3.x.28, mounted with puparium, but no data as to host (E. S. Gourlay). Allotype, Wanganui, 5.i.22 (J. G. Myers). Paratypes, York Bay, 4.ii.23 (J. G. Myers), and Ohakune, February, 1921, no collector's name.

***Perrissina albiceps*, n.sp.**

Male. Head black, densely greyish white dusted, face testaceous, anterior part of gena in front of the haired part reddish brown, interfrontalia dark brown; antennae black, apex of second segment and extreme base on third reddish, palpi fuscous. Occipital hairs except those on margins yellow, the other hairs and bristles black. Narrowest part of frons not as wide as third antennal segment; profile as in *crocea*, but the third antennal segment is hardly twice as long as second.

Thorax black, with quite dense grey dust, the mesonotum with four black vittae, the central pair the narrower and ceasing at or shortly beyond the suture, the apex of the scutellum brownish yellow. Bristling as in *crocea*, but the lower anterior sternopleural bristle usually well developed.

Legs black, fore coxae partly and the tibiae largely brownish yellow, the tibiae with a dark stripe above and dark at bases below. Bristles as in *crocea*, except that the mid tibia has a rather long submedian ventral bristle. The outer claw of each fore tarsus is widened and peculiarly bent at the apex as if it had been pinched, the surface with dense pile except on the short black projecting tip; the inner claw apparently compressed on its entire length except near apex and not as noticeably pilose as in *crocea*.

Wings slightly brownish, most noticeably so basally, the veins dark brown, becoming paler basally, the basal scale fuscous, base of costa tawny yellow. Costal spine very small; node of third vein with a few fine hairs.

Abdomen broadly ovate, black, with the basal three tergites broadly brownish yellow and semipellucid on sides, the dark colour reduced to a dorsocentral vitta of variable width, the dusting distinct, white, most evident when the abdomen is viewed from behind against the light, most dense at bases of the tergites and more or less checkered beyond. Bristling as in *crocea*, but rather variable, the pair at apex of first tergite always distinct. The fifth sternite has the processes yellow and rather large, with their general form broad and apically rounded, without any hairs or bristles on the apical and lower portions. Backward extension of superior hypopygial forceps very short.

Squamae brownish yellow. Halteres yellow.

Female. Differs from the male in having the palpi tawny yellow, and the abdomen not yellow on the sides, the frons at vertex not one-fourth of the head width and with the bristling as noted in the generic description, the legs with the exception of the tarsi tawny yellow, and the abdomen with no apical bristles on the first tergite nor discals on the second and third. The tarsal claws are as usual very much smaller than in the male, and the fore pairs are symmetrical.

Length, 11–12 mm.

Holotype, Male, and allotype, Wairaurahira, 30.xii.16. Paratypes, Nelson, 6.xii.28 (E. S. Gourlay); Dun Mt.; Wellington; Salisbury's Opening; Stephen's Island; and two without data.

***Perrissina brunniceps*, n.sp.**

A blue-black species with a close superficial resemblance to some species of the genus *Calliphora*.

Male. Head black, epistome pale brown, frons without pale dusting, parafacials with brown dust which is changeable when viewed from different angles, the narrow postocular orbits similarly dusted, occiput and the raised and haired part of genae pale grey dusted; antennae and palpi black, the apex of second antennal segment slightly brownish; hairs on centre of occiput and the beard golden yellow, the other hairs and the bristles black. Eyes densely haired; general structure as in *albiceps*.

Thorax including the scutellum blue-black, with rather slight white dusting, the mesonotum with four dark vittae that are most distinct in front of suture when seen from behind against the light. Bristling as in *albiceps*, but there are only 2 sternopleurals in the type, and the hairs are longer.

Legs black, tibiae more or less brownish yellow centrally. Mid tibia without a submedian ventral bristle and the fine hairs decumbent and shorter than the more erect ventral hairs on the mid tibia in *crocea*. Fore tarsal claws as in *albiceps*. There are some distinctions in the armature of the mid metatarsus which I have not used in differentiating the species of the genus.

Wings slightly smoky, veins fuscous, not paler basally except the base of the costal vein which is yellowish brown, the basal scale fuscous.

Abdomen broadly ovate, tapered apically, with distinct white dusting which is most evident when seen from behind, and with a rather broad central undusted vitta. Bristling as in *albiceps*. Fifth sternite not much paler than the others, and the superior hypopygial forceps without a marked backward extension.

Squamae dark brown. Knobs of halteres brown, yellow at apices.

Length, 11 mm.

Holotype, Auckland, 9.x.27 (E. S. Gourlay).

***Perrissina variceps*, n.sp.**

This species is very similar in general colour and habitus to *brunniceps*, but the upper part of the parafacials opposite the base of the antennae is greyish dusted, the postocular orbits are pale grey and not brown dusted, the tibiae are paler and the mid pair have the submedian ventral bristle present, while the abdomen has the sides of the first and second visible tergites widely translucent brownish yellow. The wings are also more distinctly yellowish brown clouded along the veins basally, and the basal scale of the costa is pale brown.

Length, 11 mm.

Holotype, Male, no locality (D. Miller).

***Perrissina xanthopyga*, n.sp.**

Similar to *variceps*, but smaller and with a narrower abdomen. The parafacials are white dusted, less densely so below, the frons of the male is about as wide as the third antennal segment instead of much narrower than it, the legs are not at all noticeably paler on centre of the tibiae, the abdomen is less broadly yellow on the sides of the first and second visible tergites and the discal bristles are lacking on the second and third tergites. The wings are slightly smoky, with dark veins, the base of the costal vein is bright yellow, and the costal scale is orange-yellow.

Length, 10 mm.

Holotype without data from Dr. Miller's collection.

A second specimen differs from the type in having the tibiae and bases of the hind femora brownish yellow, but I can detect no other differences, though on the only mid tibia remaining on the specimen there is no submedian ventral bristle. Like the type there is no data on the specimen which is from the same collection.

Genus ASETULIA, novum.

I erect for the reception of a species without setulae or hairs below the lower squama and the general habitus of the *Peremaptor* group this new genus, of which the following in addition to the lack of the infrasquamal hairs are the distinguishing characters:—Eyes long haired except on a narrow strip along the hind margin; parafacials coarsely haired on upper third, the hairs ceasing on a line with the apex of the second antennal segment, the width of the

parafacials subequal to the length of eye and almost as great as the height of the gena; frons in male one-third of the head width, with some proclinate outer orbital bristles; interfrontalia longitudinally furrowed, bare; face deeply sunken, bifoveolate, the central linear carina hidden when the antennae are in their normal position and in that case the large wide third antennal segment is only half visible in profile; second antennal segment not one-third as long as third; second segment of the arista hardly longer than thick; apical section of proboscis as long as lower margin of head; palpi longer than the third antennal segment; gena without a large raised haired part. Thorax with the bristling much as in *Peremptor*, but the scutellum has about 10 marginal bristles. Abdomen narrowly ovate, variably bristled, but the armature strong apically. The peculiar elongate backwardly directed numerously bristled paired processes of the hypopygium appear to be modified superior forceps, but I have not carefully dissected these organs so do not give a definite opinion. In any event, there are several New Zealand genera in which similar structures appear and I am not using this character as generic.

Genotype, the following species.

***Asetulia nigropolita*, n.sp.**

Male. Head black, face brownish, parafacials and genae reddish brown, more definitely red on posterior part of genae, the parafacials with dense brassy dust that is changeable according to the angle from which the head is viewed; basal two antennal segments red, third deep black; palpi fulvous yellow; central occipital hairs and beard orange-yellow, remainder of hairs and the bristles black. Profile as Figure 24. Frons at vertex about one-third of the head width, widened anteriorly; second antennal segment about one-fourth as long as third, the latter very wide.

Thorax shining black, with brownish grey dust, most distinct on mesonotum where there are about six brown or fuscous vittae that are evanescent posteriorly and variable in number and intensity according to the angle from which the surface is seen. Dorsocentrals 3 + 4, the acrostichals finer and about the same in number; prealar long; sternopleurals 2 + 1; pteropleura with one bristle a little longer than the others.

Legs black, knees narrowly red. Fore tibia with a few short anterodorsal setulae and two or three fine posterior bristles; mid tibia without a submedian ventral bristle, the ventral surface with the short hairs erect and more conspicuous than usual, the anterodorsal and posterior surfaces each with three or four bristles; hind tibia with one or two anteroventral and four or five anterodorsal and posterodorsal bristles. Claws of all tarsi moderately long and symmetrical.

Wings slightly brownish, more so costally, the veins dark brown, paler basally, basal scale brownish yellow. First posterior cell quite widely open, ending in front of wing tip; third vein with some minute basal hairs.

Abdomen glossy black, without dusting. First visible tergite without apical central bristles, second with a pair, but no discals,

third with or without a pair of discals and with a series of apical bristles; fourth with rather strong bristles on most of its surface. Hypopygium and fifth ventral segment in profile as Figure 25.

Squamae yellowish white. Knobs of halteres dark brown.

Length, 13–14 mm.

Holotype, Lake Moana, 16–21.xii.25 (A. L. Tonnoir). Paratypes, Blackball, xii.18 (J. W. Campbell), and Kumara, same collector.

A very distinct species which is well distinguished from all others known to me by the glossy black abdomen and the long somewhat clubbed and long-haired caudal appendages.

Genus *PROSENOSOMA*, novum.

A very striking member of the same group as *Erythronychia*, readily distinguished from any but the next genus dealt with herein by the remarkably long proboscis (Fig. 26), and from that genus by the small palpi. The hairs on the parafacials are very small and scattered, being difficult to detect below the level of the apex of the second antennal segment; the eyes are distinctly haired, the face is rather deeply bifoveolate, the vibrissae are well differentiated, and the second segment of the arista is about three times as long as thick. The other characters may be gleaned from the description of the genotype given below.

Prosenosoma greyi, n.sp.

Female. Head brownish yellow, covered with dense yellowish grey dust, the occiput, upper parafacials and frontal orbits fuscous; antennae black, second segment brown, base of third red, palpi testaceous yellow; central occipital hairs and beard pale yellow, other hairs and the bristles black. Profile as Figure 26. Frons at vertex over two-fifths of the head width; orbits with rather few bristles, about five incurved on the inner margin of each and one proclinate outer bristle near middle and two outwardly curved bristles above them; ocellars strong; outer verticals lacking or undifferentiated from the long setulose hairs on upper part of the occipital margin, the inner verticals long and strong.

Thorax black, densely grey dusted on pleura and lateral margins of the mesonotum, the disc of the mesonotum and the scutellum with brown dust, the former with four black vittae which do not attain the hind margin, the base and margin of the scutellum black. Dorsocentrals 3 + 3, acrostichals 2 + 2, posterior presutural intra-alar lacking as usual in the New Zealand members of the family. Sternopleurals 1 + 1, scutellum with six marginals and a pair of discal bristles, the discal hairs fine.

Legs black, densely grey dusted, all the tibiae brownish yellow. Fore tibia with an irregular anterodorsal series of bristles and two posterior bristles; fore tarsi slender and, like other pairs, longer than their tibiae.

Wings of moderate size, slightly smoky, the veins fuscous, some parts of them near the base yellow, the cross veins and the apical section of fourth vein narrowly brown margined. Seen from the

tip against the light there is visible a yellowish white streak across the wing at level of the apices of the anal and basal cells and the apical half of the subcostal cell is of the same colour.

Abdomen black, with densely silvery grey dusting which is checkered much as in most species of the genus *Sarcophaga*, Meigen. First visible tergite very shallowly impressed in front in centre, all tergites with apical central bristles, only the fourth with discals.

Squamae white. Halteres brownish yellow.

Length, 10.5 mm.

Holotype, Mt. Grey, 30.x.24 (S. Lindsay).

This species has much the appearance of a *Prosenia*, the general form of the head being similar, but that genus belongs to the Dexiini, having a plumose arista, and the face has a rounded central carina.

Genus XENORHYNCHIA, novum.

This genus is somewhat similar to the next preceding one, but the differences in the head structure (Fig. 27), especially in the lengths of the palpi readily distinguish them. The third antennal segment is about five times as long as the second in the male and about four times as long in the female, the second segment has almost invariably no outstanding bristle, but is densely short setulose, and the second segment of the arista is at least three times as long as thick. For other characters see the description of the genotype given below.

Xenorhynchia peeli, n.sp.

Male, Female. Shining black, with dense grey dust, the antennae and palpi black, second segment of former and base of third red, mesonotum with four partial black vittae, scutellum sometimes reddish brown at apex at least in the female, abdomen of male with or without a red spot on each side of second visible tergite, the dust in both sexes checkered on dorsum as in *Sarcophaga* species.

Male. Head in profile as Figure 27. Frons at vertex one-third of the head width, widened to anterior margin, the orbits narrow, with numerous fine incurved bristles along the inner margins, outer verticals undeveloped, inner pair long; ocellars quite long, the hairs descending very slightly below the lower frontal bristle and very short, not as long below as the hairs on the eyes. Face quite deeply bifoveolate, the carina linear and sharp.

Thorax with the bristling as in the next preceding species, but there are usually three well-developed sternopleurals.

Abdomen narrowly ovate, tapered to apex. First visible tergite with a pair of apical central bristles, second and third with a pair of discal bristles, second with a pair of apical central bristles that are more widely separated than the discal pair, third with a complete apical series, the central pair much more widely separated than the discal pair, fourth with several series of strong bristles on almost the entire surface. Processes of fifth sternite moderately long and wide, rounded at apices and not abnormally armed, and no outstanding bristles on any of the other sternites.

Female. Similar to the male, but the dusting denser. Frons with three outer bristles on each orbit above, the anterior one proclinate, the others usually outwardly curved. Abdomen more broadly ovate than in the male, the bristling somewhat similar, but less regular in arrangement in different specimens.

Fore tarsi not dilated, and the armature as in the next preceding species.

Costal thorn small but distinct, first posterior cell open, ending before the wing tip.

Length, 13–15 mm.

Holotype, Male, allotype and 3 paratypes, Mt. Peel, 5,300 ft., 15.ii.31, 7.i.30; paratypes, Mt. Arthur, 4,500 ft., 31.xii.28, Balloon Hut, 4,300 ft., 15.ii.31, Beeby's Knob, 27.i.29 (E. S. Gourlay); Dun Mt., 3,000 ft., 3.ii.21 (A. Philpott); Arthur's Pass, 3,000 ft., 29.xii.22, 3,500 ft., 26.xii.22 (J. G. Myers); and one without data in my collection.

Genus *PLETHOCHAETIGERA*, novum.

A peculiar genus which is readily distinguished from all those in which the frons is wide in both sexes and the eyes distinctly haired by the number of long strong bristles on the abdomen, and particularly by the presence of one or more pairs of strong bristles proximad of the apical central pair on the first visible tergite of the abdomen. I have placed in the genus species in which there are or are not distinct hairs on the parafacials below the level of the arisal insertion as it is sometimes rather difficult to determine whether these are present or not in some specimens, and occasionally in some there are one or two scattered minute hairs well below the majority of those that are readily detected with a good lens. I list as follows the other outstanding characters of the genus:—Face slightly bifoveolate, more noticeably so above; parafacial at middle not or very little over half as wide as eye; gena variable, less than or equal to half the eye height, the hairs carried forward to anterior level of eye; proboscis with the apical section not longer than height of head; palpi moderate; thorax with three or four pairs of postsutural dorsocentral bristles; abdomen strongly bristled, in the male usually with two or four bristles in front of the apical central pair on the first visible tergite, in the female with the anterior pair sometimes almost in line with the apical pair, discal bristles always present on the other tergites; fifth sternite with the processes moderately long, tapered to apices; first posterior cell of the wing open, ending distinctly in front of the wing tip.

Genotype, *Plethochaetigera fenwicki*, n.sp.

KEY TO THE SPECIES.

- | | | | | | | | |
|-----------|----|----|----|----|----|----|---|
| 1. Males. | .. | .. | .. | .. | .. | .. | 2 |
| Females. | .. | .. | .. | .. | .. | .. | 3 |
2. Frons at vertex fully one-third of the head width; first visible abdominal tergite with a complete apical series of long strong bristles; parafacials with hairs descending very little below lower frontal bristles; fore tibia with five or six strong posterior bristles; fifth sternite of abdomen with the processes slender (Fig. 28), the preceding sternites quite fine haired. *fenwicki*, n.sp.

- Frons not over one-fourth of the head width at vertex; first visible abdominal tergite with at most four, generally two, apical central bristles; parafacials with the hairs descending usually as far as lower level of the eyes; fore tibia with at most three, usually two, posterior bristles; fifth sternite of abdomen with the processes stouter (Fig. 29), the preceding sternites mostly strongly and rather densely bristled. . . . *setiventris*, n.sp.
3. Fore tibia with about six unequal posterior bristles; first visible abdominal tergite with a complete apical series of strong bristles; inner cross vein of the wing slightly proximad of middle of discal cell. . . . *fenwicki*, n.sp.
- Fore tibia with two or three subequal posterior bristles; first visible abdominal tergite with at most four apical central bristles; inner cross vein of the wing slightly beyond middle of the discal cell. . . . *setiventris*, n.sp.

***Plethochaetigera fenwicki*, n.sp.**

Male, Female. A black species with dense grey dust on the head, thorax, and abdomen.

Male. Head black, the gena in front of and above the haired part brownish red, parafacials densely whitish grey dusted. the frontal orbits and postocular orbits a little less so, interfrontalia dull brownish black; antennae, palpi, and proboscis, black. All hairs and bristles, including those of the occiput and beard, black. Frons at vertex fully one-third of the head width, widened to anterior margin, the orbits narrow, with numerous long inner marginal incurved bristles on their entire extent and three or more outer bristles on the upper half or more, the anterior one or two proclinate and strong, the others outwardly curved and weaker; ocellar and inner vertical bristles long and strong, outer verticals shorter but well developed, the setulose hairs on upper half of the postocular orbits long and curved forward slightly at apices. Eyes long haired; gena about half as high as eye, with the hairs long and strong, carried forward to anterior level of eye on a grey dusted and slightly raised area that extends more than midway to eye from lower genal margin. Third antennal segment rather wide, hardly more than twice as long as broad, and about twice as long as second segment; arista with second segment fully twice as long as thick, third thickened on almost its basal half.

Thorax black, quite densely grey dusted on the pleura and lateral margins of the mesonotum, less densely so on disc of latter, where there are four rather wide black vittae that do not entirely attain the posterior margin, scutellum black at base, grey dusted at apex. Dorsocentrals 3 + 4, acrostichals variable but usually 2-3 + 3, prealar long, a strong bristle between the anterior presutural and posthumeral bristles; scutellum with 8 or 10 marginal bristles and the discal setulose hairs long and almost erect; sternopleura with at least three strong bristles and a number of setulose hairs.

Legs strong, and with numerous strong bristles, the anterodorsal and posterior surfaces of the fore tibia with six or more bristles, those on the latter irregular in length and arrangement.

Wings greyish hyaline, veins dark brown, hardly paler basally. Costal thorn undeveloped; inner cross vein slightly proximad of middle of the discal cell.

Abdomen coloured as thorax, but usually reddish brown on sides of the second and third tergites, the grey dust dense at bases of the tergites, fading out as it extends apically, the apices of the tergites black. First visible tergite with at least one pair of bristles anterior to the apical central pair and with the apical series entire; second tergite with the discals in two or more rather irregular series of four bristles, the apical series entire; third tergite with the apical half bristled, and four almost entirely bristled, though the armature apically is less strongly developed and more dense. Fifth sternite in profile as Figure 28, the two sternites proximad of it with fine erect hairs and no strong bristles, though the second sternite has a number of much longer bristly hairs.

Squamae white. Halteres brown.

Female. Similar to the male in general colour and structure, but the abdomen is nowhere reddish, and is more broadly ovate and less strongly bristled apically. The hairs descend more distinctly on the parafacials, and the fore tarsi are not distinctly dilated, though the fifth segment appears slightly so.

Length, 9–11 mm.

Holotype, Male, allotype, and 3 paratypes, Bold Peak, no date (Fenwick); one male paratype, 3.ii.12, Ranfurly, No. 917 (D. Miller).

***Plethochaetigera setiventris*, n.sp.**

Similar in general colouration and structure to *fenwicki*, differing markedly in the characters listed in the above key and in having the disc of the thorax with the vittae more nearly fused, throwing it into more marked contrast with the pale dusted lateral margins, the apex of the scutellum not grey dusted, the abdomen with the dust more checkered, and less noticeably dense at bases of the tergites and carried to their apices, and a brown suffusion along the entire centre of the disc. There is no trace of brown or red colour on the sides basally. The main structural distinctions are dealt with in the key, but in addition there are longer backwardly directed hypopygial processes in the male (Fig. 29) and there are fewer discal bristles on the second and third visible tergites, the latter being broadly lacking in bristles on each side of the disc.

Length, 10–12 mm.

Holotype, Male, Bold Peak (Fenwick); allotype, Mt. Arthur, 31.xii.28 (E. S. Gourlay); paratypes, Tararuas, 20.xii.20, Cleughearn, 1.i.15, 3 without any data, and several Paradise, 1.i.20 (Fenwick).

There is a third species which I place tentatively in this genus. It differs from the other two in the lack of the central bristles proximad of the apicals on the first visible tergite, but the other characters are so suggestive of the genus that there can be no reason for its removal therefrom. I append the description.

***Plethochaetigera isolata*, n.sp.**

Similar to the other two species in general colour and markings, no red on the sides of the basal half of the abdomen, the mesonotum with the lateral margins broadly pale grey dusted, and the four black vittae showing signs of fusion much as in *setiventris*, the

abdomen almost as in that species, though the dust is paler, the apices of the segments darker, and the brown central suffusion not as noticeable. The epistome is more produced than in either of the other species, the entire parafacial is haired, the face is not evidently foveolate, and the frons of the male at vertex is over one-fourth of the head width. The principal distinctions between the species and the other two are to be found in the abdomen. The first visible abdominal tergite has no discal bristles in front of the entire apical series, the latter is quite strongly developed, the second tergite has one pair and the third three or four bristles in the discal series, while the fifth sternite is as shown in Figure 30, more triangular than in either of the other two, and the fourth sternite has a group of about four long erect bristles on each side near its apex. It may also be noted that the occipital hairs and the beard are yellow, and the fourth vein beyond the bend is more or less sinuate or arcuate, though in the direction of this there is considerable variation in the genus.

Length, 12-13 mm.

Holotype, Routeburn, 24.xii.13; paratype, No. 198f, no other data.

Female. One specimen in the collection belongs here. It may be known from the same sex in the other two species by the much dilated fore tarsi, which are very similar to those of *Veluta albicincta* (Fig. 42). The sides of the mesonotum are very conspicuously whitish grey dusted, and the abdomen has a complete apical series of strong erect bristles. The head is even more produced below than in the male. Second antennal segment almost as long as third.

Locality not given on label, which bears the number 268c (Coll. Miller).

The peculiar armature of the fourth sternite of the male and the prominent processes of the fifth sternite in the same sex ought to readily distinguish the species from its allies. The female has one discal bristle on the first tergite that is not present in the male, and both have the apical series complete.

Subgenus CHAETOPLETHA, novum.

I erect this subgenus for the reception of a species that has the first visible abdominal tergite with one or more pairs of bristles proximad of the apical central pair, no complete apical series, and the epistome not projecting as far as the vibrissal angles. In the three species placed in *Plethochaetigera* sen. str. the epistomal margin projects more or less markedly beyond the vibrissal angles upon which are the bristles. Lacking the male, I cannot give characters for that sex. The general build of the species is, as in the others, quite robust, the abdomen being broadly ovate. One character that may prove significant is the presence on the underside of the costa near its base of a single long forwardly directed bristle that extends to the humeral cross vein. I find this bristle also in *P. tonnoiri*, but in the other two species there are usually one or two additional bristles close to it. In the present species the basal segment of the arista is slightly longer than thick, and the second is about four

times as long as thick, the parafacials are haired to the lower level of the eyes, the hairs being well developed, and the palpi are rather short and thick. Other characters may be gleaned from the description of the type-species given below.

***Plethochaetigera (Chaetopletha) centralis*, n.sp.**

A black species, with dense grey dusting, more yellowish on pleura, the mesonotum and disc of scutellum broadly brown dusted centrally, the abdomen with similar brown dorsocentral broad stripe which is more or less spot-like and widest behind, the fourth visible tergite being almost entirely brown above.

Head black, densely grey dusted except on the interfrontalia which shows very slight dusting from certain angles, the dust becoming yellowish or brownish on the lower part of head. Antennae black, basal two segments brownish; palpi dark brown to fuscous. Frons at vertex almost half as wide as head, widened in front, the orbits less than half as wide as interfrontalia at middle; triangle grey dusted, extending but little beyond the anterior ocellus. Inner verticals strong, outer pair weak and short, inner marginal bristles on orbits long and fine, about 8 in number, the anterior one almost opposite base of second antennal segment, the proclinate outer bristles about 4 in number, fine, the hairs rather long. Parafacial at middle almost as wide as eye; face slightly receding below, the vibrissal angle with two almost equally long bristles, the other genal bristles very fine. Face not carinate, but with a rather deep central depression. Third antennal segment about four times as long as second, reaching well below middle of face, and rather slender, the arista inserted about as far from its base as length of second segment, the basal segment of arista fully as long as thick, second about four times as long as thick, the two combined not half as long as third, the latter thickened to near middle; palpi about as long as antenna and equal to apical section of proboscis, rather densely soft haired. Eyes haired.

Thorax black, dull, densely grey dusted, the mesonotum in addition to the central brown vitta with four rather faint partial dark grey vittae. All bristles fine and moderately long, the dorso-centrals $2 + 4$; presutural lateral area with three bristles; prealar duplicated; presutural acrostichals 3; scutellars 6; sternopleurals $2 + 1$.

Legs black. Bristles strong and about the same as in *tonnoiri*; fore tarsi not dilated.

Wings greyish hyaline, slightly brownish at bases; veins quite thick and dark; first posterior cell open, ending slightly in front of wing tip, fourth vein beyond bend longer than before it.

Abdomen coloured as thorax. First visible tergite hardly impressed centrally in front, with two or three pairs of bristles which are rather widely spaced from centre, and two or three bristles near lateral curve at apex; second with three or four pairs of bristles in centre, the one nearest apex not strictly apical, and a few lateral bristles; third with a pair of bristles near anterior margin from

which there extends on each side a series of bristles to about middle at the lateral curve, the sides rather numerous bristled; fourth with numerous long hairs and bristles on entire surface.

Squamae white. Halteres brown.

Holotype female, Mt. Peel, 5,300 ft., 2.i.30 (E. S. Gourlay).

Genus CEROSOMYIA, Hutton.

I have already pointed out in this series of papers that this genus is the same as that identified as *Phorocera*, Robineau-Desvoidy, by Hutton in his work on the New Zealand Tachinidae.*

I have also stated that the New Zealand species depart from the typical forms so definitely that the name proposed by Hutton may be accepted as valid for the genus.

Having before me Hutton's type material, I give below my findings regarding the species names involved, in the hope that it may be possible for resident students the more readily to identify material in the genus.

Cerosomyia usitata, Hutton.

This species has the following characters which may be accepted as common to the whole of those referred to the genus herein: Frons of male narrower than that of female, but distinctly wider than the third antennal segment, with one strong upper reclinate orbital and no outer proclinate orbitals, the female with one or two strong outer proclinate orbitals and one upper reclinate bristle; eyes in both sexes distinctly haired; facial ridges with strong bristles ascending from vibrissae to well above middle (Fig. 31); parafacials bare; antennae inserted above middle of eye in profile, third segment usually over three times as long as second; second segment of the arista not or very little longer than thick; palpi well developed; proboscis short; gena never half as high as eye; parafacial in profile quite wide. Thorax with the bristles strong, the presutural posterior intra-alar always well developed. This last character segregates the following of the more typical Tachinidae of New Zealand from the rather aberrant and evidently endemic genera: *Arthuria*, *Genotrichia*, *Plagiomyia*, *Calcager*, *Calcageria*, *Uclesiella*, *Wattia*. All the genera in which the parafacials are very wide and the face bifoveolate, and even those that appear more nearly like some of the common Palearctic genera, such as *Perrissia*, have the bristle referred to lacking. The lack of this bristle has sometimes been cited as a character for the separation of Dexiini from Tachinini, but it is valueless for that purpose. In passing, it may be worth mention that in New Zealand there are no known representatives of Dexiini. An outstanding character of *Cerosomyia*, found also in *Phorocera* and a number of other genera, is the haired or setulose sides of the prosternal plate. In no other New Zealand genus are these hairs present. The armature of the dorsum of the abdomen is variable in the species, and even in individual specimens of the same species, the pair of apical central bristles on the first visible tergite being present or absent, but in

* *Rec. Cant. Mus.*, 3 (5), 325 (1930).

most cases distinguishable, while on the disc of the second tergite there are most frequently one or two pairs of discal bristles in the males, less frequently in the females; the third tergite has the discals more constant though not always present. The hind tibia has the anterodorsal surface with a rather regular series of short closely placed bristles with one or two longer bristles near the middle of the series. This character is met with in a number of Palearctic and Nearctic genera, but in no other New Zealand genus, all having the bristles either much fewer and more widely separated or much more irregular.

I have before me in addition to the type male of *usitata* males identified by Hutton as *oratus*, Walker, and *clathrata*, Nowicki. I have in the paper above referred to stated that I consider all the specimens, which are males, belong to the same species. In view of the fact that identifications of the older species are at best merely guesses, it is better to accept for the one now under discussion the name of the one represented by authenticated type material and to leave the decision of synonymy if any to subsequent investigators who may have access to the types of the other two species.

In his specific key* Hutton uses mainly colour as a guide to the separation of the species, running *oratus* and *clathrata* into the same couplet and separating them on the basis of the presence or lack of red spots on the abdomen. I find that the specimens before me both have such spots, as does also the type of *usitata*.

The head is fuscous behind, with greyish white dusting, the frontal orbits are fuscous, and similarly dusted, and the interfrontalia and remainder of head are reddish brown, paler below, with white dusting, the parafacials when viewed from above with the face towards the light has a reddish brown spot near the base of the antenna, the basal two segments of the antennae and the palpi are variable yellowish brown, and the third antennal segment and aristae black. Frons about one-third of the head width at vertex, widened to anterior margin in the male, the interfrontalia at middle about as wide as either orbit at the same point. Third antennal segment fully four times as long as the second and moderately wide; arista with the basal two-fifths swollen. Facial ridges with the bristles irregularly biseriate. In the female the frons is a little wider, the basal two segments and the base of third are paler, and the third is narrower, not as wide as the parafacial.

Thorax shining black, slightly bronzy, with whitish grey dust, the mesonotum with four narrow black vittae anteriorly; scutellum brownish yellow; pleura in the female sometimes rufous centrally.

Legs in male black, the coxae and femora more or less brownish shaded, the tibiae pale brown or yellowish brown; in female the coxae and femora are mainly yellowish brown and the tibiae are always of that colour.

Wings hyaline, veins brown, paler basally.

Abdomen black, with a more marked bronzy or greenish tinge than the thorax, the dust white and distinctly checkered, the sides

* *Trans. N.Z. Inst.*, 1904, 150.

of first and second visible tergites usually reddish brown. First visible tergite with the apical central bristles weak, second usually without the pair of discals, third usually with them present.

Squamae yellowish white, the inner edge of the lower one dark brown.

Length, 7-9 mm.

Localities: Christchurch, Nelson. Hutton gave Auckland and Ashburton as localities for *oratus*, and despite the fact that he gives no record of having seen the species, he states in the paper just referred to that the amount of red on the sides of the abdomen is variable, and it is difficult to determine to which of the two species some specimens should be referred. The identified specimen before me is from the Hutton collection and bears no locality label.

I might mention here that in addition to the generic characters listed the bristling of the fore tibia is characteristic, there being a partial series of short bristles on the anterodorsal surface, an almost complete series of similar bristles on the posterodorsal surface, and two or three much longer posterior bristles; the posterodorsal bristles are usually lacking in New Zealand genera of this family.

Cerosomyia efferata, Hutton.

I am practically certain that this is another synonym of *usitata*, there being no tangible characters for the separation of the type female from those I am placing with that species. Despite Hutton's statement in his key that the tibiae and tarsi are black, his type specimen has the tibiae reddish brown and hardly darker than their femora. The only structural character that differs from the general run in *usitata* is the much stronger pair of discal bristles on the second and third visible tergites of the abdomen. The basal two segments of the antennae and the palpi are also darker, and the dust on the parafacials is greyish white, not noticeably yellow.

Christchurch.

I have two females and one male from Mt. Arthur that have the characters of the abdomen as in the above type and the second antennal segment and palpi black. They have the parafacials differently dusted also, the colour in the female being almost white, while in the male it is less conspicuous and pale greyish white below.

Cerosomyia brouni, Hutton.

The type is a teneral specimen of some species that it will be impossible to identify because it must have been killed shortly after emergence from the puparium and neither the structures nor the colour are developed sufficiently to justify more than a guess at its specific identity. I believe, however, that it is one of the blue forms despite the present lack of that colour on the abdomen and without doubt it has been described under another name in the mature condition. The abdomen has the apical central bristles on the second to fourth tergites and the discals on the second and third well developed. The squamae appear to me to be brown.

Length, 4.5 mm.

Locality, Maketu.

***Cerosomyia fulvipes*, Hutton.**

Closely related to *usitata*, and separable from it merely by the paler colour of the legs and parafacials. I am very doubtful of the distinctness of these two forms, and it would be worth while for some local student of the family to attempt a check upon them by rearing them or by making extensive collections in the field so that dissections of the male hypopygia might be available for study.

In addition to the type female, I have seen specimens from Cass and Wanganui—in the latter one male.

***Cerosomyia recta*, Hutton.**

A much smaller species than *usitata*, with the abdomen black, checkered with greyish white dust, the antennae not very noticeably pale at base, palpi fuscous, squamae white, slightly yellowish along the inner edge of the lower one. In the type female before me the first posterior cell of the wing is closed slightly before the margin of the wing, all the abdominal tergites have a pair of strong apical central bristles, and the second and third visible tergites each a pair of strong discs.

Length, 7 mm.

Genus PROCISSIO, Hutton.

This genus is extremely close to *Peremptor*, Hutton, and because it may be confused with it I have decided to present a key in which I have included the species of both genera. It appears to me that the best character for the separation of the genera, if one desires to retain both, lies in the structure of the antennae. In *Procissio* the third segment is always slender, and, except in *milleri*, three or more times as long as second, and there is very slight sexual difference, while in *Peremptor* the third segment is much widened in the male, less so in the female, and in two of the species it is not much longer than the second.

Genotype, *Procissio cana*, Hutton.

KEY TO THE SPECIES.

1. Mesonotum with dense lavender grey dust, sometimes with a pinkish tinge, the central third with a complete velvety black vitta equal to the similarly coloured central third of the occiput; scutellum with dense grey dust centrally, broadly black on each side; wings seen from apex against the light white at bases, smoky apically, most noticeably so just beyond the white part, both cross veins and fourth vein on apical part more or less distinctly dark margined; first visible tergite with a pair of well developed erect apical central bristles; third antennal segment about twice as long as second; arista not longer than width of parafacial at centre; tibiae brownish yellow in both sexes. *milleri*, n.sp.
- Mesonotum and scutellum not as densely nor as pale dusted, the former without a broad deep black central vitta.

2. Third antennal segment hardly longer than second; first visible abdominal tergite with a pair of fine apical central bristles; fifth abdominal sternite of male with a rather deep excision near apex of each process on its underside, giving these the appearance of terminating in a short downwardly directed stout hook; head narrowed below in profile (Fig. 39), epistome appearing as if pushed inward and upward, not projecting, the proboscis short and enclosed in the mouth opening; vibrissae not well differentiated. *Peremptor egmonti*
Hutton
- Third antennal segment much longer than second; first visible abdominal tergite without apical bristles except in abnormal specimens; fifth abdominal sternite of male not as above, without a downwardly directed hook-like apical process on each lateral arm, sometimes with a median or submedian excision; head not narrowed below in profile (Fig. 35), and differing in the characters listed above. 3
3. Abdomen largely ferruginous yellow, with a dark dorsocentral vitta, and no apical central nor discal bristles on first and second visible tergites, nor discals on third; legs in both sexes tawny yellow, only the tarsi black. *Peremptor kumarensis*
Miller
- Abdomen black, with grey dust, in one species more or less noticeably reddish on part of each side, second visible tergite with at least apical central bristles, and in the males usually with a pair of discal bristles; legs in males largely black, the tibiae sometimes brownish yellow. 4
4. Third antennal segment not over 2.5 times as long as its greatest width, much larger and wider in the male than in the female, and deep black in both sexes, the apex broadly rounded, particularly in the male; fifth sternite in that sex with the processes simple, not excised in inner margin. *Peremptor modica*
Hutton
- Third antennal segment slender, not less than three times as long as its greatest width, not noticeably larger and wider in the male than in the female, the apex narrowly rounded in both sexes. 5
5. Males. 6
Females. 8
6. Width of frons at anterior ocellus distinctly less than half that of one eye seen from above; fifth visible tergite of abdomen with long bristly hairs on anterior or upper two-thirds and one or two transverse series of strong bristles near its apex; fifth sternite from below as Figure 32. *albiceps*, n.sp.
- Width of frons at anterior ocellus about three-fourths that of one eye seen from above; fifth visible tergite with bristles on its entire surface, becoming stronger apically. 7
7. Abdomen and legs entirely black; fifth abdominal sternite from below as Figure 34; abdomen over twice as long as wide; arista almost uniformly thick on basal three-fourths as in *modica* (Fig. 37). *cana* Hutton
- Abdomen red on part of the sides; tibiae largely reddish yellow or brown; fifth abdominal sternite as Figure 36; abdomen less than twice as long as its greatest width; arista tapered from near base to near apex (Fig. 35). *lateralis*, n.sp.

8. Vibrissae inserted very close to the extremity of the raised vibrissal angle, distance from the bristle to the inner edge not one-fifth as great as the distance across the central flat area between the angles (Fig. 33a). 9
- Vibrissae inserted at some distance from the extremity of the raised vibrissal angle, length from inner angle to bristle about as great as distance across the central flat part between the angles (Fig. 33b). *cana* Hutton
9. Scutellum with six marginal bristles. *albiceps*, n.sp.
- Scutellum with eight marginal bristles. *lateralis*, n.sp.*

***Procissio milleri*, n.sp.**

A very pretty species, much like certain species of *Erythronychia*, and readily distinguished from any other in *Procissio* by the dense lavender grey dust on the head and thorax, the deep black or velvety blackish brown central stripe on the occiput which lines up with the complete similarly coloured central vitta on the mesonotum. The sides of the scutellum are of the same colour as the central vitta on the mesonotum.

Male, Female. Head fuscous in male, brown in female, becoming much paler below, the frons blackened above in male, the occiput with a broad central black stripe in that sex, and each parafacial with a transverse black stripe near base of the antenna that is variable in intensity and width according to the angle from which the head is viewed; in the female the dark parts are usually brown. Dust on frontal orbits, face, and genae denser in male than in female, and more silvery white. Basal two segments of antennae brown, base of third red, remainder of third and all of the aristae black; palpi testaceous yellow to brownish yellow; proboscis shining black. Frons at vertex about two-thirds as wide as one eye, in female wider than eye, widened in front. Vertex with the inner pair of bristles long in both sexes, the ocellars well developed, the outer proclinate orbitals lacking in male, present in female; head much as in *lateralis* in profile (Fig. 35), but the third antennal segment is not three times as long as second, the arista is not longer than the third antennal segment, and more tapered on apical half.

Thorax black, or dark brown, the surface obscured by dense lavender grey dust that has sometimes a pinkish tinge, the dark central vitta sometimes narrowly pale brown on sides in the female. Usual bristling as follows: Dorsocentrals 3 + 3, acrostichals 1 + 1, prealar long, 2 lateral presuturals, 1 short pteropleural, 1 + 1 sternopleurals, 6 marginal scutellars and no discals.

Legs black in the male, the apices of coxae, sometimes the apices of the femora below, and the entire tibiae brownish yellow; in the female the coxae and femora are usually very little darker than the tibiae. Fore tarsi of the female not at all widened. Bristling as usual.

* This species is unknown to me in the female sex, and in placing it in the key I am making use of a structural character that distinguishes the male from that of the other two included above it, and which I have not found to vary sexually, so that it is extremely probable that my diagnosis will be found to be correct.

Abdomen in male dark brown, paler on sides and below, partly fuscous on dorsum and with checkered pale grey dust, usually with some brown dust along the centre of dorsum which is variable according to the angle from which it is seen; in the female the abdomen is usually reddish brown to fuscous, similarly marked to the male. First visible tergite with a pair of apical central bristles, second and third each with a discal and apical central pair, fourth in female with a transverse discal series of bristles, in male with an additional apical series; all tergites with one median and one or two apical bristles at the lateral curve. Fifth sternite of male much as in *albiceps*.

Wings normal, whitish at bases when seen from the apices against the light, the veins brown, both cross veins and apical section of fourth darker and with a narrow fuscous or dark brown suffusion. Outer cross vein more markedly bisinuate than in the other species, and the apical section of fourth vein much incurved just above the preapical angle.

Squamae yellowish white, margin yellow. Halteres yellow to brownish yellow.

Length, 7-8 mm.

Holotype, Male, and allotype, Mt. Arthur, 5,000 ft., 23.xii.21 (A. L. Tonnoir). Paratypes, Ohakune, 10.i.20 (D. Miller); Arthur's Pass, 3,500 ft., 23.xii.22 (J. G. Myers); Balloon Hut, 4,300 ft., 8.i.30 (E. S. Gourlay); Salisbury's Opening, 3,600 ft., 6.i.30 (E. S. Gourlay); Beeby's Knob, 26.xii.27 (E. S. Gourlay); Mt. Arthur, 4,500 ft., 21.xii.21 (A. L. Tonnoir).

This very pretty species is dedicated to Dr. D. Miller, who kindly placed in my hands most of the material upon which this report is based.

***Procissio albiceps*, n.sp. (Fig. 33a).**

A rather aberrant species of the genus on account of the narrower frons than is usual in the males, but properly placed herein in my opinion. The general pale grey colour of the insect is an additional character for its recognition.

Male, Female. Head black, densely white dusted, the parafacials almost silvery, the area behind the vibrissae hardly showing any reddish below the dust; antennae black, second segment brownish; palpi fuscous, not noticeably paler basally; interfrontalia black, with a reddish tinge on part centrally in female. Frons of male at vertex less than half that of either eye seen from above, widened to anterior margin, the orbits linear above, widened in front, the armature as in *milleri*; in the female the frons at vertex is distinctly wider than either eye seen from above, the outer pair of verticals is minute, and each orbit has one to three proclinate outer upper bristles. The parafacial at centre is not as wide as the eye in the male, and wider than it is in the female. The eyes are distinctly haired in both sexes, a character common to the species of the genus. Palpi slightly clubbed in both sexes.

Thorax black, densely whitish grey dusted, the mesonotum with dull black vittae, the central pair narrower, beginning at anterior

margin, interrupted at suture and ceasing about midway from suture to hind margin, the sublateral pair represented by two elongate streaks, one before and the other behind the suture. Chaetotaxy as in *milleri*. Scutellum in both sexes with six marginal bristles.

Legs black. All tarsi slender and distinctly longer than their tibiae in both sexes, the bristles not very strong.

Wings greyish hyaline, showing white at bases as in *milleri*, the veins black and unmarginated. First posterior cell narrowly open as a rule, sometimes closed in margin, the fourth vein beyond the preapical angle and the outer cross vein not as markedly bent as in *milleri*.

Abdomen coloured as the thorax, the dust distinctly checkered when seen from varied angles, and a slight brown dusted mark generally round the apical central pairs of bristles on the intermediate tergites in the male. First tergite usually unarmed at apex, second and third in male normally with a pair of apical central and a pair of discal bristles, and the fourth with a discal and apical series, the bristle at centre of lateral curve frequently lacking on the intermediate tergites; female always without apical centrals on first visible tergite and only rarely with any trace of discals on second. Fifth sternite of male as Figure 32.

Squamae white. Halteres yellow.

Length, 7–8 mm.

Holotype, Male, allotype, and one female paratype, Cass, ii.25 (A. L. Tonnoir). Paratypes, Ben Lomond, 14.ii.20 (Fenwick); Otira, 8.ii.22 (A. L. Tonnoir).

***Prociissio albiceps*, var. *varians*, novum.**

This variety is rather darker in general appearance, with a distinct brown mark on each side of the scutellum at its base in both sexes, the brown mark at apex of the intermediate abdominal tergites broader and more distinct, usually present in both sexes, and the upper extremities of the frontal orbits of the female brown.

In structure there are no tangible distinctions, though I have not dissected the hypopygia of the males. The fifth abdominal sternite is similar to that of the typical form in the male. The quite characteristic bristling of the fifth visible tergite of the abdomen of the male mentioned in the key to the species on a preceding page is the same as in the typical form. Palpi yellowish basally.

In two females before me there is a brown suffusion on the greater portion of the mesonotum which I do not regard as sufficient to justify varietal segregation.

Length, 7.5–9 mm.

Holotype, Male, allotype, and 2 paratypes, Salisbury's Opening, 4,000 ft., 16.ii.31 (E. S. Gourlay). Paratypes, Mt. Arthur, 3,000 ft., 2.i.29 (E. S. Gourlay); Ben Lomond (Fenwick); Nelson, 27.xii.21, a male with apical central bristles on the first visible tergite (R. J. Tillyard); Obelisk, 4.iv.20 (D. Miller); Ohakune, 20.xi.19; Maitai Valley, 16.iii.22 (A. L. Tonnoir); Upper Maitai, 26.xi.23 (E. S. Gourlay).

***Procissio cana*, Hutton.**

I have before me the type-specimen of the genotype, which differs from the next preceding one herein in being darker grey dusted, in having the parafacials with a brownish tinge above, the strongest bristle on the vibrissal area much farther from the anterior edge of the raised part (Fig. 33b), the frons at anterior ocellus in the male about as wide as either eye, and the third antennal segment in that sex about four times as long as the second. In the female the third antennal segment is not over three times as long as the second. The underlying colour of the lower face and anterior parts of the genae are reddish brown, and the palpi are usually brownish yellow. There are usually two pairs of presutural acrostichal bristles on the mesonotum and a pair of discal bristles on the scutellum. Squamae white. Fifth sternite of male as Figure 34.

Length, 9–10 mm.

Type locality, Christchurch. Other localities: Cass, male and female; Upper Hororata, Nelson, Dunedin, Mt. Grey, Stephen's Island, Sunnyside.

***Procissio cana*, var. *valida*, Hutton.**

Procissio valida Hutton, *Trans. N.Z. Inst.*, 1900, p. 55.

Procissio montana Hutton, *op. cit.*

I have before me the type-specimens of both the above and consider that they belong to the same species, and that it is in all probability merely a variety of *cana*. The specimens average larger and more robust and are darker in colour, with squamae brownish instead of white. Structurally they are similar, but it is not impossible that careful field work will prove that the two forms are entitled to separation as valid species.

There is no difference between the two type-specimens in the colour of the legs despite the key character given for their separation by Hutton in his paper.

Length, 11–13 mm.

Type localities, Taranaki and Mt. Peel. Other localities: Dunedin, Blackball, Nelson.

***Procissio lateralis*, n.sp. (Fig. 35).**

A robust black species, with the sides of the abdomen more or less noticeably reddish, and the general build more robust than in the other species. The scutellum is also red in centre apically, and it has eight instead of six marginal bristles.

The head (Fig. 35) is much as in *cana*, though the frons of the male is not as wide, and the arista is more tapered on its apical half. The mesonotum is darker, and has four black vittae anteriorly and a fifth one in centre in front of the scutellum. There is frequently a bristle between the usual two on the presutural lateral area, and the sternopleural bristles are almost invariably 2 + 1.

Legs with the tibiae usually broadly reddish yellow centrally.

Fifth abdominal sternite of the male, as Figure 36, differing from that of any of the other species in having two short inner processes.

Squamae dirty white.

Length, 11–12 mm.

Holotype and two paratypes, Arthur's Pass, 2,500–2,700 ft., 25.xii.22 (J. G. Myers). Paratypes, Flora Camp, 3,000 ft., 16.ii.31 (E. S. Gourlay); Ben Lomond (Fenwick); and Otira. Female unknown to me.

Genus *PEREMPTOR*, Hutton.

I have already dealt with the three species of this genus known to me in this series of papers, and have merely to add the following synonymy:—

Procissio modica Hutton, *op. cit.*, p. 55 (male)*

Peremptor pavida Hutton, *op. cit.*, p. 56 (female).

I have before me the two type-specimens and have decided that the names apply to the sexes of the same species. Figure 37 shows the head of the male in profile, the third antennal segment in the female is much smaller and narrower.

The type localities are Wellington and Ashburton. I have additional specimens from Broad Bay, Ruapehu, and Peel Forest.

For other data I refer the reader to my previous paper.

Peremptor egmonti, Hutton.

The peculiar head of this species should insure its identification (Fig. 39).

Genus *HETERIA*, Malloch.

1930. *Rec. Cant. Mus.*, 3 (5), 324.

1931. *Pseudopeteina*, Townsend, *Rev. Ent.*, 1, 459.

1933. *Rhynchopeteina*, Ringdahl, *Skr. Svalb. Ishav.*, 53, 17.

I have carefully compared specimens of the genotypes of the New Zealand and North American genera and can find no reason to separate them. Both agree in having the basal and second arisal segments elongated, the basal as long as the second, and both combined from one-half as long as the third segment, the parafacials haired or setulose, and the infrasquamal hairs present. The other characters are almost identical, though the petiole of the first posterior cell is much longer in the North American species than in the New Zealand one. The parafacials in the former are more strongly armed, having rather well-developed bristles in a single series, but in some of the New Zealand species the armature is much more reduced than in *appendiculata*, there being only fine short hairs present. The first posterior cell of the wing is also in some species narrowly open instead of petiolate.

The genotype of *Petenia*, Brauer and Bergenstamm, lacks the infrasquamal hairs, and has the basal segment of the arista not longer than thick and much shorter than the second, both combined being not over one-fifth as long as the third segment. In other respects this also differs from *Heteria*.

This association of a Greenland species in the same genus with several from New Zealand is very remarkable, but on the basis of available generic characters it appears impossible to avoid the conclusion indicated by the synonymy cited above.

* Figure 38 should be referred to here.—D. M.

I have already presented a treatment of the species in the paper in which I described the genus and have nothing to add thereto at this time.

Genus OCCISOR, Hutton.

This genus contains robust blue-black species, all of which known to me are characterized by the bright orange-yellow flaps of the thoracic spiracular openings, and frequently the same coloured basal scale of the costa of the wing. The frons is about one-third of the head width in the male, a little wider in the female, and furnished with proclinate outer orbitals in both sexes; the parafacials are haired to, or almost to, the lower level of the eyes (Fig. 40), and the latter are quite densely haired. The mesonotum has four pairs of postsutural dorsocentrals, and in no specimen that I have seen are there any apical central bristles on the first visible tergite of the abdomen, though in one female there is one discal pair on the second, possibly an aberrant feature of this example. The outer cross vein in all specimens enters the fourth vein at not over one-fourth of the distance from its bend to the inner cross vein. The lower squama lies close against the side of the scutellum and is straight on its inner side, with a slight angle at its inner apex.

Genotype, *Occisor inscitus*, Hutton.

KEY TO THE SPECIES.

1. Squamae white, edge of the lower one yellowish, that of the upper narrowly brownish; abdomen steel-blue, with faint white dusting at bases of the tergites; basal scale of the costa bright orange-yellow. *versutus* Hutton.
- Squamae fuscous or brown. 2
2. Upper squama paler than the lower, whitish, with dark brown edge; abdomen and basal scale of the costa as in *versutus*; lower squama of female narrowly white; fore tarsus in same sex but slightly widened, second segment not less than 2.5 times as long as wide, the basal one not dilated apically. *inscitus* Hutton.
- Both squamae dark brown, the edge of the lower one in female not paler than the remainder of its surface; fore tarsus very distinctly widened, the second segment not twice as long as wide and the first distinctly widened to apex from near middle; basal costal scale brown; abdomen glossy black, without a distinct blue tinge. *atratus*, n.sp.

Occisor inscitus, Hutton.

I have before me the type-specimen of this species, a male, and find that it is very similar to that of the next species, there being no distinction in the degree of hairiness of the eyes as stated by Hutton. I have used the only character in the above key that appears to me of value in the separation of the two species.

Type locality, Christchurch. I have females from Day's Bay (Myers) and Tauranga (E. S. Gourlay).

Occisor versutus, Hutton (Fig. 40).

In addition to the type male from Christchurch I have one from Wellington (Miller).

Occisor atratus, n.sp.

A larger and stouter species than the others, with the abdomen broadly ovate and glossy black, the squamae dark brown, and the

basal scale of the costa brown except at its apex. The parafacials are wider than in the female of the genotype, the abdomen has a pair of discal bristles on the second and third visible tergites that are not present in either of the other species, and the bend of the fourth vein has a short spur vein. This last character is not dependable.

Length, 15 mm., width of abdomen at middle 7.5 mm.

Holotype, Dun Mt., 25.i.31 (E. S. Gourlay).

I may be in error in placing this species in this genus rather than in *Neotachina*, but lacking the male it is impossible to be absolutely certain of its exact generic position. In the only species that I place in the other genus of which I have females available the fore tarsus in that sex is slender, while in both species of *Occisor* in which there are females in the collection here the fore tarsi are widened. This character is not a very good one on which to base generic limits, but it may suffice until further material in these two concepts is available.

Genus VELUTA, novum.

This genus is distinguished from its allies by the presence of one or more pairs of bristles proximad of the apical central pair on the first visible tergite of the abdomen and the very narrowly separated eyes of the male and the much-dilated fore tarsi of the female. In *Plethochaetigera* the eyes of the male are separated above at the narrowest point of the frons by not less than one-fifth of the head width, and in no species known to me except *isolata* are the fore tarsi of the female distinctly dilated. In *Veluta* the eyes are densely haired, and the parafacials are haired to the lower level of the eyes. The face is slightly convex, the epistome is distinctly produced, and the raised and haired part of the genae extends almost to the vibrissal angle.*

Genotype, the following new species:—

Veluta albicincta, n.sp.

A deep dull black species, with whitish grey dust on the head, thorax, and abdomen, on the latter forming three transverse bands, one at the base of second, to fourth tergites.

Male, Female. Head black, with dense white dust except on the interfrontalia and margin of upper occiput, the vibrissal angle brownish behind; antennae, palpi, and proboscis black. Frons in male narrower than third antennal segment for some length in front of the anterior ocellus, the interfrontalia not obliterated, in female at vertex slightly narrower than an eye, widened to anterior margin, either orbit at middle fully half as wide as the interfrontalia. Male with the inner verticals distinct, the outer pair not differentiated from the usual long erect fine hairs on margin of the upper occiput, the orbits with an inner marginal series of fine incurved hair-like bristles on their entire extent laterad of which there are numerous fine hairs, the lower bristle about level of base of antenna. Female

* It may be noted here that specimens with only two bristles at apex of the first visible tergite of the abdomen will run to *Zelandotachina*, but the only species of the latter that has the parafacials haired has the hypopygial backwardly directed pair of processes uniformly slender instead of dilated.

with the outer verticals about half as long as the inner pair; ocellars distinct, the orbits each with two or three outer proclinate bristles on upper half or less. Antennae moderate in length, third segment hardly longer than second. Profile as Figure 41.

Thorax black, with quite dense greyish white dust, most conspicuous on the lateral margins of the mesonotum anteriorly, the dorsal vittae four in number, black and not entire, least conspicuous in the male because of a fuscous or brown suffusion on the disc, the female sometimes with a brown suffusion between each pair of vittae but not in centre. Dorsocentrals usually 3 + 4; prealar distinct; sternopleurals 1 + 1; scutellum with six marginal and two discal bristles.

Legs black, the bristles less developed than in *Plethochaetigera*, the hind femur in male with a complete series of fine posteroventral bristles, and the fore tarsus of female as Figure 42.

Wings smoky, more so basally, the extreme base and alula white, veins black, inner cross vein slightly brown clouded. First posterior cell narrowly open.

Abdomen coloured as thorax, the white dusted band at base of the second visible tergite usually much narrower than the other two. First visible tergite with four or more central apical bristles, one pair behind the others, the apex, without a complete series; second with two or more discal pairs and a complete series of weaker bristles at apex in male, in female the apical series less conspicuous; third with more numerous discal and longer apical bristles in male, the discals in female usually four; fourth with the entire disc more or less bristled and haired. Hypopygium of male with a pair of long flat backwardly-directed long-haired processes that extend to apex, the apex of abdomen in profile as Figure 43. Fifth sternite of male in profile with two short basal processes, the apical pair somewhat triangular in profile as in the figure cited.

Squamae white, the lower one of the form typical in the New Zealand species of the family, lying close against the side of the scutellum and with a slight apical inner angle. Halteres yellow.

Length, 7.5-8.5 mm.

Holotype, Male, and allotype, Mt. Arthur, 4,500 and 5,000 ft., 21, 23.xii.21 (A. L. Tonnoir). Paratypes: Beeby's Knob, 26.xii.27 (E. S. Gourlay); Otira, 20.xi.19; Milford, 24.xii.20 (Fenwick); Arthur's Pass, 2,200 ft., 24.xii.22 (J. G. Myers).

Genus *ALTAIA*, novum.

This genus belongs to that group in which the parafacials are haired on the upper half or less, the eyes haired, and the abdomen with discal bristles on all but the first visible tergite. From most of the species of this group it may be distinguished by the fact that the parafacials at middle are narrower than the third antennal segment, and the arista is slightly elbowed at the junction of second and third segments, and from all known to me by the lack of the apical pair of scutellar bristles. These bristles are present in all other genera, though sometimes much shorter and weaker than the next pair, but in *Altaia* they are represented by at most a pair of

minute fine hairs. In some specimens there is a pair of short fine bristles near the apex on disc that may be mistaken for the apical bristles, but in all cases these are higher placed than the strong preapical lateral pair so that they cannot be mistaken for the apicals. For other characters see the description of the genotype given below.

***Altaia geniculata*, n.sp.**

Male, Female. A black, densely brownish grey dusted species, with the legs tawny yellow, the femora sometimes slightly darkened above at apices, and the tarsi black.

Head of male in profile as Figure 44, the frons of that sex about one-fourth of the head width at vertex, widened to anterior margin, the orbits at middle about half as wide as the interfrontalia, each with a long erect outwardly curved bristle near upper extremity and a series of incurved inner marginal bristles, and numerous fine hairs, the latter descending to about middle of parafacial. Female with the frons not wider at vertex than in male, more widened anteriorly with fewer fine hairs on the orbits and a proclinate outer orbital in front of the upper outwardly curved bristle. Antennae black; palpi sometimes yellowish at bases. Eyes short haired.

Thorax black, densely brownish grey dusted, mesonotum with 4 rather distinct black vittae that are interrupted at suture and discontinued about midway from there to hind margin. Dorsocentrals 3 + 3, presutural acrostichals usually 2, sternopleurals 2 + 1, the lower anterior one small.

Legs rather stout, the hind femora of male stouter than usual, the bristling not exceptional; fore tarsus of female not thickened.

Wings greyish hyaline, veins fuscous to black. First posterior cell open, ending very slightly before wing tip, outer cross vein less than one-third of the distance from angle of fourth to inner cross vein; costal thorn variable, but usually distinct.

Abdomen narrowly ovate in male, rather broadly ovate in female, the dust variable in tone, from brown to grey, and distinctly checkered. First to third visible tergites each with a pair of apical central bristles, second and third each with a pair of discal bristles, fourth with more numerous bristles. Fifth sternite in male with a short basal projection and a longer apical downwardly directed apical one when seen in profile (Fig. 45), the fifth visible tergite in that sex with only fine hairs on disc, no strong bristles present.

Squamae brownish in male, almost white in female, of the usual form. Halteres yellow.

Length, 6-7 mm.

Holotype, Male, Dun Mt., 2,000 ft., 15.i.28 (E. S. Gourlay). Allotype, topotypical, 25.i.31 (E. S. Gourlay). Paratypes, Mt. Duppa, 3,500 ft., 6.i.29, Upper Maitai, 13.ii.27 (E. S. Gourlay); Hilltop, 15.i.25, and Riwaka, i.23 (A. L. Tonnoir).

It may be noted here that the palpi show considerable variation in colour, in extremes being either black or tawny yellow, though sometimes they are tawny yellow with infuscated apices.

Here again we have a case of recurrent characters in the hypopygium of the male, there being the same elongated backwardly directed pair of haired processes as are found in *Asetulia* and several other genera including *Veluta*, and a considerable resemblance exists between the figures of *Veluta* and the present genus, facts that may indicate that the generic groupings adopted herein will prove to be merely tentative, based as they are upon external characters of possibly less fundamental importance than others not as yet exploited.

Genus PLATYTACHINA, novum.

I am placing in this genus a number of rather dissimilar species, all of them having one outstanding character in common—the well-exposed though reduced fifth visible abdominal tergite in the male. All are large robust species, with broadly ovate abdomen, four pairs of postsutural dorsocentrals, at least eight strong marginal bristles on the scutellum, and densely haired eyes. In all the females known to me the fore tarsi are distinctly widened. The rather similar appearing *Neotachina*, in addition to having the fifth tergite concealed or almost so, has but six outstanding marginal bristles on the scutellum and the females have the fore tarsi slender.

It is quite probable that my action in placing this rather diverse assemblage in the same genus will provoke dissent now or later, but I feel that the course adopted, though conservative, is the best under present circumstances, the preliminary segregation of related species and the identification of these being of prime importance to us rather than the making of an attempt to definitely limit generic concepts that without doubt will be subject to future modification with the accession of more detailed data, especially on life-histories and immature stage characters.

Genotype, *Platytachina major*, n.sp.

KEY TO THE SPECIES.

- | | |
|---|---------------------------|
| 1. Males | 2 |
| Females | 6 |
| 2. Frons at vertex almost as wide as either eye seen from above; abdomen brick-red, first visible tergite black, second and third each with a broad black central mark that is widened in front and behind, and the fourth with a small black mark in centre of anterior margin; first tergite without apical central, and second without discal, bristles. | <i>latifrons</i> , n.sp. |
| Frons at vertex distinctly narrower than either eye seen from above, or if about three-fourths as wide as eye then the abdomen is not coloured nor bristled as above. | 3 |
| 3. Antennae and palpi black; width of the frons at vertex about three-fourths as great as either eye seen from above; first visible abdominal tergite with a pair of fine apical central bristles, second with two pairs of similar discal and a complete series of apical bristles, the four at centre stronger than several on each side of them. | <i>atricornis</i> , n.sp. |
| Antennae partly, palpi entirely reddish to testaceous yellow; width of frons at vertex less than half that of either eye seen from above. | 4 |

- | | |
|--|-----------------------------|
| 4. First visible abdominal tergite with a pair of apical central bristles, second and third each with usually two pairs of discals and a pair of apical centrals, these bristles all strong and erect; length of species 13-15 mm. | <i>major</i> , n.sp. |
| First visible abdominal tergite at apex and disc of second with at most a pair of very fine bristles; length of species not over 13 mm. | 5 |
| 5. Narrowest part of frons wider than the third antennal segments. | <i>difficilis</i> , n.sp. |
| Narrowest part of frons distinctly less than as wide as third antennal segment. | <i>angustifrons</i> , n.sp. |
| 6. First visible abdominal tergite with apical central and second and third each with at least two pairs of discal bristles. | <i>major</i> , n.sp. |
| First visible abdominal tergite without apical central and second without discal bristles. | 7 |
| 7. Thorax and abdomen brick-red, both with the dorsum blackened centrally. | <i>latifrons</i> , n.sp. |
| Thorax and abdomen black, grey dusted, only the scutellum partly reddish. | 8 |
| 8. Legs with the exception of the tarsi tawny yellow. | <i>angustifrons</i> , n.sp. |
| Femora largely black, tibiae tawny yellow, tarsi black. | <i>difficilis</i> , n.sp. |

***Platytachina latifrons*, n.sp.**

This is the species identified by Hutton as *Tachina messor*, Walker, and which he considered a true *Nemoraea*. This is an error, the erect fine hairs on the upper surface of the lower squama which characterize that genus being absent in the New Zealand species. I cannot accept Hutton's identification as correct. Walker's description, while inadequate for present day requirements, is clear enough on certain points to prove that the species now under consideration is not the one he had. In fact, the paragraph by Hutton in which he says that "Walker's statement that the abdomen is narrow and nearly cylindrical must be a mistake" leads one to infer that he rather strained a point to make his species fit the description. The petiolate first posterior cell of the wing and some other characters of Walker's species lead me to believe that it will prove to belong somewhere near *Wattia*, though it is not possible without further data on the type-specimen to definitely place it in my present paper.

Male, Female. Head brownish yellow, upper half of occiput, the vertex and upper part of frons fuscous to black, interfrontalia red, the frontal orbits and upper part of the parafacials golden yellow dusted, slightly speckled and changeable in different lights, the remainder of the dusting in the face, genae, and lower occiput duller yellow, the central occipital hairs orange-yellow, the others and the bristles black; antennae orange-yellow, third segment usually blackened on margins and apex; aristae black; palpi orange-yellow. Profile as Figure 46; frons at vertex in both sexes almost as wide as one eye, much widened to anterior margin, orbits at middle wider than the interfrontalia, with the usual inner marginal incurved series of fine bristles, one outwardly curved bristle near upper extremity in both sexes, and in the female two or three upper outer proclinate bristles; the ocellars are long, proclinate, and divergent; eyes densely haired. Second segment of the arista almost twice as long as thick.

Thorax brick-red to fulvous yellow, dull, the mesonotum broadly black to dark brown on the disc, with greyish dust in perfect specimens, and but faint traces of four darker vittae, the scutellum and pleura usually entirely without black marks. Postsutural dorso-centrals 4; the presutural lateral area usually with three bristles, the prealar long, sometimes duplicated, presutural acrostichals two or three pairs, sternopleurals usually $2 + 1$; scutellum with at least 8 marginal bristles.

Legs coloured as thorax, the fore tarsi of the female browned to infuscated and distinctly widened from before apex of basal to apex of fourth segment, second segment a little over twice as long as its greatest width.

Wings greyish hyaline, more yellowish basally, veins orange-yellow at bases, merging into brown at apices. Inner cross vein at middle of discal cell, outer at less than one-third as far from pre-apical angle of fourth as from inner cross vein, bend of fourth narrowly rounded to subangulate, the vein just above the angle bent inward, outer cross vein sinuate, second section of costa over half as long as first, the first posterior cell open, ending distinctly in front of wing tip.

Abdomen coloured as thorax, first visible tergite almost entirely black above, second and third each with a broad central black mark which is widened in front and behind, fourth with a central anterior marginal black mark. In fresh and unrubbed specimens there is a brownish grey dust on the surface that almost obliterates the markings, but ordinarily the latter are conspicuous. Apex of male abdomen seen from the side as in Figure 47. General form broadly ovate, bristled as noted in key.

Squamae white, margins yellowish. Halteres yellowish brown.

Length, 12–14 mm.

Holotype, Male, and allotype, Eglinton, 31.xii.20 (Fenwick). Paratypes, Lake Peel, 28.ii.21, Mt. Cook, 4.i.29, Mt. Arthur, 4,500 ft., 2.ii.23 (A. Philpott); Mt. Cleughearn, 25.i.17.

***Platytachina atricornis*, n.sp.**

A much darker species than *latifrons*, only the apical portion of the scutellum and the sides of the first three visible abdominal tergites distinctly brownish red, the ground colour of the head brown, showing but faintly through the dense grey dust on the lower anterior part, the antennae, frons, and palpi black, and the legs of the same colour, only the tibiae centrally reddish brown.

Head in profile much as in *latifrons*, but the epistome more produced, the frons narrower, at vertex hardly over two-thirds as wide as either eye, the antennae as Figure 48; and the palpi much shorter.

Thorax dull black, the lateral margins of the mesonotum with rather distinct pale grey dust, the disc with four partial, more intensely black, vittae, apical half or more of the scutellum brownish red. Bristling similar to that of *latifrons*.

Wings greyish hyaline, veins brownish basally, becoming black apically. In arrangement of veins similar to *latifrons*, and with the same series of four or five setulae at base of third vein above and below.

Abdomen coloured as thorax, the sides of the first three tergites rather broadly but inconspicuously brownish red, the surface with rather dense grey dust on second to fourth tergites except on apices and a narrow central vitta which are black. General form not as broadly ovate as in *latifrons*, nor as noticeably flat on dorsum, with fine apical central pair of bristles on first visible tergites and one or two similar pairs of discals on second, the latter with four long erect apical central bristles, third tergite with one or two pairs of long discal and a series of long apical bristles that are more conspicuous and stronger than in *latifrons*, fourth with similarly long bristles on most of its surface; apex of abdomen much as in the preceding species, but the hypopygium is very different, the superior pair of forceps being bent up at apices, and the inferior pair having no group of stiff bristles near base on the inner edge (Fig. 49).

Squamae white, edge of lower one slightly yellowish.

Length, 12 mm.

Holotype, Male, Ben Lomond, 14.ii.20 (Fenwick).

***Platytachina major*, n.sp.**

This species averages larger than any of the others; sometimes specimens attain a length of 15 mm., and in both sexes there is a character that appears to separate it from all its congeners. This consists of a series of widely spaced short spines on the costal vein between humeral vein and the apex of the subcosta that are situated on the upper surface between the usual upper marginal closely placed series and the membrane (Fig. 50). In the other species there are no stout spines, the armature consisting of a more closely placed series of microscopic fine hairs.

Male, Female. Head fuscous, showing brown below the dust on lower anterior part and face, in the male with dense grey dust, in female brownish dusted, the dust least evident on face; interfrontalia undusted when seen from the side, slightly dusted when seen from in front; antennae black, second segment on inner side and apically, and third at base, reddish yellow; palpi reddish yellow. Male with the frons at vertex about one-third as wide as either eye seen from above, widened to anterior margin, the orbits narrow above, widened below like the interfrontalia; vertex with the inner pair of bristles moderately distinct as long as the ocellars, each orbit with a series of inner marginal incurved fine bristles that are very short above and become longer below, laterad of these many rather long fine hairs and below a few bristles, the lower bristle almost opposite middle of second antennal segment and nearer inner than outer margin, the parafacials haired to lower level of eye, the appearance somewhat speckled above. Frons of female at vertex almost as wide as either eye, the orbits widened in front, but the interfrontalia parallel-sided; vertex with all four bristles distinct but not very conspicuous; each orbit with the usual inner marginal series of

incurved bristles, which are quite regular and stronger than in the male, the upper half with two proclinate bristles and above these one outwardly curved bristle, none of which are present in the male, the lateral hairs less numerous and shorter than in the male and not descending as far on parafacials. Face not bifoveolate, almost flat, slightly depressed above vibrissae in profile. Vibrissae about as far above epistome as length of second antennal segment, with a number of moderately long bristles adjacent to them, some of which are above them, but the highest is well below middle of facial ridges and much finer than the lower bristles. Antennae extending to slightly below middle of face, inserted about middle of eye in profile, third segment about 1.75 times as long as second, rounded at apex; arista swollen at base, tapered to middle of third segment, the second segment about as long as thick. Gena about half as high as eye, the haired and slightly raised part extending to level of anterior edge of eye; the eyes distinctly haired; palpi slender, of moderate length; proboscis short. Thorax brownish black, slightly shiny, with rather dense dust, most distinct on the lateral margins, and especially the humeri; in the male the dust is pale grey except on the disc of the mesonotum, where it is brownish, and in the female it is almost all brownish; the mesonotum with four black vittae that do not extend to the posterior margin; scutellum broadly brownish yellow apically. Dorsocentrals rather variable, 2-3 + 4-5, at least two pairs of presutural acrostichals, the other bristles also variable and fine, but in no case is the posterior presutural intra-alar present; sternopleurals 1 + 1; pteropleura with two or three fine bristles amongst the finer hairs; scutellum with at least 8 fine marginal bristles.

Legs brownish yellow, shaded with black or fuscous on part of the femora, and especially the fore pair in the male. Fore tibiae in the female sometimes with the posterodorsal surface weakly bristled as well as the two stronger bristles on the posterior surface; fore tarsus in same sex distinctly widened.

Wings greyish hyaline, slightly pale brown at bases, veins yellowish brown at bases, darker at apices. Venation as in *latifrons*.

Abdomen brownish yellow, the disc broadly, sometimes almost entirely, black, and with grey dust, the sternites black. Both sexes with the general form broadly ovate and slightly flattened on dorsum, the bristles erect and rather strong, consisting of one apical central and sometimes an anterior pair on first visible tergite, an apical central and two or three discal pairs on second tergite, an almost complete apical series and several pairs of discals on third, and scattered bristles on fourth. A remarkable feature of the male type is that the right side of the fourth tergite is strongly bristled, and the left side has merely long setulose hairs. In one paratype male the abdomen is entirely normal, but in another there is again an asymmetrical feature of the fourth tergite, but here it has apparently been injured, as it is shorter and unarmed on the left side. There are other cases of the same nature in the collection that are listed in this paper.

Squamae white, margins yellowish. Halteres yellowish brown. Length, 13–17 mm.

Holotype, Male, Hunter Mts., 4,000 ft., 5.i.23. Allotype, Mt. Arthur, 4,500 ft., 2.ii.23 (A. Philpott). Paratypes, Male, Beeby's Knob, 26.xii.27 (E. S. Gourlay); Female, Gordon's Pyramid, January 24 (A. Philpott); one damaged Male, Mt. Arthur, January 24 (A. Philpott).

One of the largest species in the collection, readily distinguished from the other large forms by the base of the stem vein, flat face, and other characters.

***Platytachina difficilis*, n.sp.**

A considerably smaller species than *major*, differing in the narrower frons of the male, the lack of bristles on the first visible tergite and disc of second, and the generally black femora.

Male. Head brownish red, infuscated on frons and upper half or less of the parafacials, and the occiput, the raised part of genae not as dark but grey dusted, the other dark parts also grey to brownish grey dusted, antennae with the basal two segments and the narrow base of third of the same colour as the pale parts of the head, the remainder of third segment and the aristae black; palpi reddish yellow. Frons at vertex fully as wide as third antennal segment and about one-fifth as wide as one eye seen from above; vertex with numerous long setulose hairs but no well developed bristles; ocellars generally quite distinct, the orbits with numerous fine inner marginal incurved bristles that become longer anteriorly, and laterad of these numerous much shorter finer hairs that descend to or below level of middle of third antennal segment, the parafacial comparatively wider than in *major*, the epistome more produced, and the third antennal segment less than 1.5 times as long as second. The aristae are swollen on less than their basal halves.

Thorax black, slightly shiny, with grey dust, and four black vittae on the mesonotum that are not continued to posterior margin; scutellum broadly reddish brown at apex. Armature as in *major*, but the lower anterior sternopleural bristle is usually present.

Legs black, coxae behind, apices of femora ventrally, and all of tibiae brownish yellow.

Abdomen black, with grey dust that is slightly checkered, the lateral curves of tergites more or less broadly brick-red to brownish yellow. First visible tergite without central bristles, second without discs but with two to four apical central bristles; third with at least one pair of discs and a complete series at apex; fourth with scattered bristles on almost the entire surface; fifth with rather closely placed and moderately strong bristles; sixth fine haired except at apex, where there are a few fine bristles in a transverse series. Hypopygium seen from the side as Figure 52.

Squamae tinged with brownish, margins yellow. Halteres brownish yellow. Costal vein of wing as in Fig. 51.

Length, 11–12 mm.

Holotype, Beeby's Knob, 4,700 ft., 27.i.29 (E. S. Gourlay). Paratypes, Mt. Peel, 5,300 ft., 12.ii.31 (E. S. Gourlay); Blackball, March 20 (J. W. Campbell).

I have before me a female that I tentatively place with this species. It is similar in general colour and appearance to the male, but the abdomen is entirely black, with checkered grey dust which is not what one would be led to expect from the general rule in related species. The dust on the head is quite dense and brownish yellow, the basal two antennal segments are fulvous yellow and the third black.

The fore tarsi are not as much widened as in *major*, the first visible tergite and the disc of third are unarmed, the apex of second has a pair of strong bristles in centre and the third has a complete apical series; the fourth has the apical half bristled, with the apex compressed from the sides so that the apical opening appears slit-like.

Length, 12 mm.

Locality, Waiho, 20.i.22 (A. L. Tonnoir).

***Platytachina angustifrons*, n.sp.**

This species is very similar to *difficilis*, differing essentially in having the frons of the male reduced to a mere line at its narrowest point, where it is not as wide as the third antennal segment. Both species have the fifth abdominal sternite of the male with a pair of short central lobes much as in *Procissio lateralis*, the ventral view of the right half being as Figure 53. The hypopygium is very similar to that of *difficilis*, but the inferior forceps are not as wide and are less curved, with sharper apices.

Length, 11–12 mm.

Holotype, Male, Mt. Rolleston, 15.xii.20 (E. H. A.). Paratypes, No. 122c (Miller); and Arthur's Pass, 3,500 ft., 23.xii.22 (J. G. Myers).

Two specimens that I take to be females of this species differ from the male in having the legs with the exception of the tarsi fulvous yellow, the abdomen entirely black, with slightly checkered grey dusting, and the wings more yellowish basally.

The abdomen has a pair of apical central bristles on the second visible tergite and usually small discals on the third. The fore tarsi are more distinctly widened than in *difficilis*, more like those of *latifrons*, and the third antennal segment is about 1.25 as long as the second.

Localities, Otira, 8.ii.22 (A. L. Tonnoir); No. 133b (Miller).

Genus PHAONIELLA, novum.

This genus differs from the preceding one in being more slender, in having 6 well developed scutellar bristles, and the fifth abdominal sternite not exposed. The face is also slightly bifoveolate and the postsutural dorsocentrals are three in number.

Genotype, the following new species.

***Phaoniella bifida*, n.sp.**

An entirely black species, with black antennae and palpi, the thorax slightly shining and with grey dust, the mesonotum with four black vittae, but the space between the submedian pair almost as dark as the vittae, so that there appear to be but three broad black vittae. Abdomen with distinct grey dust, the dorsum with black apices to the tergites and with a central black vitta. Wings greyish hyaline, alar lobe white, veins yellow basally, dark apically.

Male, Female. Head with silvery grey dusting on the parafacials below bases of the antennae in male, the frontal orbits and parafacials in female more yellowish grey dusted; the ground colour of the vibrissal angle showing reddish brown. Frons of male in front of ocelli reduced to a mere line, much narrower than the third antennal segment, with fine closely placed bristles on the entire extent of the inner edges of the orbits; ocellars weak but evident. Female with the frons at vertex about one-third of the head width, widened to anterior margin, the orbits narrow above, widened in front, the interfrontalia slightly widened in front, each orbit with the usual inner marginal series of bristles and an upper outwardly curved and three proclinate bristles on upper half. Eyes distinctly haired.

Thorax with 3 + 3 dorsocentrals, one prealar, the hairs rather long, sternopleurals 2 + 1.

Legs black. Fore tarsi of female not at all widened, all tarsi longer than their tibiae.

Wings hyaline. Third vein with a few basal setulae, first posterior cell variable at apex, either narrowly open or closed, rarely with a minute petiole.

Abdomen narrowly ovate, the first visible tergite in male with a pair of central apical bristles and sometimes a weaker pair anterior to them; second with a pair or two of discals in the male, usually none in the female, and two to four central apicals; the third with two or more pairs of discals and an apical series. Apex of abdomen with the fifth sternite largely exposed in profile and with a deep rounded excision in each lateral lobe near centre; fourth sternite with four or more strong, straight, downwardly directed bristles.

Squamae white, margins narrowly yellowish. Halteres yellow.

Length, 8.5–10 mm.

Holotype, Male, allotype, and 2 paratypes, Mt. Arthur, 4,000 ft., 31.xii.28 (E. S. Gourlay). Paratypes, Salisbury's Opening, Mt. Arthur Table Land, 4,000 ft., 15.ii.31, 3,600 ft., 6.i.30 (E. S. Gourlay); Lake Peel, 25.ii.21; Mt. Arthur, 26.ii.21 (A. Philpott); Mt. Peel, 5,300 ft., 7.i.30 (E. S. Gourlay).

Genus NEOTRYPHERA, novum.

This genus is erected for the reception of a small black species which has in common with the next one dealt with the lower squama narrowly rounded on its apical margin, the inner edge more rounded than the outer, without an inner apical angle, and lying well clear of the lateral edge of the scutellum. In all the other New Zealand genera the lower squama is much wider, with a more or less developed

apical inner angle, and lies close against the lateral edge of the scutellum, most frequently touching it on the straight part of its inner edge. The eyes are not noticeably haired unless when seen under a magnification of at least 34, and then there are hardly visible minute widely scattered hairs. Frons in both sexes about one-third of the head width, with the usual inner marginal series of incurved bristles on each orbit which number usually four and are strong, the lower part of the series divergent and more closely placed, usually three in number, of which the anterior one is slightly below the antennal base, and three upper outer bristles, the two anterior outwardly and forwardly directed, the upper one outwardly curved; all four verticals present, the inner pair the longer, and the ocellars well developed. Parafacial in profile rather wide above, narrowed below, above vibrissae almost linear; vibrissae strong, a few setulae above them; gena not over one-fourth of the eye height, haired to almost anterior level of eye; face not carinate, slightly depressed; antennae normal, third segment about 1.5 as long as second; arista swollen on basal fifth or less, second segment about as long as thick; proboscis and palpi normal. Thorax with prosternum and centre of propleura bare; postsutural dorsocentrals 3, the presutural posterior intra-alar lacking; scutellum with but 4 marginal and no discal bristles; sternopleurals 1 + 1; postscutellum not large, falling well short of apex of scutellum. First posterior cell of wing closed, ending almost in wing tip; costa with some distinct bristles; outer cross vein about midway between inner cross vein and bend of fourth, the latter subangulate; third vein setulose at base. Abdomen with apical bristles on all segments and discals on all but first visible tergite.

Genotype, the following species.

***Neotryphera atra*, n.sp.**

Male, Female. Head black, interfrontalia dull brownish black, orbits glossy, face with greyish dust; apex of second antennal segment brownish red; palpi rufous yellow. Profile as Figure 54.

Thorax glossy black, humeral angles grey dusted, the pleura slightly so. Dorsocentrals 2 + 3, acrostichals 2 + 1-2, notopleural bristles subequal in length, prealar moderately long. In one male specimen there is an extra bristle on one side between the usual lateral and apical bristles.

Legs black, stout, the fore tibia with four or five irregular anterodorsal and two posterior bristles; mid tibia with the submedian ventral bristle long; hind tibia with 2 to 4 unequal posterodorsal and anterodorsal, and usually two anteroventral bristles; fore tarsi of female very slightly thickened apically.

Wings slightly smoky, veins brown anteriorly, yellowish basally and posteriorly. Costal vein with some irregularity of the bristling, most of them longer than the diameter of the vein, the one at apex of the subcosta longer than the inner cross vein. Inner cross vein close to middle of the discal cell, outer cross vein not much nearer to the bend of fourth than to inner and about its own length from apex of fifth; third vein with a few basal setulae above and below; apical part of the venation as Figure 55.

Abdomen cylindrical in male, more ovate in female, glossy black, with a narrow anterior marginal patch of whitish dust on each side of second and third tergites which is visible when seen from behind against the light. Surface hairs decumbent and short, discal bristles shorter than apicals. Hypopygium small.

Squamae as Figure 56, yellow in colour. Halteres with brownish yellow knobs.

Length, 3.5–4 mm.

Holotype, Male, allotype, and one male paratype, Cass, February, 1925 (A. L. Tonnoir).

Genus *TRYPHERINA*, novum.

This genus is readily distinguished from *Neotryphera* by the narrow frons of the male, in which there are no outer orbital bristles, all being confined to the inner margins of the orbits, and while the female has the frons much broader, about one-third of the head width, the interfrontalia is distinctly narrower than either orbit at middle instead of as wide as these as in *Neotryphera*. In the profile there are also some distinctions (Fig. 57), and the scutellum has a pair of short but quite distinct erect discal bristles, and four or six marginals. The fore tibia in the male has the anterodorsal surface with very short setulae instead of well developed bristles. In other respects there is considerable similarity, but the costal vein is less strongly setulose, and there is a confusing sexual dimorphism in the bristling of the scutellum and abdomen that only careful and extensive examination of specimens in the field will clarify. The eyes are rather densely haired in most specimens.

One female before me bears a label with Hutton's identification as *Tryphera solsilus*, Walker. I can hardly see why one can accept this identification, as Walker makes no mention of the dense grey dust on the thorax and the bases of the abdominal tergites that characterize this species. In fact, his description reads more as if it applied to the preceding species, but I have rejected that possibility because the fulvous yellow palpi of *atra* are quite distinctive, and Walker states that these organs are black in *solsilus*. Accurate identification of Walker's species requires a careful examination of the type specimen if it is in existence.

It would appear necessary to note here that in *Tryphera*, Meigen, the posterior presutural intra-alar bristle is present. This bristle is, as already noted herein, almost invariably lacking in the New Zealand genera that are endemic.

I have before me a number of specimens of both sexes which I am placing as one variable species, the number of scutellar bristles and the degree of width between the apices of the third and fourth veins at their apices being quite variable. In some specimens the first posterior cell is narrowly open, while in others it is closed and short petiolate.

Trypherina grisea, n.sp.

A small black species, with the head and thorax densely pale grey dusted, the abdomen glossy black with the bases of the second

to fourth visible tergites each with a narrow fascia of white dust, black legs, and hyaline wings. The palpi are rather variable in colour, sometimes almost entirely fuscous, to entirely tawny yellow. The squamae are white and the halteres yellow.

Frons of the male at narrowest point, in front of the ocelli, reduced to a mere line, that of the female at vertex over one-fourth of the head width, with the orbits at middle distinctly wider than the interfrontalia at the same point, the male without, the female with, outer proclinate orbitals; head in profile in male as Figure 57. Eyes rather sparsely but quite evidently haired.

Thorax with 2 + 3 dorsocentrals and usually 2 + 1 pairs of acrostichals, the scutellum with 4 or 6 marginal bristles. Possibly I am in error in considering all the females as belonging to one species, but there appear to be no distinctions in the variously bristled males that would justify specific segregations.

Fore tarsi in neither sex widened.

Wing usually with one outstanding bristle on costa at apex of the subcostal vein, which is much longer than inner cross vein. Outer cross vein about midway between inner and curve of fourth vein.

Length, 4-6 mm.

Holotype, Male, Ruapehu, 7.i.22 (Fenwick). Allotype and 2 paratypes, Cass, February and November (A. L. Tonnoir). Paratypes: Balloon Hut, Mt. Grey, Ranfurly, Otago, Purakanui, both sexes. Sixteen specimens.

Genus MACQUARTIA, Robineau-Desvoidy.

I have already dealt with this genus in a paper in this series and have given a summary of the characters. Now with two additional species from New Zealand before me I have little to add to my previous treatment except the presentation of a key to the four species and descriptions of the two new forms. It may be noted, however, that one of the species possesses the same peculiar yellow bristles on parts of the ventral surface and bases of the femora that distinguish one or two species of the genus *Zealandotachina*. In the latter the parafacials are bare below the lower frontal bristle, the head is longer at vibrissae than at base of antenna, and the hypopygial characters are different.

KEY TO THE SPECIES.

- | | |
|--|---------------------------|
| 1. Both cross veins of the wing brown clouded and the first posterior cell and usually also the discal cell with one or more small dark spots enclosing short vein-like streaks; fore tarsi of the female quite conspicuously widened. | <i>varata</i> Hutton |
| Both cross veins of the wing unclouded or only the inner one noticeably bordered with brown, and neither the first posterior nor the discal cell with any small brown spots. | 2 |
| 2. Many of the hairs and bristles on venter of thorax and abdomen, and on coxae and bases of the femora, golden-yellow; fore tarsi of the female quite conspicuously widened; inner cross vein of the wing not clouded. | <i>flavohirta</i> , n.sp. |
| All the hairs and bristles on the above parts black. | 3 |

3. Inner cross vein of the wing quite distinctly clouded with brown; fore tarsi of the female not as much dilated as in the preceding two species, but still distinctly so, basal segment widened from near base to apex. *nigrihirta*, n.sp.
- Inner cross vein of the wing not at all darkened; fore tarsi of female not noticeably dilated, basal segment slender. *claripennis* Malloch

***Macquartia vexata*, Hutton.**

This species is readily distinguished from any other in New Zealand by the presence of dark spots in the wing cells that usually enclose short vein-like lines.

Male, Female. General colour black, slightly shining, with whitish grey dust on the head, more brownish dust on the thorax and abdomen, mesonotum with four rather poorly defined black vittae, abdominal dorsum with irregular large black marks on centre of the tergites in the male, less marked in the female, the dusting checkered; antennae and palpi black; hairs and bristles on thorax, abdomen, and legs black.

Head of male in profile as Figure 58; frons in that sex at vertex about one-seventh of the head width, the orbits without proclinate outer bristles, that of the female nearly one-third of the head width at vertex, widened anteriorly, each orbit with two proclinate outer bristles; face with a weak central vertical carina.

Legs black, the tibiae of female sometimes brownish centrally; fore tarsi quite conspicuously widened, the basal segment gradually widened from near base to apex.

Fourth wing vein more bent in just above preapical angle than usual, much as in *Graphotachina*.

Length, 6–8 mm.

The type-specimen, of which I figure the head and apex of abdomen (Fig. 59) is from Wellington. Other specimens are from Cass, Nelson, and Governor's Bay.

***Macquartia claripennis*, Malloch.**

Originally described from a female which is now before me. This species has the head much as in *vexata*, but the frons is wider, the second antennal segment is much more strongly bristled, and the antennae are considerably longer. The other distinguishing characters are listed in the foregoing key.

I have before me a male which I tentatively refer here, though there are some characters of it that differ so much from those of that sex that I may be in error in allocation. The second antennal segment is not more strongly bristled than usual, the first visible tergite of the abdomen has a pair of apical central bristles, but I can find no trace of the discal pair of the second tergite which are quite prominent in the female. In the exposed hypopygial structures it agrees well with *vexata*. The first posterior cell of the wing has, as in the female, a distinct though rather short petiole, and neither the cross veins nor any of the others are clouded. Frons at vertex one-fourth of the head width.

Length, 10 mm.

Type-locality, Otira. Locality of Male, Waihopai, 23.ix.08, No. 494 (D. Miller).

***Macquartia flavohirta*, n.sp.**

A more slender species than either of the above two, of a general black colour, slightly shining, and quite densely grey dusted, the head on interfrontalia and above the vibrissal angles on the lower part of the parafacials reddish-brown, antennae and palpi black, the latter more yellowish in the female; thoracic dorsum with the usual four black vittae, the abdomen with a large irregular black mark on each tergite in the male, in the female merely black and grey checkered. Wing veins not clouded. Most of the hairs and bristles on the lower part of thorax and abdomen as well as many of those on the coxae and bases of the femora golden-yellow, the others black.

Male, Female. Head higher in comparison with its length than in the two preceding species, the face shallowly bifoveolate, the antennae as long as in *claripennis*. Frons of male at vertex about one-seventh of the head width, that of the female at vertex one-fourth of the head width, bristled as usual.

The dorsocentral bristles 3 + 3, scutellum with six marginal bristles.

Legs black, fore tarsi of the female much widened.

Wings usually with the first posterior cell open, sometimes closed and short petiolate.

Abdomen narrowly ovate in male, broadly ovate in female, in both sexes with a pair of apical central bristles on first to third visible tergites and a pair of discals on second and third. Apex in male similar to that of *vexata*, the sternites not as densely bristled as in that species.

Length, 7-9 mm.

Holotype, Male, and one Male paratype, Riccarton Bush, 10.xi.24.

Allotype, Wellington (D. Miller). Paratypes: Ranfurly, Dunedin, and Flagstaff (D. Miller).

***Macquartia nigrihirta*, n.sp.**

Similar in general habitus to *flavohirta*, but with no yellow hairs or bristles on the thorax, abdomen or legs.

Male, Female. General colour and structure as the preceding species, differing in the male in having the frons at vertex about one-fifth of the head width, the first visible tergite of the abdomen with four apical central bristles, the central two a little in front of the other two, and the apex of the abdomen as Figure 60, the fifth sternite with a pair of short basal processes and the slender backward extensions of the superior forceps much shorter.

The female has the fore tarsi less widened than in the preceding two species, but still obviously widened. The first posterior cell of the wing is open in all the available specimens, and the clouding of the inner cross vein, though it might be considered a trivial character, is constant and valuable in associating the sexes of this species.

Length, 7-9 mm.

Holotype, Male, Leith Valley, Dunedin, 16.xii.09 (D. Miller). Allotype, Leith Valley, same collector. Paratype females, Ranfurly and Dunedin (D. Miller).

It appears that the last two species are more closely related to each other than they are to *vexata* and *claripennis*, but without field data it is impossible to make a definite declaration on this point.

Genus ZEALANDOTACHINA, novum.

I am placing in this genus a rather composite group of species, some of them with no hairs below the lower frontal bristle and others with hairs to near the lower level of the eyes on the parafacials. It will fall to the lot of some subsequent worker to determine whether this grouping is proper or if it should be modified to the extent that the two groups above indicated should be considered as subgenera or even genera.

The generic characters are as follows: Eyes haired; frons of male much narrower than that of female (ex. *latifrons*); parafacials bare or haired; second segment of the arista not longer than thick; postsutural dorsocentrals 3.

Genotype, *Macquartia subtilis*, Hutton.

KEY TO THE SPECIES.

1. Scutellum with but four strong bristles, the usual basal pair lacking; frons one-fifth of the head width at vertex; hairs on parafacials descending to about midway from base of antenna to vibrissa; antennae entirely black, the third segment but little longer than second; hypopygium without long slender backwardly directed paired processes at bases of the superior forceps. *quadriseta*, n.sp.
- Scutellum with six well developed bristles, the basal and apical pairs usually shorter than the subapical pair. 2
2. Parafacials with fine hairs on less than their upper third. 3
- Parafacials with hairs to at least midway from base of antenna to level of the vibrissa. 11
3. Frons at vertex over one-fourth of the head width, the orbits without outer proclinate bristles. *latifrons*, n.sp.
- Frons at vertex not over one-fifth of the head width, the orbits without proper proclinate bristles 4
4. Frons at narrowest point not as wide as third antennal segment; parafacial at its narrowest point distinctly wider than the third antennal segment; head with black bristles from vibrissae downward in an oblique series to lower margin of gena in line with anterior edge of the raised portion of the latter, no black bristles on or close to the lower edge behind that series, the genal hairs long, rather fine, and all, or almost all, golden yellow; fore coxae and basal portions of all the femora with some golden yellow bristles usually mixed with the black bristles; pleura and venter of abdomen usually with numerous golden yellow hairs; legs entirely black. *subtilis* (Hutton)

- Frons at narrowest point wider than the third antennal segment and as wide as to twice as wide as the parafacial in profile, or the bristling below the eyes much stronger and mainly black; legs always partly brownish yellow. 5
5. Frons at narrowest point wider than the third antennal segment and twice as wide as narrowest point of the parafacial in profile. 6
- Frons at its narrowest point not as wide as the third antennal segment nor narrowest part of parafacial in profile. 9
6. The bristles on the underside of the costal vein of wing at apex of the subcostal vein over twice as long as the one at same point on the upper side and about twice as long as the inner cross vein; hypopygium without a pair of long slender backwardly directed and densely haired processes; scutellum without distinct discal bristles, the discal hairs short and fine. 7
- The two bristles on the costal vein at apex of the subcosta subequal in length; the one on underside not longer than inner cross vein; scutellum with some outstanding discal setulose hairs or bristles that are distinctly longer and stronger than the other discal hairs. 8
7. Scutellum with six long marginal bristles; first posterior cell of the wing short petiolate. *setigera*, n.sp.
- Scutellum with but four long marginal bristles; first posterior cell of the wing merely closed in margin. *quadriseta*, n.sp.
8. Femora largely yellow; fifth abdominal sternite with the processes fuscous, their surfaces sparsely haired to lower edges and a few longer bristly hairs at apices; hypopygium with a pair of slender backwardly directed processes that are longer than the processes of the fifth sternite, slightly spatulate at apices, and furnished with black hairs that become longer apically. *lamellata*, n.sp.
- Femora almost entirely black; fifth abdominal sternite with the processes largely orange-yellow, their surfaces haired on only outer, or upper, third; hypopygium with a pair of short subtriangular backwardly directed processes that are rather densely black haired. *nigrifemorata*, n.sp.
9. Legs preponderantly black, with at most the tibiae, and usually only the mid and hind pairs, brownish yellow; wings infuscated, most deeply so basally; squamae brown to fuscous; hypopygium without a pair of slender backwardly directed processes. *varipes*, var. *fuscata*, n.var.
- Legs preponderantly yellow, the femora at most partly blackened. 10
10. Hypopygium with a pair of slender apically spatulate backwardly directed long haired processes that are distinctly longer than the processes of the fifth sternite; all four of the black mesonotal vittae seen from behind distinct in front of the suture through the presence of dense grey dust between the submedian pair. *quadrivittata*, n.sp.
- Hypopygium without a pair of long slender processes as described above. *varipes*, n.sp.

11. The long backwardly directed pair of hypopygial processes uniformly slender, densely grey dusted, and long haired on the exposed lower surface; superior hypopygial forceps clothed dorsally with fine dense short black hairs (Fig. 66); fifth abdominal sternite without a short process at base of each arm (Fig. 65). *tenuis*, n.sp.

The long backwardly directed pair of hypopygial processes rather broadly lanceolate, the exposed surface glossy black and long haired only on sides; superior hypopygial forceps with a few short dorsal hairs; fifth sternite with a short stout protuberance at base of each of the lateral arms. . . . *Veluta albicincta*, n.sp.

FEMALES.

1. Legs entirely black. 2
 Legs with at least the tibiae largely or entirely yellow. 4
2. Glossy black species, the mesonotum with the usual four vittae sooty black on a glossy black ground, the frons velvety or sooty black, shining only on small dots at bases of the bristles; the parafacials, genae on their raised portions, and the bases of second to fourth abdominal tergites, silvery white dusted; parafacials with the fine hairs sparse, descending to about midway between base of antenna and vibrissa; aristae swollen to at least the middle of third segment; fore tarsi uniformly, but not very noticeably thickened from base to apex. *binigra*, n.sp.
- Rather dull black species, the mesonotum and abdomen with greyish or brownish dust, the former with four rather dull black vittae, the frons not sooty black, nor any part of the head or abdomen silvery white dusted; hairs lacking on the parafacials except immediately below the lower frontal bristle; basal fourth of the third segment of the aristae swollen; fore tarsi more conspicuously and not uniformly widened. 3
3. Parafacial very distinctly wider at its narrowest point in profile than the third antennal segment; fore tarsus as in Figure 62. . . . *subtilis* (Hutton).
- Parafacial not as wide at its narrowest point in profile as the third antennal segment; fore tarsus as Figure 64. *infuscata*, n.sp.
4. Fore tarsi with the basal segment not at all widened, the other four segments very slightly so. 5
 Fore tarsi with the basal segment very distinctly widened from at least before the middle to its apex, the second and third segments also distinctly widened. 8
5. Basal two antennal segments brownish yellow, the dust on head and the pleura of almost the same colour; first visible abdominal tergite invariably without apical central bristles in my material. *varipes*, n.sp.
- Antennae entirely black; pleura entirely or predominantly fuscous. 6

6. Scutellum with four strong bristles, the usual basal pair lacking; face including the parafacials, and the frontal orbits, grey dusted. *quadriseta*, n.sp.
 Scutellum with six well developed bristles, the apical pair usually the shortest. 7
7. Head with dense pale grey dust; thorax entirely black or fuscous and densely grey dusted, with the usual dark dorsal vittae. *quadrivittata*, n.sp.
 Head entirely brownish yellow dusted; propleura and lower half of the humeral angles brownish yellow. *varipes*, n.sp.
8. Parafacial with some short hairs that extend to or below midway from base of the antenna to the vibrissae; presutural sublateral area of the mesonotum with three or four well developed bristles in a diagonal series; first visible abdominal tergite with a pair of apical central bristles; none of the hairs on the venter of the abdomen golden-yellow, some showing brownish at apices against the light; legs brownish yellow, only the tarsi black. *tenuis*, n.sp.
 Parafacial not haired below level of apex of second antennal segment; presutural sublateral area of the mesonotum with only two bristles. 9
9. Small species, not over 5 mm. in length; first visible tergite of the abdomen with a pair of well-developed apical central bristles; hairs on entire abdomen black; legs with the exception of the tibiae black, the tibiae faintly brownish yellow. *infuscata*, n.sp.
 Larger species, 7-8 mm. in length; first visible tergite of the abdomen without an apical central pair of bristles; hairs on the venter of the abdomen mainly golden-yellow; legs brownish yellow, only the tarsi black. *nigrifemorata*, n.sp.

Zealandotachina subtilis (Hutton).

This is evidently a common species, as there are many specimens in the present collection, most of them males. The entirely black antennae and legs (Fig. 62), with the presence of golden-yellow hairs on the genae and their lower edges, as well as many similarly coloured hairs and bristles on the venter of the thorax and abdomen and the coxae and bases of the femora readily distinguish the species from any of its allies.

The frons of the male is not wider than the third segment. The male has usually a pair of strong apical central bristles on the first visible tergite and a pair of discals on the second that are lacking in the female. The male hypopygium has the superior forceps peculiarly formed, their apices seen from the side as in Figure 61, and the posterior extension short and stout; the fifth sternite is not exceptional in form, as shown in the figure referred to.

Length, 7-9.5 mm.

Type-locality: Wellington, from whence I have seen a number of additional specimens in the collection of Dr. Miller. Additional localities: Wilton's Bush, Durville Is., Riwaka, Day's Bay, Silverstream, Stephen's Is., and Pokororo. Taken in November to January.

***Zealandotachina nigrifemorata*, n.sp.**

This species has much the same appearance as the genotype, but there are a number of black bristles on the lower edge of the genae behind the anterior diagonal series below the vibrissa, the tibiae in the male are always brownish yellow, and the legs with the exception of the tarsi are brownish yellow in the female. There are numerous golden-yellow hairs and bristles on the venter of the thorax and abdomen and also on the coxae and bases of the femora as in *subtilis*.

In structure the principal distinctions are to be found in the wider frons of the male, which is distinctly wider than the third antennal segment and about twice as wide as the narrowest point of the parafacial in profile; the lack of any bristle between the usual two on the presutural sublateral area, the much longer antennae, which are about 1.5 times as long as the height of the gena below centre of eye, with the third segment fully 2.5 times as long as the second. The abdomen is the same in general features in both sexes as in *subtilis*, the male having the third and fourth sternites with strong and rather numerous bristles apically, though they are more conspicuous because of the less dense yellow hairs and bristles, and the hypopygium is differently constructed (Fig. 61c). The costal thorn is small as in *subtilis*, and the first posterior cell is generally open.

Length, 6–9 mm.

Holotype, Male, allotype, and 10 paratypes, Cass, February and November (A. L. Tonnoir). Paratypes: Ohakune, Pokako, Wallace-town, Lake Moana, Medford, Dun Mt., and Salisbury's Opening. Twenty-three specimens.

***Zealandotachina varipes*, n.sp.**

This species differs noticeably from the two dealt with above in having no golden-yellow hairs and bristles on the venter of the thorax and abdomen nor on the bases of the femora. It is also marked in the male by the variable amount of brownish yellow colour on the sides of the abdomen, neither of the others having the sides of the abdomen pale, and the abdomen is less checkered on the dorsum, the dusting being more confined to the basal halves of the tergites and their apical halves black. There are a number of male specimens of several types before me which may be accorded varietal rank on the basis of the present material, but further collecting may prove that these are really valid species. I designate them as merely varieties meanwhile and below present a key for their separation. It must also be borne in mind that it is entirely possible that there will be found to be so many intermediate forms in nature that the proposed varietal segregations cannot be maintained. I leave it to subsequent workers to determine the facts.

KEY TO THE VARIETIES.

1. Head in profile seen against the light with the entire frontal orbits and the parafacials to below middle dark velvety brown; wings conspicuously infuscated, darkest at bases and on costa; squamae dark brown, paler on edge of lower one.

1a

- Head in profile with the frontal orbits and parafacials grey dusted, sometimes a little yellowish, but usually almost white; wings and squamae much paler, rarely a little yellowish. 2
- 1a. All femora entirely black. *fuscata*, n.var.
 All femora largely yellow. *fumata*, n.var.
2. Fore femora almost entirely black, yellowish only at extreme bases and slightly so ventrally, fore coxae broadly black in front as in *fumata*, and the mid and hind femora marked as in that variety. .. *varipes*, typical var.
 Fore femora with a more or less extensive black dorsal mark that does not extend below middle of posterior surface, the fore coxae usually entirely yellow, and the mid and hind femora with or without black apical dorsal mark. 3
3. Frons at narrowest point about as wide as third antennal segment; the black dorsal stripe on fore femora extending almost from base to apex. .. *strigipes*, n.var.
 Frons at narrowest point about 1.5 times as wide as third antennal segment; the black dorsal stripe on fore femora confined to apical half. *lata*, n.var.

***Zealandotachina varipes*, var. *varipes*, nov.**

This variety is represented by two rather small dark examples in which the frontal orbits are silvery grey and the parafacials are similarly dusted to lower level of the eyes, all the coxae are partly blackened, and the sides of the abdomen are slightly brownish yellow. The wings are slightly browned basally, and the squamae are brownish yellow.

Frons at narrowest point not wider than third antennal segment and slightly wider than the narrowest point of the parafacial, the latter with a few fine hairs below the lower frontal bristle about level of apex of second antennal segment, the third antennal segment hardly longer than the second.

Thorax black, with dense grey dust, the four black mesonotal vittae rather diffuse; seen from behind, the submedian pair narrow, the sublaterals very much wider, both pairs most distinct in front of the suture. Presutural lateral area with but two bristles; sternopleurals 2 + 1.

Legs normal in structure, claws of the fore pair as long as the fourth and fifth tarsal segments combined and longer than the mid and hind pairs.

Wings with the first posterior cell closed in both specimens, but probably variable in this respect, inner cross vein at middle of the discal cell, costal thorn rather well developed.

Abdomen narrowly ovate, slightly depressed, with a pair of apical central bristles on first and second visible tergites, and discs on second and third, the fifth sternite projecting downward keel-like, but more rounded in profile than in the two preceding species.

Female. I am associating with this variety a number of specimens taken at the same time and place which differ markedly from the male in having the legs except the tarsi fulvous to tawny yellow, the second antennal segment brownish yellow, the frontal orbits and face brownish yellow dusted, and the pleura and some part of the abdominal venter of the same general colour.

Length, 5.5–7 mm.

Type, Male, allotype, and 8 paratypes, Cass, November and February (A. L. Tonnoir).

There are three other females, placed separately in the key, in which the second antennal segment is black, and which have some other distinctive characters, but I am uncertain of their varietal association.

Localities, Mt. Arthur and Waiho (A. L. Tonnoir).

***Zealandotachina varipes*, var. *fumata*, nov.**

A much darker variety than the typical one, with the wings blackened basally, the legs more extensively blackened, the squamae dark brown, and the entire frontal orbits and the parafacials to the lower edge of the eye dark velvety brown. In the other characters there is a marked resemblance, the structures being similar.

Length, 7 mm.

Holotype, Male, and one paratype, Salisbury's Opening, 4,000 ft., 16.ii.31 (E. S. Gourlay); one paratype, Otira, 7.ii.22 (A. L. Tonnoir).

***Zealandotachina varipes*, var. *fuscata*, nov.**

This variety is distinguished from all the others by the entirely black femora. The wings are even darker than in *fumata* and so also are the squamae.

Length, 5–6 mm.

Holotype, and one paratype, Waiho, January, 1922 (A. L. Tonnoir). Two paratypes, Ohakune (D. Miller).

***Zealandotachina varipes*, var. *fuscata*, nov.**

This is a markedly paler insect, with the black markings on the femora much more reduced, their extent on the posterior surface never attaining the lower edge, and the mid and hind pairs being frequently without marks.

I figure the dorsal aspect of the left side of the male hypopygium to show the striking distinctions from that of *subtilis*, the superior forceps in particular being very different, consisting of a pair of closely adherent slender processes (Fig. 63).

Length, 7.5–9 mm.

Holotype, Male, Mt. Grey, N. Canterbury, 30.ix.28 (E. S. Gourlay). Paratypes, Mt. Ida, 20.ii.22; Otira, 8.ii.22 (A. L. Tonnoir); Dun Mt., 30.x.21 (A. Philpott); and two without locality labels.

***Zealandotachina varipes*, var. *strigipes*, nov.**

Quite similar to *strigipes* in general characters, but with denser grey dust, that on the face and lower parafacials yellowish, the mesonotum when seen from in front with the vittae merely grey, and the legs with the dark femoral stripe confined to the apical halves of the fore pair.

I should have been inclined, without an examination of the hypopygium, to consider this merely a rather aberrant example of the preceding variety but for the much wider frons, which is about 1.5.

times as wide at its narrowest point than the third antennal segment and has the orbits stronger bristled, with one bristle at the upper extremity of the series outwardly curved. The fifth abdominal sternite has the processes in profile even more prominent, and shining black.

Length, 7 mm.

Holotype, Aniseed Valley, 1-4.xii.23 (A. L. Tonnoir).

***Zealandotachina varipes*, var. *lata*, nov.**

A black species, but slightly shiny, with dense pale grey dust on the head, thorax and abdomen, the mesonotum with the usual four black vittae, the submedian pair narrow, the sublateral pair much wider, neither complete, the bases of the abdominal tergites densely pale grey dusted, becoming brownish black at apices. Antennae entirely black, palpi yellow, slightly darkened at apices. Legs black, grey dusted, all trochanters, extreme bases of mid and hind femora, and the entire tibiae tawny yellow. Wings hyaline. Squamae slightly yellowish brown.

Head a little more protuberant at bases of antennae and epistome than in the next preceding species, the frons at vertex in the male one-fourth of the head width, the orbits at middle slightly narrower than the interfrontalia, each with a series of quite strong inner marginal incurved bristles that diverge below, the lowermost about opposite level of apex of second antennal segment and below it some very fine hairs, the uppermost strong and erect, with tip incurved, and with two outer bristles opposite the ocelli that are outwardly curved, the upper one shorter; ocellars well developed, outer verticals about half as long as the stronger inner pair. Eyes with distinct hairs. Third antennal segment about 1.5 as long as second, and nearly twice as wide as narrowest part of the parafacial. Genal hairs and bristles all black, the height of gena at middle about half the length of antenna; palpi longer than the latter, slightly dilated at apices.

Thorax bristled as in *varipes*, the scutellum with six well developed marginal bristles.

Legs normal, the hind femora with much shorter and finer bristles at apices of the posteroventral surface than in *varipes*.

Abdomen narrowly ovate, with the same bristles as in *varipes*, the fifth sternite not as much exposed in profile, the inner edges of the processes narrowly keeled when pressed together.

Length, 6 mm.

Holotype, Waiho, 25.i.22 (A. L. Tonnoir). Abdomen broken off and gummed to a card below the specimen, and some of the legs missing.

***Zealandotachina quadriseta*, n.sp.**

This species is extremely like *setigera*, but it differs from it and all the other species now before me in having but four well-developed scutellar bristles in both sexes, the usual basal pair being absent. Usually when the number of scutellars is reduced in the New Zealand members of this family except in *Trypharina*, it is the

apical pair and not the basal one that is minute or lacking. In most respects there is a very striking resemblance in the male to *setigera*, but the frons is a little narrower and lacks the outer divergent bristles near the upper extremity of each orbit. The palpi are also in the main dark brown to fuscous. In the only female available the palpi are much paler, almost as in the male of *setigera*, and the frons is normal for this sex. The fore tarsi of the female are as in *varipes*. In both species the bristle on the underside of the costa at apex of the subcostal vein is longer than the inner cross vein.

Length, 6-7 mm.

Holotype, Male, and allotype, Kumara (J. W. Campbell). Paratype, Male, Cass, 28.xi.24 (A. L. Tonnoir).

It might be well to note here that there are no backward extended paired processes to the superior hypopygial processes such as characterize *tenuis* and its allies.

***Zealandotachina infuscata*, n.sp.**

I distinguish this species on the basis of the female only. It is a very small insect, with less evident grey dust on the thorax and abdomen than usual in the genus and only the tibiae partly brownish yellow. The fore tarsi are much dilated (Fig. 64), and the abdomen has distinct pairs of bristles on the apex in centre of the first three visible tergites and a pair of discals on the second and third. The squamae are yellowish white, palpi fuscous, and in general the species is very similar to *varipes* in the chaetotaxy.

Length, 4 mm.

Holotype, Ruapehu, 7.i.22 (Fenwick).

***Zealandotachina quadrivittata*, n.sp.**

A black species, with quite dense grey dust on the thorax and abdomen, the former with the usual four dark vittae, the abdomen changeably checkered with grey and black. Antennae entirely black, palpi fuscous, yellowish at bases in female. The legs are tawny yellow with black tarsi and a dark dorsal stripe on the fore femora.

Frons of male at vertex about as wide as third antennal segment and wider than narrowest part of the parafacial, with moderately strongly inner marginal incurved bristles on entire extent and one upper outwardly curved bristle. Third antennal segment about 1.5 times as long as second, the entire antenna little more than as long as the height of gena. Frons of female at vertex about one-fourth of the head width, much widened to anterior margin, with the usual bristles of that sex.

Abdomen narrowly ovate, with four bristles in centre of apex of first visible tergite, discals on second and third. Fifth sternite with the processes large, longer than wide, rounded at apices, with some moderately long bristles and hairs. Hypopygium with a pair of slender shining black backwardly directed processes that are longer than the processes of the fifth sternite and bristly haired, longer so apically.

Female. Fore tarsi as in *varipes*.

Length, 6-7.5 mm.

Holotype, Male, Ruapehu, 7.i.22 (Fenwick). Allotype, Queens-town (D. Miller). Paratype, Wanganui, 5.i.22 (J. G. Myers).

A female which I place doubtfully here has the palpi much paler than in the other specimens and the frons over one-fourth of the head width at vertex, but it is in other respects so similar that I prefer to consider it as *quadrivittata*.

Locality, Salisbury's Opening, 4,000 ft., 15.ii.31 (E. S. Gourlay).

***Zealandotachina lamellata*, n.sp.**

A smaller species than *quadrivittata*, with the same general colour markings, though the base of the third antennal segment is narrowly red, and in one specimen there is more fuscous colour on the dorsal surface of the fore femora and both the mid and hind pairs are slightly infuscated apically.

Structurally it is distinguished by the wider frons of the male, which at the vertex is one-fifth or more of the head width and has one or two outwardly curved bristles on each orbit near the upper extremity. The first visible abdominal tergite has but two apical central bristles, and the hypopygial pair of backwardly directed processes are rather shorter and less bristly haired.

Length, 6 mm.

Holotype and one paratype, Mt. Grey, N. Canterbury, 30.ix.28 (E. S. Gourlay).

***Zealandotachina tenuis*, n.sp.**

This species differs from all others in the genus by the greater downward extension of the fine hairs on the parafacials, these extending to, or below, the middle. The parafacial is also wider than the third antennal segment and is comparatively less narrowed below than in *varipes* and its closest relatives. The general colour is much as in *quadrivittata*.

Frons of the male at vertex about twice as wide as third antennal segment and wider than narrowest part of the parafacial, with a series of inner marginal incurved bristles, and the outer bristling of the upper part quite variable, but usually at least one outwardly curved bristle present. Antennae black, apex of second segment usually brownish yellow. Palpi yellow. Gena as high as antennal length, black haired and bristled.

Thorax bristled as in *subtilis*, usually four bristles in a diagonal series on the presutural lateral area. Scutellars six.

Legs tawny yellow, with a black stripe on dorsum of fore and usually mid femora. Fore tarsi of the female with the basal segment dilated from base to apex, second segment as wide as apex of third, third narrower than second, fourth and fifth not noticeably widened.

Abdomen of male more broadly ovate than in *varipes*, with a pair of long apical central bristles on first visible tergite and at least one pair of discals on second and third, the apex as in Figure 65, the backwardly directed pair of processes not lanceolate, more uniformly slender than in *lamellata* and with much longer hairs

(Fig. 66). The female has a pair of strong apical central bristles on first and second visible tergites and discals on second and third.

Length, 8–10 mm.

Holotype, Male, Mt. Arthur, 4,500 ft., 21.xii.21 (A. L. Tonnoir). Allotype, Ruapehu, 7.i.22 (Fenwick). Paratypes: Salisbury's Opening, 3,600 ft., 6.i.30 (E. S. Gourlay); Ruapehu, 7.i.22 (Fenwick); Flagstaff, Dunedin, 10.xii.21; Otago (D. Miller).

***Zealandotachina latifrons*, n.sp.**

A small species of the same general appearance and colour as *varipes*, var. *lata*, the legs similarly coloured, and the face yellow dusted. The abdomen is also yellowish below basally. The frons, however, is one-fourth of the head width at vertex and much widened in front, while each orbit has two upper outer outwardly directed bristles and in front of these, near middle of orbit, one proclinate bristle, much as in typical females of the genus. The abdomen has the pair of apical central bristles on the first visible tergite and the pair of discals on the second reduced to mere short bristly hairs, which is never the case in any variety of *varipes* seen by me. The first posterior cell of the wing is short petiolate, but this character is not of much value in this genus, there being much variation in this part of the venation.

Length, 4.5 mm.

Holotype, no data (Coll. D. Miller).

Subgenus CALOSIA, novum.

I am erecting for a single female specimen this subgenus on the basis of the following characters distinguishing it from typical *Zealandotachina*: Parafacials almost as in *Z. tenuis*, with some hairs descending to middle, arista inserted about one-third from base of third antennal segment, thickened to well beyond the middle of third segment, fore tarsi slightly and uniformly thickened from base to apex.

***Zealandotachina (Calosia) binigra*, n.sp.**

A very pretty small deep black species, with the frons sooty or velvety black except on minute shining dots at bases of the bristles; the parafacials except at upper and lower extremities, the lower half of back of head, and the raised part of the genae, silvery white dusted; antennae and palpi black. Thorax glossy black, with the four mesonotal vittae sooty or velvety black, interrupted at suture and not continued to hind margin, the posterior half of the mesopleura and upper part of the sternopleura silvery white dusted. Abdomen glossy black, with silvery white dust on bases of second to fourth tergites inclusive, the dust appearing interrupted when seen from different angles on second and third, and widely interrupted on middle on fourth tergite. Legs black. Wings brownish hyaline. Squamae white. Knobs of halteres pale yellow.

Frons at vertex nearly one-third of the head width, widened in front, each orbit with three outer bristles, the anterior one proclinate, the other two more outwardly curved. Antennae about as

long as face, third segment about 1.5 times as long as second, wider at apex than width of parafacial. Eyes sparsely long haired. Gena at centre about as high as length of third antennal segment.

Thorax with the usual bristling, the scutellum more raised on disc than usual, with six marginal bristles.

Legs rather stout, fore tibia with a closely set series of short bristles on anterodorsal surface from base to apex, 9-10 in number, that gradually increase in length apically.

Abdomen broadly ovate, segments subequal, first to third tergites with a pair of apical central bristles, second and third with a pair of discals.

Length, 4.5 mm.

Holotype, Blackball, March 20.

The discovery of the male of this species will determine if I am justified in considering it as entitled to subgeneric segregation.

It is probable that many more species of this genus will be found in the country, and a careful study of the hypopygia of the males coupled with information on the habits of the larvae is required to throw light on their classification. This I am unable to undertake, and it will fall to some New Zealand worker to check up my findings as presented above, which I hardly dare to hope will be sustained in their entirety.

Genus MEDINELLA, novum.

This genus is readily distinguished from its near relatives in New Zealand by the lack of distinct hairs on the eyes in both sexes and the presence near the base of the posteroventral surface of the mid femur of a single exceptionally strong, downwardly directed bristle. In the bristling of the thorax there is some variation in the different species of the genus, the apical pair of scutellar bristles being sometimes about half as long as the next pair and sometimes practically absent. In one case only are there distinct discal scutellar bristles present, and there are four of the specimens before me in which the posterior presutural intra-alar bristle is present though rather weak. This last character is very exceptional in the New Zealand members of the family, but without a better representation of local material I do not care to magnify its importance in the present case.

Genotype, *Medinella unispinosa*, n.sp.

KEY TO THE SPECIES.

- | | | | | | | |
|--|----|----|----|----|----|---|
| 1. Males. | .. | .. | .. | .. | .. | 2 |
| Females. | .. | .. | .. | .. | .. | 5 |
| 2. Hypopygium with a pair of long slender rather densely black haired processes that extend backward to posterior margin of the sixth visible tergite (Fig. 68); fifth sternite large, the processes broad, their inner edges depressed, the apical part forming a sharp glossy ridge, and at base of each a small thumb-like inwardly directed process; apical pair of scutellar bristles about half as long as preapical pair. | | | | | | |
| | | | | | | 3 |

- Hypopygium without a pair of long slender processes as described above, or if such are present they are not densely haired; fifth sternite with the processes much narrower apically, ending in a rather slender downwardly curved point; apical pair of scutellar bristles minute. 4
3. Legs black, tibiae brownish yellow; abdomen glossy black, with white slightly checkered dust that does not extend to apices of the tergites. *nigrifemorata*, n.sp.
 Legs fulvous yellow, only the tarsi black; abdomen not as glossy, with brownish grey to brown dust that is slightly checkered and continued to apices of the tergites. *flavofemorata*, n.sp.
4. Frontal orbits and parafacials densely silvery white dusted; frons seen from the side and slightly in front entirely white dusted. *albifrons*, n.sp.
 Frontal orbits and parafacials brown dusted, the latter yellowish grey below; frons seen from the side and slightly in front brown dusted. *varipes*, n.sp.
5. Apical pair of scutellar bristles about half as long as the preapical pair. *flavofemorata*, n.sp.
 Apical pair of scutellar bristles reduced to short hairs that are not nearly half as long as the preapical bristles. *varipes*, n.sp.

***Medinella nigrifemorata*, n.sp.**

Male. A black species, with the tibiae dirty yellow, darker at bases, the squamae white, halteres yellow, and the wings slightly brownish hyaline. The frontal orbits and parafacials are silvery white dusted, the genae almost as densely dusted, becoming less so behind, the antennae black, and the palpi concolorous. The thorax is dark grey dusted, with the usual four dark vittae on the mesonotum poorly defined, and the abdomen is almost glossy, with greyish white dust at the bases of the second to fourth visible tergites that is slightly checkered and does not extend distinctly to apices.

Head in profile as Figure 67. Frons at vertex not over one-sixth of the head width, the orbits narrower at narrowest point than the interfrontalia at same point, with a series of incurved inner marginal bristles of moderate length and one outwardly curved upper bristle; all four verticals distinct though not strong, the ocellars not well developed; lower frontal bristle opposite base of antenna; parafacials bare. Eyes almost entirely devoid of hairs.

Thorax with the dorsocentrals 3 + 3, 2 pairs of presutural acrostichals, the prealar long, the posterior presutural intra-alar lacking, sternopleurals 2 + 1, scutellum with six marginal bristles, the apical pair longer than the basal pair, and no discals present.

Legs rather stout, the mid femur with the single posteroventral bristle near base about as long as diameter of the femur; hind tibia with one bristle in the anterodorsal and another in the posterodorsal series beyond middle much longer than the others.

Both costal thorns fully as long as the inner cross vein; section of costa between apices of subcostal and first veins not half as long as the preceding one; outer cross vein nearly three times as far from inner cross vein as from bend of fourth, the fourth almost straight and oblique beyond the bend, ending a little before wing tip, the first posterior cell open; third vein with a few setulae at extreme base above and below.

Abdomen subcylindrical, slightly tapered to apex; first visible tergite with a pair of long apical central bristles, second with a similar pair of discals and a pair of central apicals, third with a pair of discals and an almost complete apical series, fourth with three or four irregular series of long bristles, fifth concealed, sixth moderately bristly, seventh weakly haired, the long pair of finely haired slender hypopygial processes extending proximad of apex of sixth tergite; fifth sternite large, processes broad at apices, depressed along inner edges and raised into a thin plate at apices, below which is glossy black, the outer exposed parts grey dusted and with bristly hairs which become longer at apices, each process with a short inwardly directed projection at base on inner edge.

Lower squamae widened behind, broadly rounded at apex.

Length, 6 mm.

Holotype, Mt. Arthur, 5,000 ft., 23.xii.21 (A. L. Tonnoir).

An aberrant specimen which may belong here has two strong bristles on the basal half of the posteroventral surface of the mid femur, and no apical bristles on the scutellum. It may really belong to a distinct species, but the other characters are in such close agreement that I leave the single male available tentatively as *nigrifemorata*.

Locality, Arthur's P., 9.xii.20 (E. H. A.).

***Medinella flavofemorata*, n.sp.**

Very similar to the preceding species, differing essentially in the yellow legs, of which only the tarsi are black, the more brownish than grey dust of the thorax and abdomen, more especially of the latter, and its greater extension over the tergites. The palpi are also paler, yellowish at bases.

In structure there is very little distinction, though the first posterior cell of the wing is narrower at apex, the fifth abdominal sternite has more bristly armature, and there are more and stronger hairs on the fourth sternite (Fig. 68).

Length, 6 mm.

Holotype, Male, Cass, 28.xi.24 (A. L. Tonnoir). Paratype, No. 831, Flagstaff Hill, Dunedin, 29.xii.12 (D. Miller); Astrolabe, Nelson, 1.i.12 (D. Miller); Nelson, Oct. 17 (A. L. Tonnoir), and one from Dr. Miller's collection with No. 278b.

One female which I place with this species differs in having the frons at the vertex about one-fourth of the head width, each orbit with two outwardly curved upper and one proclinate lower bristles on the upper half laterad of the inner marginal bristles, the abdomen rather broadly ovate, with a pair of central apical bristles on the first and second visible tergites, and a pair of discals on second and third. The fore tarsi are very slightly dilated beyond the basal segment.

Locality, Astrolabe, Nelson, 1.i.12 (D. Miller).

***Medinella albifrons*, n.sp.**

Male. A small black species, with the head densely white dusted, the frontal orbits and parafacials more or less silvery, the antennae

black, palpi black with a yellowish tinge at bases, thorax with four black dorsal vittae, the sublateral pair interrupted in front and at suture, the scutellum brown at base, abdomen with dense grey dusting like the thorax, with first to third visible tergites each black or dark brown at apices, more broadly so centrally, the fourth less noticeably dark at apex; legs black, grey dusted, mid and hind femora at bases and all of the tibiae brownish yellow. Wings greyish hyaline, veins fuscous. Calyptrae white.

Head in profile as in *nigrifemorata*. Frons at narrowest point about one-sixth of the head width, the orbits about as wide as, or wider than, the interfrontalia, all densely white or greyish white dusted, the bristling rather strong, similar to that of *nigrifemorata*, the ocellars about as long as the upper orbitals. Genal bristling strong below.

Legs stout, bristled as in *nigrifemorata*.

Costal thorn long, venation much as in *nigrifemorata*, but the outer cross vein is not over twice as far from inner as it is from the preapical angle of fourth vein; first posterior cell open, ending a little in front of wing tip.

Abdomen subcylindrical, tapered to apex, with the dorsal bristling strong and similar in arrangement to that of *nigrifemorata*. Fifth sternite with the processes as Figure 69, the hypopygium with a pair of slender, inconspicuous, backwardly directed processes that are slightly spatulate at apices and furnished with a few very short fine hairs.

Length, 5 mm.

Holotype, Cass, February, 1925 (A. L. Tonnoir).

A second specimen, in rather damaged condition, differs from the type in being darker coloured, with the mesonotal vittae and the dorsal dark marks on the abdomen more extensive. Both have the posterior presutural intra-alar bristle present and stronger than in the next species.

Locality, Queenstown, Otago, 22.ii.12 (D. Miller).

***Medinella varipes*, n.sp.**

Male. A much darker species than *albifrons*, with the frontal orbits and upper half or more of the parafacials brown dusted, the thoracic dorsum and abdominal tergites more diffusely marked, and the mid and hind femora and trochanters more conspicuously yellow. The structures are very similar, but the bristling is finer and the disc of the scutellum has only one or two setulose hairs besides the short hairs instead of several rather noticeable bristles. The fifth sternite is also more triangular at apices of the processes.

Female. Similar to the female of *flavofemorata*, differing as noted in key.

Length, 5 mm.

Holotype, Male, Cass, February, 1925 (A. L. Tonnoir). Allotype, and 1 paratype, Greenstone R., 1.i.21 (Fenwick). Paratype, Male, damaged, Kawari Is. (D. Miller).

Genus *GRAPHOTACHINA*, novum.

This genus belongs to that group in which there are no hairs on the parafacials below level of the base of antennae, the face is shallowly bifoveolate, the parafacial in profile is about as wide as the third antennal segment, the eyes are distinctly haired, the frons of the male is about one-third of the head width, and the second segment of the arista is about twice as long as thick. The scutellum has usually six marginal bristles and the postsutural dorsocentrals are in three or four pairs, generally the latter. The abdomen is moderately broad ovate, with apical bristles on all visible tergites, and discals on all but the first. The distinguishing character lies in the wing venation, the fourth vein beyond the preapical angle being very much incurved into the cell just above the angle, and the outer cross vein is much bent (Fig. 70).

Genotype, the following new species.

Graphotachina sinuata, n.sp.

Male, Female. Head reddish brown, raised part of the genae, the occiput, and frontal orbits black or fuscous, the interfrontalia dull black, the orbits, parafacials and genae silvery white dusted, the intensity of the dusting varying according to the angle from which it is seen; antennae black, basal two segments brown, base of third narrowly red; palpi fuscous, reddish basally. Frons of male at vertex over one-fourth of the head width, widened anteriorly, the orbits linear above, widened in front, with an inner marginal series of strong incurved bristles and two or three outer bristles on upper half that are sometimes almost proclinate; frons of the female a little wider than that of the male, with two or three outer proclinate bristles on upper half and a series of inner marginal incurved bristles as in the male. Profile as Figure 71.

Thorax black, with changeable silvery white dusting, the mesonotum with four black vittae, humeral angles and scutellum largely red. Dorsocentrals usually 3 + 4; three pairs of acrostichals in front, the posterior pair rather close to the suture.

Legs in male black, the tibiae brownish yellow; in female the femora are also largely brownish yellow. Bristling as usual; fore tarsi of female very little wider than the mid pair.

Wings hyaline, veins black, with a fuscous cloud at base of costa to just beyond humeral cross vein, another beginning at apices of basal cells, most evident on costa and along the veins, fading out about middle, but the cross veins and other veins more or less dark margined. Apical venation as Figure 70. Costal thorn not developed; third vein haired at base above and below.

Abdomen coloured as thorax, in the male with some red on sides of most of the tergites, on base of fourth, and the hypopygium and fifth sternite, the bases of all tergites rather broadly silvery white dusted, the intensity changing with the angle from which the surface is viewed. Processes of fifth sternite broad, rounded at apices, without exceptional armature; hypopygium with two rather short slender finely-haired backwardly-directed processes.

Squamae white, margins yellowish. Halteres brownish yellow.

Length, 8–10 mm.

Holotype, Male, and one Male paratype, Mt. Arthur, 5,000 ft., 23.xii.21 (A. L. Tonnoir). Allotype, without data, in my collection.

Genus *CAMPYLIA*, novum.

This genus might possibly be accorded merely subgeneric rank within *Zealandotachina*, but definite allocation must await further investigation of the relationships of the whole family in New Zealand. The peculiar third antennal segment, which is somewhat like that of some species of *Heteria*, is quite distinct, at least in the male, from that of any species of the closely related genera, the concavity of the upper edge being in many examples even more marked than shown in Figure 72, and the elongated second aristal segment, with the noticeable elbowing of the third and second at their junction is also noteworthy.

Genotype, *Calcager temerarum*, Hutton.

Campylia temerarum (Hutton).

The type-specimen of this species, which I have before me, is a female in good condition. In this sex the third antennal segment is not as wide as in the male, and second segment of the arista is not as much elongated. The legs except the tarsi are entirely fulvous yellow, the fore tarsi have the basal segment undilated and the second to fifth quite distinctly though not greatly dilated. The first posterior cell of the wing is closed and short petiolate, and the outer cross vein is over twice as far from the inner as from the bend of the fourth vein. The palpi are long, slightly dilated at apices, fulvous yellow, with their tips slightly infuscated.

It is rather unfortunate that the type-specimen is a female, as it is thus at present impossible to definitely associate it with one of the various types of the other sex available to me. I have made an attempt to determine species on the basis of both sexes in this collection, but accurate associations and specific limits must await more detailed work on more material than I now have and it would be preferable that such be supported by field work on the life-histories of the forms involved. My deductions as to possible species are presented below, with a key to the diagnostic characters.

KEY TO THE SPECIES.

- | | |
|--|---------------------------|
| 1. Females. | 2 |
| Males. | 3 |
| 2. First visible abdominal tergite with a pair of well-developed apical central bristles. | <i>temerarum</i> (Hutton) |
| First visible abdominal tergite without a pair of apical central bristles. | sp.? |
| 3. Frontal orbits with no outwardly curved bristles or at most one short one near the upper extremity. | <i>nudarum</i> , n.sp. |
| Frontal orbits each with from one to three strong outwardly curved outer bristles on the upper half or less. | 4 |
| 4. The anterior outer orbital bristle proclinate. | <i>temerarum</i> (Hutton) |
| The anterior outer orbital bristle divergent. | sp.? |

I have arbitrarily determined as the male of *temerarum* some specimens in which there is an anterior proclinate orbital bristle (Fig. 72) and the apex of the inferior forceps of the hypopygium is as Figure 73.

Length, 6-7.5 mm.

Type locality, Christchurch. Other localities, Cass, Weraroa, Mt. Cargill, Nelson, and Aniseed Valley.

Campylia nudarum, n.sp.

This species differs from *temerarum* as noted in the above synopsis and in the much wider apical half of the inferior hypopygial forceps of the male (Fig. 74a). It is to be noted that there is considerable variation in the colour of the legs, in most specimens the femora being almost entirely black, densely grey dusted, but in others they are blackened only apically or even entirely tawny yellow as in the females. I do not attach much importance to the character, but leave the matter of its significance, if any, to future students of the group. The ventral view of the fifth abdominal sternite in both species is as Figure 74b.

Length, 6-7 mm.

Holotype, Male, Nihotapu, 23.ii.23 (A. L. Tonnoir). Paratype males, Reu Lake, Ben Lomond, Lake Brunner, Weraroa, Dunedin.

Campylia sp.

This species, which is represented by two males, has the armature of the frontal orbits intermediate between those of the two preceding forms, there being one strong outwardly directed upper outer bristle on each orbit. It is entirely probable that this is a good species, but I leave it tentatively as above, and hope that it may be possible for someone to definitely determine its status.

Length, 7 mm.

Localities, Cass, February, 1925 (A. L. Tonnoir); Mt. Arthur, 23.ii.21 (A. Philpott).

Genus NEOTACHINA, novum.

This genus has much in common with *Platytachina*, but is readily distinguished from it by the distinctly bifoveolate face in both the subgenera. In one subgenus the number of scutellars is invariably 6, while in the other there is some variation, either 6 or 8 being present. In the latter subgenus the fifth visible tergite of the abdomen is broadly exposed, being in both the species now before me about as long as the sixth and separated from the latter by a depression rather than a suture. I prefer to associate this subgenus with *Neotachina* rather than with *Platytachina* because of the distinctly bifoveolate face. For other characters of the genus and subgenera see the key to the species and descriptions given below.

Genotype, *Neotachina obtusa*, n.sp.

KEY TO THE SPECIES.

MALES.

1. Fifth abdominal tergite either entirely concealed or reduced to a very narrow transverse strip that is not over one-sixth as long in centre as the sixth tergites. (Subgenus *Neotachina*) .. 2
 Fifth abdominal tergite broadly exposed, about as long as the sixth in centre. (Subgenus *Tachineo*) .. 4
2. Parafacials haired to lower level of eyes close to anterior edge of latter; frons at its narrowest point in front of the ocelli not nearly as wide as third antennal segment; tarsal claws rather blunt at apices. .. *obtusa*, n.sp.
 Parafacials haired to or slightly below middle; frons at its narrowest point in front of the ocelli usually as wide as, or wider than, the third antennal segment; tarsal claws acutely pointed at apices. .. 3
3. Third antennal segment fully twice as long as its greatest width and as wide as narrowest part of frons. .. *angusticornis*, n.sp.
 Third antennal segment not twice as long as wide and distinctly narrower than narrowest part of frons. .. *laticornis*, n.sp.
4. Abdomen metallic dark blue, nowhere red nor distinctly dusted; antennae with the third segment predominantly orange-yellow, stained with brown basally; parafacial haired to, or almost to, lower level of eye, the hairs coarse; dust on centre of parafacial golden-yellow; most of the wing veins suffused with pale brown. .. *clarki* (Hutton)
 Abdomen black, with a slight bronzy tinge, broadly red on sides basally, and with distinct, though not dense, grey dust; third antennal segment predominantly black; parafacial with fine hairs on upper half, the dust centrally brownish yellow; none of the wing veins suffused with brown. .. *depressa*, n.sp.

Subgenus NEOTACHINA, s. str.

***Neotachina (Neotachina) obtusa*, n.sp.**

A robust species of predominantly black colour, with distinct grey dust on head, thorax and abdomen, the thorax distinctly quadrivittate with black, the sides of the abdomen partly reddish yellow on basal half, the dust checkered on dorsum. Legs black, the hind tibiae showing only slightly brownish. Wings hyaline, the alulae or anal lobes white. Squamae yellowish white, with white fringe. Halteres brown.

Head fuscous, the ground colour in facial foveae and vibrissal region red. Antennae black, third segment narrowly red at base on inner side; palpi brownish yellow. Frons black, lunule reddish brown, orbits, parafacials, and raised part of genae, pale grey dusted. Width of frons at narrowest point not half as great as that of third antennal segment, the hairs ceasing a short distance from anterior ocellus; ocellar bristles and inner verticals well developed, the latter cruciate in type; parafacial in profile over twice as wide as third antennal segment and about half as wide as eye, the latter distinctly haired, the hairs on parafacials descending to lower level of eye; antennae hardly longer than width of parafacial and much shorter than height of gena at centre; second segment of the arista about as long as thick, third tapered from base to beyond middle;

gena at centre about half as high as eye; palpi longer than antennae, apical section of the proboscis slender, nearly as long as eye height; face rather markedly bifoveolate, the central carina visible in profile beyond edge of the parafacial; antennae inserted below middle of eye in profile.

Scutellum entirely black, with changeable grey dust, and six marginal bristles, some of the hairs on apical half of disc very long. Presutural lateral area with two bristles; posterior notopleural bristle duplicated as in most males of the subgenus; sternopleurals 2 + 1.

Legs black, the tarsal claws blunt-tipped.

Wings with the usual venation, the first posterior cell open, the inner cross vein distinctly proximad of level of apex of first vein, second section of costa as long as fourth and half as long as first; some fine hairs at base of third vein both above and below; costal thorn undeveloped.

Abdomen broadly ovate, slightly flattened on dorsum, the first visible tergite with a pair of apical central bristles, second with a pair of discals and four or more in centre of apex, third with four or more discals and a complete apical series; hypopygium slightly bulbous, the basal segment with short fine hairs; fifth sternite with the processes slightly emarginate (Fig. 75), the other sternites rather numerously bristled.

Length, 13 mm.

Holotype, Male, Mt. Arthur, January 24 (A. Philpott).

In addition to the distinguishing characters listed in the key the entirely black legs and yellowish white squamae serve to separate this species from any of the others in the genus now before me.

I have a female before me which I take to be that of *obtusa*. It is the only one in which the legs are entirely black and the squamae are yellowish white. The scutellum is also entirely black, and though there are only a few scattered hairs on the lower half of the parafacials close to the eyes, I have no doubt that it belongs to this species. The claws are pointed, and the abdomen is not red on the sides.

Length, 14 mm.

Locality, Mt. Cook, 4.xi.29 (A. Philpott).

This may be considered as the allotype.

***Neotachina (Neotachina) angusticornis*, n.sp.**

Very similar to *obtusa* in general appearance, differing markedly in having the tibiae brownish yellow, the scutellum usually showing brown or red on the apical half, the parafacials haired on only their upper halves, and the tarsal claws acutely pointed. The squamae are also brown.

Frons at narrowest point not half as wide as narrowest part of the parafacial, the orbits and upper part of the parafacials with brassy yellow dust. Antennae rather variable in colour, the third segment usually red on at least its base, its width not less than equal to that of narrowest part of frons. Parafacials haired to middle, the hairs extending fully across, not prolonged downwards close to eye.

Scutellum usually reddish brown on apical half, the thorax similar in other characters to that of *obtusa*.

Legs black, all the tibiae brownish yellow.

Abdomen black, with checkered grey dust, the sides quite broadly brownish yellow basally. First visible tergite with at most a pair of very inconspicuous apical central bristles and the discals on second also rather short and fine.

Squamae and their fringes brown.

Length, 11–13 mm.

Holotype, Male, Flora Camp, 15.ii.31, 3,000 ft. (E. S. Gourlay). Paratypes, Ohakune (Harris); Otira, 5.i.23 (J. G. Myers).

I have several females before me that belong to either this or the next species. These differ from the female of *obtusa* in having the tibiae brownish yellow, the apex of the scutellum similarly coloured, and the hairs on the parafacials not descending to lowest level of the eyes. In neither species are the fore tarsi at all widened.

Length, 12–13.5 mm.

Localities, Mt. Arthur, Dun Mt., and Salisbury's Opening.

Field association of the sexes is desirable to establish specific identities of the two species.

***Neotachina (Neotachina) laticornis*, n.sp.**

This species is very similar to *angusticornis*, differing mainly in having the antennae larger, with the third segment wider, and the frons very distinctly wider than the latter.

It is entirely possible that the two are merely variants of a single species, but the specimens separate on the characters given, and tentatively I give them distinct specific rank.

Length, 12–13 mm.

Holotype, Male, Flora Camp, 16.ii.31, 3,000 ft. (E. S. Gourlay). Paratypes, Mt. Arthur, 3 males.

Subgenus TACHINEO novum.

For diagnosis see specific description.

Genotype, *Tachina clarki* Hutton.

***Neotachina (Tachineo) clarki* (Hutton).**

This species was originally described as *Tachina clarki*, but there is no species of that genus, nor in fact closely related thereto, found so far in New Zealand. The type specimen is a male that differs from any in the genus in being mainly of a metallic dark blue colour, the abdomen being entirely of that shade though the thorax is almost black. The bright orange-yellow basal scale of the wings reminds one of the genus *Occisor*, but in other characters this species is quite different, especially in the much narrower frons of the male and the more broadly ovate abdomen in the same sex.

The specimen is slightly stained, but the antennae are evidently paler than in any of the other species, the third segment being mainly orange-yellow, and the parafacials have the dust dense and golden-yellow centrally. The frons at its narrowest point is wider

than the third antennal segment and narrower than the parafacial at its narrowest part; the latter has coarse hairs that descend to lower level of the eye, the eyes are haired, and the third segment of the arista is swollen on its basal third. Gena fully half as high as eye.

Thorax with the bristling much as in *obtusa*, some long hairs adjacent to the posterior notopleural bristle, and a number of long marginal and apical discal hairs on the scutellum.

The legs are largely broken off in the type, but those that remain are black with reddish yellow tibiae.

The wings are brownish hyaline, with slight but evident brown suffusion along most of the veins.

The abdomen has no distinct dust on the dorsum and is abnormal in form, the apex having apparently been damaged, as the third visible tergite is present on only the left side, being eliminated on the right, or fused with the fourth there. The apex of the first tergite and disc of second lack bristles.

Upper squama greyish white, lower one and fringe brown. Halteres yellow.

Length, 12 mm.

Type locality, Christchurch. I have seen only the type specimen.

Neotachina (Tachineo) depressa, n.sp.

A shiny black species, with the sides of the abdomen reddish brown basally, the third antennal segment fuscous, yellowish at base, the dorsum of the abdomen quite evenly and lightly grey dusted, the dust not checkered, and the squamae pale yellowish brown with paler fringes.

Head much as in *clarki*, but the parafacials are narrower, dark velvety brown on upper third, yellowish dusted below, more nearly grey dusted close to the eyes, and the aristae are longer, being distinctly longer than the antennae. The hairs on the parafacials disappear at middle, and the frons is a little narrower.

Thorax black, with dark grey dust and four rather indistinct black dorsal vittae, the bristling as in *clarki*, the bristles on the presutural lateral area 3, the posterior notopleural not duplicated, and numerous long bristly hairs on the sides and disc of the scutellum besides the six marginal bristles.

Legs black, tibiae reddish yellow.

Wings greyish hyaline, veins not at all margined with brown.

Abdomen more flattened on dorsum than usual, first and second tergites without bristles.

Length, 14 mm.

Holotype, Male, Mt. Arthur, 1.xii.25, 4,500 ft. (A. Philpott).

A PRELIMINARY KEY TO THE GENERA OF TACHINIDAE OF NEW ZEALAND.

In the following key I have included only those genera that are known to me as occurring in New Zealand. Some others have been reported, but an examination of the specimens that the records were based upon has proven that the specimens were misidentified as to genera.

1. Posterior margin of the thorax with a heavily sclerotized plate extending from below base of the abdomen to above the hind coxae, which is evenly convex (Tribe *Cylindromyini*). 2
 Posterior margin of the thorax not evenly convex nor uniformly sclerotized from below base of abdomen to above hind coxae, centrally membranous and soft, generally sunken or wrinkled. 3
2. Sternopleura with one strong bristle; eye not emarginate behind. *Huttonobesseria*, Curran
 Sternopleura with two strong bristles; eye slightly emarginate behind. *Evibrissa*, Rondani
3. Abdomen without well developed dorsal bristles (Tribe *Phasiini*). *Hyalomyia*, Robineau-Desvoidy
 Abdomen with well-developed bristles on the dorsum, at least at the apices of the third and fourth visible tergites. 4
4. Ultimate section of fifth vein usually half as long as penultimate, sometimes much longer than that; outer cross vein usually retracted posteriorly; scutellum with some erect discal bristles (Tribe *Vorini*). 5
 Ultimate section of fifth vein usually less than one-third as long as the penultimate one; outer cross vein not much retracted posteriorly; scutellum without erect discal bristles, sometimes the apical marginals curved upwards. 8
5. First wing vein strongly setulose or bristled on upper side centrally. *Calcageria*, Curran
 First wing vein bare above. 6
6. First posterior cell of the wing closed and usually with a long petiole ending close to tip of the wing. *Uclesiella*, n.gen.
 First posterior cell of the wing open, ending well before the wing tip. 7
7. Abdomen with discal bristles on second to fourth visible tergites. *Calcager*, Hutton
 Abdomen without discal bristles on second and third visible tergites. *Plagiomyia*, Curran
8. Prosternum setulose; facial ridges strongly bristled from vibrissae to above middle; parafacials bare; eyes haired. *Cerosomyia*, Hutton
 Prosternum bare; facial ridges rarely bristled on lower half. 9
9. Posterior presutural intra-alar bristle strong; ocellars undeveloped in either sex; vibrissae from one-third to one-half the distance from lower to upper margin of head in profile, with no setulae above them narrowly separated, and below each a series of evenly spaced almost equally strong bristles on sides of the narrowly separated genal edges (Fig. 76); angle of fourth vein with a continuation of vein that is not shorter than the section of vein between angle and outer cross vein. *Macrophthalma*,

Posterior presutural intra-alar bristle lacking, rarely represented by a fine setula; vibrissae very much nearer to lower level of head in profile, the bristling not as above; and the angle of fourth vein either without a spur vein or if one is present it is very much shorter.	Macquart*	
		9a
9a. Basal segment of the arista not less than three times as long as thick, and as long as the second segment, the two combined varying from half as long to as long as the third segment.	<i>Heteria</i> , Malloch	
Basal segment of the arista rarely longer than thick and if so much shorter than the second when the latter is much elongated, the two combined much shorter than the third segment unless when the second is exceptionally elongated.		10
10. Basal section of the stem vein of the wing with a fringe of setulose hairs on its posterior side above.	<i>Hexamera</i> , Brauer and Bergenstamm	
Basal section of stem vein of the wing without such setulose hairs.		11
11. Fourth wing vein incomplete, lacking beyond the point where it usually bends forward towards third.	<i>Truphia</i> , Malloch	
Fourth wing vein complete, sometimes fusing with third before its apex.		12
12. Parafacials with distinct hairs or bristles to much below level of the lowest bristles of the invading frontal series, and always to below level of the arisal insertion, frequently to lowest level of eyes, or if this character is doubtful the parafacial in profile is about as wide as eye.		13
Parafacials bare or with very few fine hairs slightly below lowest frontal bristles, never haired to mid-way from antennal insertions to lower margin of eye; parafacial at middle rarely more than half as wide as the eye.		36
13. Third antennal segment not longer than second, the latter slender, longer than usual; first posterior cell of the wing closed and with a short petiole.	<i>Engycera</i> , n.gen.	
Third antennal segment distinctly longer than second, if subequal in length, then the first posterior cell of the wing is rather widely open.		13a
13a. Second segment of the arista rarely less than five times as long as thick, frequently half as long as third segment, when doubtfully five times as long as thick the first posterior cell of the wing is closed and petiolate, with the petiole usually in direct continuation of the third vein and ending close to the wing tip; and in all cases no hairs below lower squama.		14
Second segment of the arista not, or very little, longer than thick, rarely over twice as long as its diameter; first posterior cell of the wing generally open, never with a long petiole extending to near wing tip; some microscopic hairs just below base of lower squama.		18
14. First posterior cell of the wing open; parafacials finely and rather densely long haired; gena about as high as eye.	<i>Calotachina</i> , n.gen.	
First posterior cell of the wing closed, sometimes just at the margin of wing.		15

*An introduced North American genus.

15. Ultimate section of fifth vein over one-third as long as the penultimate one; petiole of first posterior cell long, continued in line with third vein almost to the exact wing tip; third vein setulose above to or almost to inner cross vein. *Genotrichia*, n.gen.
 Ultimate section of fifth vein much less than one-third as long as penultimate. 16
16. Third wing vein setulose to, or almost to, the inner cross vein; sutures between abdominal tergites 2 and 3 and 3 and 4 fused centrally; sternopleura with three strong closely placed bristles. *Wattia*, n.gen.
 Third wing vein with but two or three bristles at base above; all abdominal sutures complete and distinct; sternopleura with at least 4 bristles. 17
17. Abdomen with a bare longitudinal strip on dorsum between the central pairs of bristles; parafacials with a single series of bristles; apical pair of scutellar bristles curved upward and forward. *Arthuria*, n.gen.
 Abdomen haired or setulose on its entire dorsal surface; parafacials with several series of bristles and long hairs; apical pair of scutellar bristles directed backward. *Microhystriicia*, n.gen.
18. First visible abdominal tergite with one or more pairs of bristles proximad of the usual apical central pair, or with a complete apical series of long bristles. 18a
 First visible abdominal tergite with at most four apical central bristles, none proximad of these, and the apical series never complete and uniform. 19
- 18a. Frons of the male over one-fourth of the head width; fore tarsi of the female not dilated, or if so then the apical series of bristles on the first visible abdominal tergite is complete. *Plethochaetigera*, n.gen.
 Frons of the male very much less at its narrowest point than one-fifth of the head width; first visible abdominal tergite without a complete apical series of strong bristles. 18b
- 18b. Scutellum with at least 8 strong marginal bristles; face not foveolate. *Platytachina*, n.gen.
 Scutellum with 6 marginal bristles. 18c
- 18c. Face not at all bifoveolate; postsutural dorsocentral bristles in 4 pairs. *Veluta*, n.gen.
 Face rather noticeably bifoveolate; postsutural dorsocentrals in 3 pairs. 32
19. Face deeply sunken, with two deep foveae in the depressed part that are separated by a slender vertical carina no part of which is visible above the edge of the parafacial in profile; parafacials about as wide as eye in profile; gena over half as high as eye, the raised haired posterior part terminating in an oblique line in front and never extending midway to the vibrissal angle; frons of male never less than one-fifth of the head width. 20
 Face not deeply sunken nor carinate as above, if so then the carina is visible beyond the parafacial in profile or parafacial at its narrowest point in profile is not half as wide as the eye at middle; gena not, or very little, over half as high as eye. 30

20. Large species, not less than 15 mm. in length, very stout, the abdomen broadly ovate and with a complete apical transverse series of long erect bristles on second and third visible tergites in both sexes and an additional one on fourth in the male, no discal bristles present, the bristles mainly black at bases and orange-yellow at apices; pleura with long fine pale hairs that are somewhat crinkly. . . *Hystericina*, Malloch
- Species generally much smaller and not as robust, with the abdomen differently bristled and the bristles black; pleura usually dark haired, the hairs stronger and straight. 21
21. No one bristle on the vibrissal angle more conspicuously outstanding than the others, the epistomal margin about the same level as lower genal margin. 22
- One bristle on the vibrissal angle much longer and stronger than any of the others; palpi longer than the entire antenna in both sexes, or if not then the proboscis exceptionally long and slender. 23
22. Palpi not longer than the third antennal segment; proclinate outer orbital bristles lacking on the male. *Avibrissina*, Malloch
- Palpi longer than entire antennae; outer proclinate orbitals present in the male. *Avibrissia*, Malloch
23. Scutellum with stiff short hairs on ventral surface to its apex. 24
- Scutellum bare at apex of ventral surface 25
24. Three bristles on the presutural lateral area of the mesonotum; no costal spine at apex of the subcostal vein. *Neoerythronychia*, Malloch
- Two bristles on the presutural area of the mesonotum; costa with a distinct bristle or spine at apex of the subcostal vein. *Erythronychia*, Brauer and Bergenstamm
25. Infrascapular hairs lacking; hypopygium of the male with a pair of slender slightly spatulate densely haired processes that usually project well beyond the apex of the abdomen. *Asetulia*, n.gen.
- Infrascapular hairs present; hypopygium of male not as above. 26
26. Apical section of the proboscis slender and distinctly longer than height of the head; second antennal segment short, flattened and densely short haired above. 27
- Apical section of the proboscis not particularly slender and not longer than height of the head; if slightly elongated the second antennal segment normal. 28
27. Palpi longer than antennae. *Xenorhynchia*, n.gen.
- Palpi not much longer than thickness of base of apical section of the proboscis. *Prosenosoma*, n.gen.
28. Parafacial at lower level of eye about as wide as eye at middle; gena below eye almost or quite as high as eye; arista thickened to beyond middle. 29
- Parafacial at lower level of eye not nearly as wide as eye; gena below eye not nearly as high as eye; arista not thickened to middle. 30
29. Vibrissae separated by about the width of the third antennal segment, the area between them with a central flat strip that is distinctly higher than wide, the facial carina sometimes slightly tumid at its lower extremity; third antennal segment rarely over twice as long as wide, sometimes in male quite wide, the sexes showing considerable difference in the comparative width and length of the segment. *Peremptor*, Hutton

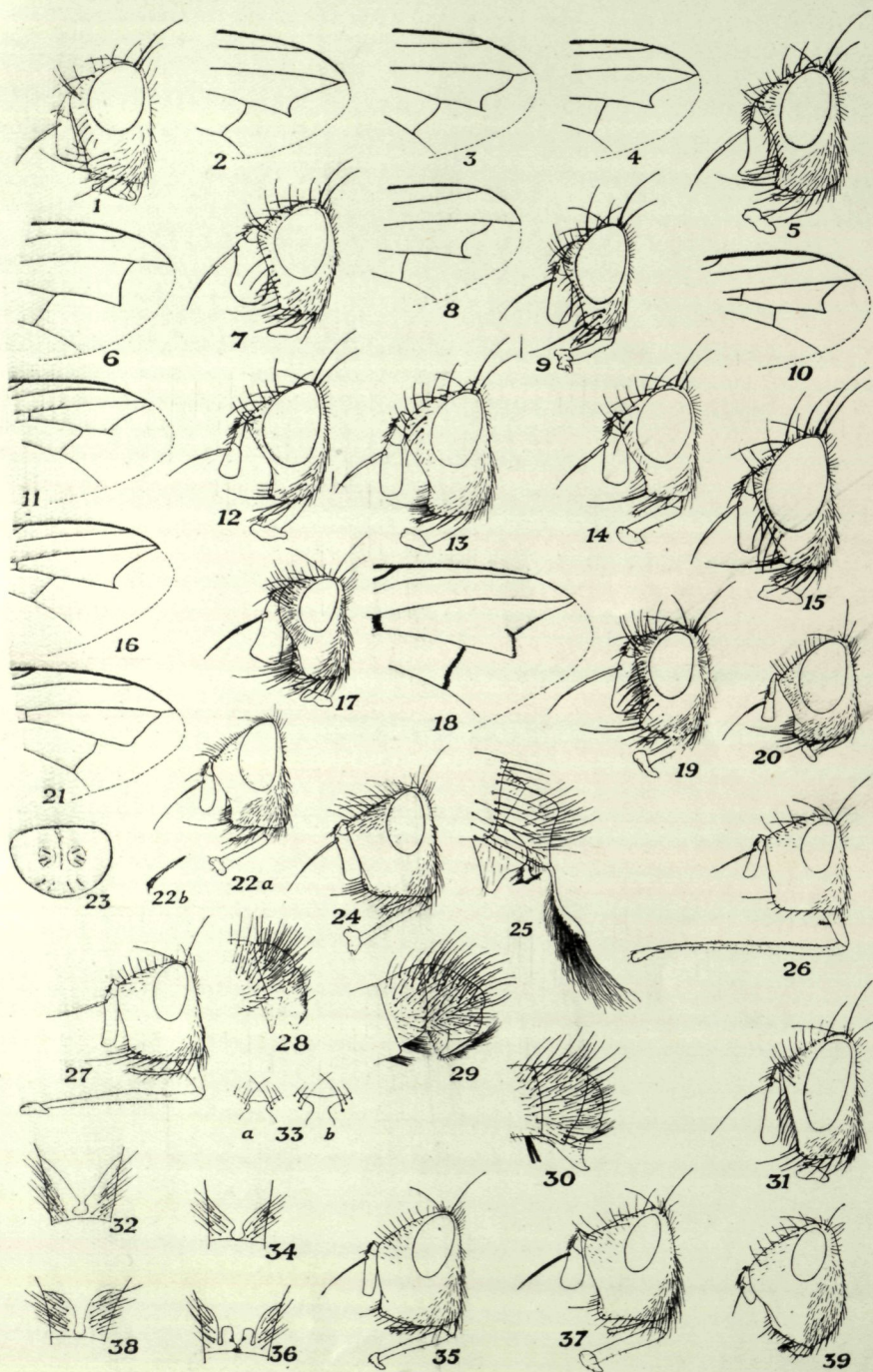
- Vibrissae usually more widely separated, the area between them without a pronounced flat strip, usually the facial depression begins just above the epistome and when it does not, then the flat part is not higher than wide; third antennal segment slender, always over twice as long as wide, not markedly wider in males than in females. *Procissio*, Hutton
30. Blue or glossy black species, with the frons in the male and female about one-third of the head width, and the epistome not at all produced, the face almost vertical; abdomen without discal bristles on first and second visible tergites in either sex; outer cross vein not over one-fourth as far from bend of fourth as from inner cross vein. *Occisor*, Hutton
- Species not blue or glossy black, or if the abdomen is blue, then the frons of the male is very much less than one-third of the head width at its narrowest point, the abdomen is differently bristled, and the outer cross vein of the wing is about one-third as far from bend of fourth as from inner cross vein. 31
31. Apical pair of scutellar bristles reduced to minute fine hairs, only 4 long marginal bristles present, the disc usually with 4 almost erect fine bristles and numerous decumbent hairs; frons of the male about one-fourth of the head width, each orbit with one long upper bristle curved outward over eye and the usual series of inner marginal incurved bristles, that of the female about one-third of the head width, each orbit with the upper outwardly curved bristle and in front of it an outer proclinate bristle; first posterior cell of the wing open; face almost flat, the epistome very slightly produced; parafacial with microscopic hairs on less than the upper half, not as wide at narrowest point as the third antennal segment; abdomen with apical central bristles on all tergites and discs on second to fourth. *Altaia*, n.gen.
- Apical pair of scutellar bristles present, sometimes very much shorter than the subapical pair; other characters not as above in combination. 32
32. Scutellum with at least 8 strong marginal bristles; abdomen broadly ovate; postsutural dorsocentrals four pairs; fifth visible abdominal tergite in male consisting of a narrow transverse strip that is four or more times as wide as its length in centre and furnished with numerous bristles and long hairs (Fig. 47); face not bifoveolate. *Platytachina*, n.gen.
- Scutellum with six or eight strong marginal bristles, and in general as *Platytachina*, but the fifth abdominal tergite is much longer, less than four times as wide as long, with the suture between it and the sixth merely indicated by a depression, and the face is distinctly though not deeply bifoveolate. *Neotachina*, n.gen.
- Scutellum with six strong marginal bristles, if with eight then the fifth abdominal tergite in the male is entirely or almost entirely concealed (Fig. 61). 33
33. Head at vibrissal angle not as long as at level of bases of antennae; face with two shallow foveae separated by a linear carina; abdomen with a pair of well developed apical central bristles on first and second visible tergites and a similar pair of discs on second and third. *Macquartia*, Robineau-Desvoidy
- Head at vibrissal angle longer than at bases of antennae. 34

34. Abdomen in both sexes broadly ovate, not over 1.5 times as long as wide; postsutural dorsocentrals 4 pairs; first posterior cell of the wing quite widely open. *Neotachina*, n.gen.
- Abdomen narrowly ovate, usually fully twice as long as wide; postsutural dorsocentrals 3 pairs; first posterior cell of wing narrowly open, sometimes closed in margin or even with a short petiole. 35
35. Parafacial much wider than the third antennal segment; face slightly bifoveolate; frons of male very much narrower than that of female, without proclinate outer orbital bristles; each process of fifth sternite of male with a deep central incision. *Phaoniella*, n.gen.
- Parafacial not wider than the third antennal segment except near its upper extremity; face not at all bifoveolate; processes of fifth sternite of male not excised. 35a
- 35a. Second aristal segment more than twice as long as thick; frons of male and female equally wide, at vertex at least one-fourth of the head width; parafacial with a few setulose hairs on upper extremity below the anterior frontal bristle. *Campylia*, n.gen.
- Second aristal segment not twice as long as thick; frons of male except in one species not as wide as above; parafacial with some minute hairs from upper extremity to near the level of the insertion of the arista, the latter sometimes farther from base of the third segment of the antenna than usual. *Zealandotachina*, n.gen.
36. Infrastomal hairs lacking. *Asetulia*, n.gen.
- Infrastomal hairs present. 37
37. Lower squama narrower than usual, its inner edge rounded at apex and not touching lateral edge of the scutellum; parafacial in profile at middle not over half as wide as third antennal segment; arista with the second segment not longer than thick, not angulated at junction of second and third segments. 38
- Lower squama of the usual width, widened behind, with a slight angle at apex of inner edge and in part touching the lateral edge of the scutellum; parafacial rarely narrower than third antennal segment. 39
38. Frons of male narrow, in front of ocelli not wider than the third antennal segment, without proclinate outer orbitals, that of the female about one-third of the head width, the interfrontalia at middle much narrower than either orbit at same point. *Trypherina*, n.gen.
- Frons of male and female about one-third of the head width and with proclinate outer orbital bristles, the interfrontalia of the female very much wider than the orbits at centre. *Neotryphera*, n.gen.

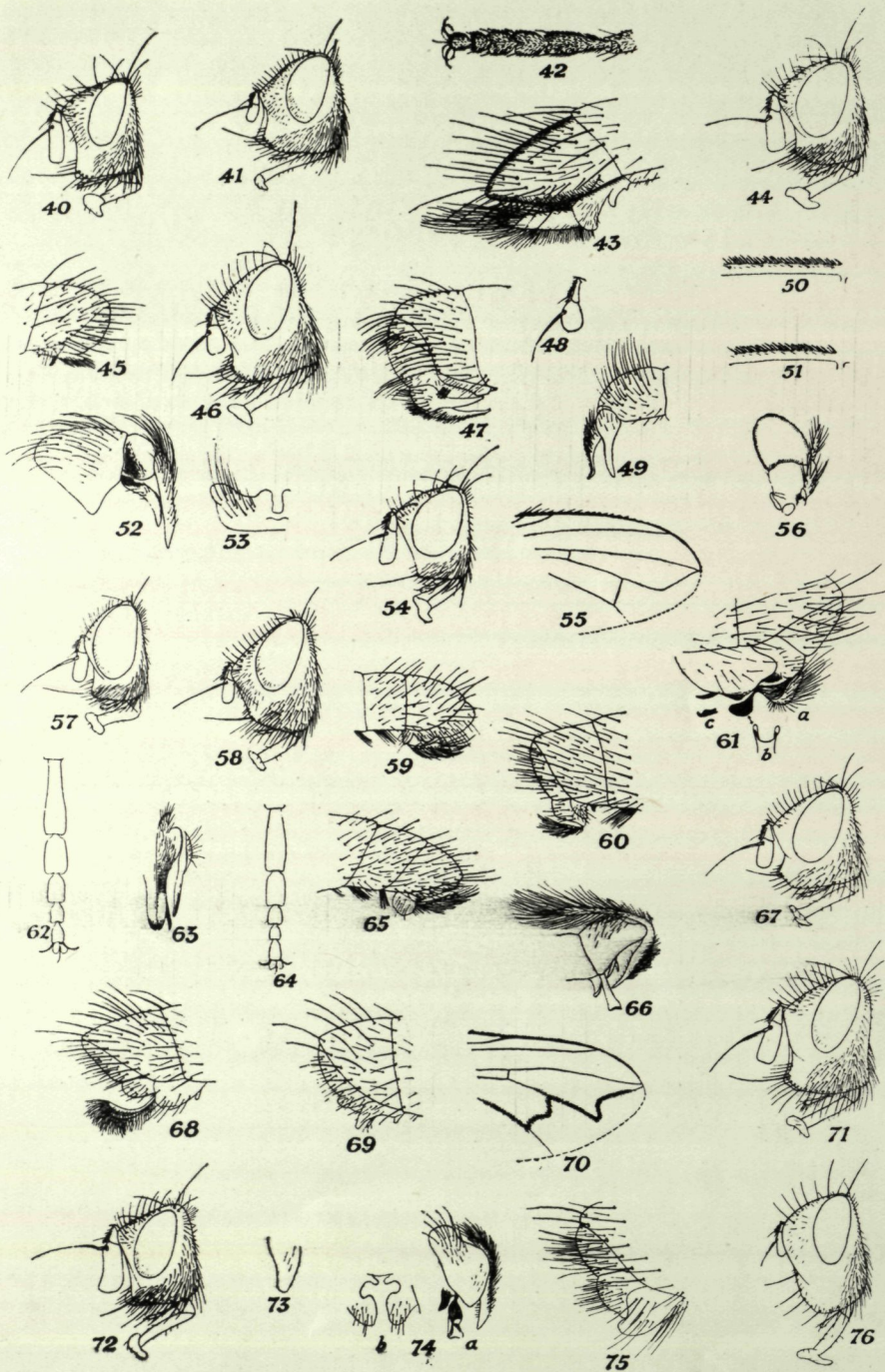
39. Third antennal segment much wider than parafacial at middle, especially in the male, generally wider at apex than in centre; second segment of the arista three or four times as long as thick, a little shorter in the female, usually more or less distinctly geniculated at junction of second and third segments; frons of male about one-third of the head width, with the upper bristle on each orbit curved outward over the eye and no proclinate outer bristles on the upper half, that of the female of the same width, with two outwardly curved upper and one proclinate lower bristles; fore tarsi of the female slightly widened. *Campylia*, n.gen.
- Third antennal segment rarely noticeably wider than the parafacial at middle in profile, and almost invariably as wide at middle as near apex; second segment of the arista not twice as long as thick. 40
40. Fourth wing vein exceptionally looped into the cell just above the preapical angle, the latter almost loop-like; frons of the male about one-fourth of the head width, without proclinate outer orbital bristles, that of the female about one-third of the head width and with the usual outer proclinate orbital bristles. *Graphotachina*, n.gen.
- Fourth wing vein not or but slightly bent into the cell above the preapical angle; frons of the male less than one-fifth of the head width. 41
41. Fore tarsal claws of the male abnormal, either appearing thickened to near apices because of the presence of dense short black pile, or asymmetrical, the outer one of each pair peculiarly distorted and thickened near apex; stout species with broadly ovate abdomen; postsutural dorsocentrals in four pairs; frons of the male narrow, never over one-fifth of the head width at vertex, without outer proclinate orbital bristles, that of the female not over one-fourth of the head width at vertex, widened in front and with the usual outer proclinate orbital bristles. *Perrissina*, n.gen.
- Fore tarsal claws of the male normal, neither with dense pile causing them to appear thickened to near apices, nor asymmetrical; rather slender species, the abdomen never broadly ovate; postsutural dorsocentrals in three pairs; frons of male variable, never with proclinate outer orbital bristles, that of the female usually at least one-fourth of the head width at vertex and with the usual proclinate outer orbitals. 42
42. Mid femur with a single exceptionally strong bristle near base on the posteroventral surface; eyes nude, at most one or two extremely minute scattered hairs present; apical scutellar bristles variable, sometimes microscopic. *Medinella*, n.gen.
- Mid femur with the usual series of posteroventral bristles on basal half or more, no one of which is outstanding; eyes quite densely or long haired; apical scutellar bristles about half as long as the next pair. *Zealandotachina*, n.gen.

A CHECK LIST OF THE TACHINIDAE OF NEW ZEALAND

- Huttonobesseria*, Curran.
verecunda (Hutton).
Evibrissa, Rondani.
huttoni, Malloch.
Hyalomyia, Robineau-Desvoidy.
(*Campbellia*, Miller.)
campbelli (Miller).
cockaynei (Miller).
lanoifer, Malloch.
Calcageria, Curran.
incidens, Curran.
var. *nuda*, Malloch.
varians, Malloch.
Uclesiella, Malloch.
irregularis, Malloch.
Calcager, Hutton.
apertum, Hutton.
dubium, Malloch.
Plagiomyia, Curran.
turbidum (Hutton).
achaeta, Malloch.
longipes, Malloch.
alticeps, Malloch.
longicornis, Malloch.
Catotachina, Malloch.
tricolor, Malloch.
Genotrichia, Malloch.
tonnoiri, Malloch.
minor, Malloch.
Wattia, Malloch.
ferruginea, Malloch.
petiolata, Malloch.
sessilis, Malloch.
Arthuria, Malloch.
dimorpha, Malloch.
Microhystericia, Malloch.
gourlayi, Malloch.
Hexamera, Brauer and Bergenstamm.
signata (Walker).
huttoni, Malloch.
Cerosomyia, Hutton.
usitata, Hutton.
syn. *oratus* Walker?
clathrata Nowicki?
efferata, Hutton.
fulvipes, Hutton.
recta, Hutton.
aurea, Hutton.
funesta, Hutton.
inconspicua, Hutton.
atrox, Hutton.
syn. *perniciosa*, Hutton?
casta, Hutton.
Engycera, Malloch.
politiventris, Malloch.
var. *setosa*, Malloch.
monticola, Malloch.
pallipes, Malloch.
kumarensis (Miller).
syn. *vittata*, Curran.
modica (Hutton).
syn. *pavida*, Hutton.
Procissio, Hutton.
cana, Hutton.
var. *valida*, Hutton.
syn. *montana*, Hutton.
lateralis, Malloch.
albiceps, Malloch.
var. *varians*, Malloch.
milleri, Malloch.
Cerosomyia, Hutton.
exitosa, Hutton.
nefaria, Hutton.
nyctemeriana, Hudson.
marginata, Hutton.
? *brouni*, Hutton.
Occisor, Hutton.
versutus, Hutton.
inscitus, Hutton.
atratus, Malloch.
Hystericina, Malloch.
lupina (Swederus).
Veluta, Malloch.
albicincta, Malloch.
Altaia, Malloch.
geniculata, Malloch.
Macquartia, Robineau-Desvoidy.
vezata, Hutton.
flavohirta, Malloch.
nigrihirta, Malloch.
claripennis, Malloch.
Phaoniella, Malloch.
bifida, Malloch.
Platytachina, Malloch.
major, Malloch.
latifrons, Malloch.
atricornis, Malloch.
difficilis, Malloch.
angustifrons, Malloch.
Zealandotachina, Malloch.
subtilis (Hutton).
nigrifemorata, Malloch.
varipes, Malloch.
var. *varipes*, Malloch.
var. *fumata*, Malloch.
var. *fuscata*, Malloch.
var. *strigipes*, Malloch.
var. *lata*, Malloch.
setigera, Malloch.
quadrisseta, Malloch.
infusata, Malloch.
quadrivittata, Malloch.
lamellata, Malloch.
tenuis, Malloch.
latifrons, Malloch.
Subgen. *Calosia*, Malloch.
binigra, Malloch.







- Heteria*, Malloch.
appendiculata, Malloch.
punctigera, Malloch.
extensa, Malloch.
olebeia, Malloch.
flavibasis, Malloch.
atripes, Malloch.
(Microphthalma, Macquart).
(michiganensis, Townsend).
- Plethochaetigera*, Malloch.
fenwicki, Malloch.
setiventris, Malloch.
isolata, Malloch.
 Subgen. *Chaetopletha*, Malloch.
centralis, Malloch.
- Avibrissina*, Malloch.
brevipalpis, Malloch.
laticornis, Malloch.
- Avibrissia*, Malloch.
longirostris, Malloch.
- Erythronychia*, Brauer and
 Bergenstamm.
australiensis (Schiner).
aliena, Malloch.
humeralis (Hutton).
velutina, Malloch.
minor, Malloch.
hirticeps, Malloch.
aperta, Malloch.
princeps (Curran).
defecta, Malloch.
grisea, Malloch.
- Neoeerythronychia*, Malloch.
hirta, Malloch.
- Peremptor*, Hutton.
egmonti, Hutton.
- Xenorhynchia*, Malloch.
peeli, Malloch.
- Prosenosoma*, Malloch.
greyi, Malloch.
- Asetula*, Malloch.
nigropolita, Malloch.
- Graphotachina*, Malloch.
sinuata, Malloch.
- Campylia*, Malloch.
temerarum (Hutton).
nudarum, Malloch.
- Perrissina*, Malloch.
crocea, Malloch.
albiceps, Malloch.
brunniceps, Malloch.
xanthopyga, Malloch.
variceps, Malloch.
- Neotryphera*, Malloch.
atra, Malloch.
- Trypharina*, Malloch.
grisea, Malloch.
- Medinella*, Malloch.
nigrifemorata, Malloch.
flavofemorata, Malloch.
albifrons, Malloch.
varipes, Malloch.
- Truphia*, Malloch.
grisea, Malloch.
- Neotachina*, Malloch.
obtusa, Malloch.
angusticornis, Malloch.
laticornis, Malloch.
 Subgen. *Tachineo*, Malloch.
clarki (Hutton).
depressa, Malloch.

PART IX.

FAMILY MUSCIDAE.

SUBFAMILY PHAONIINAE.

I have before me two species of a genus that is rather difficult to place in any known subfamily, but which I have decided on the basis of all its characters is more allied to *Phaoniinae* than to *Coenosiniinae*. I have for a number of years been compiling a generic key to the family Muscidae and amongst the most difficult of the tasks in that connection is that of differentiating the subfamilies. Finally I have determined that though the segregation of *Coenosiniinae* is difficult and rather hard to maintain on the basis of available characters, one can distinguish all the members of the group from any in *Phaoniinae* by the possession of but one recurved bristle near the upper extremity of each orbit, and the hind tibial armature,

which never consists of more than one bristle on the anterodorsal, anteroventral, and posteroventral surfaces. If there are two postero-dorsal and anterodorsal bristles on the hind tibia I place the species in *Phaoniinae*. In the present genus there is but one recurved bristle on the upper extremity of each frontal orbit, but the hind tibia has two anterodorsal and posterodorsal bristles. In addition to this last character the three sternopleural bristles are not in an almost equilateral triangle, there are two pairs of presutural dorsocentral bristles present on the mesonotum, and the sixth wing vein, though incomplete, extends over two-thirds of the distance to the wing margin, none of which characters are in conformity with the general rule in *Coenosimae*. It may be noted here that so far I have seen no typical representative of this subfamily from New Zealand.

I propose for this genus the name *Paracoenosia* with the genotype, *P. tonnoiri*.

Genus PARACOENOSIA, novum.

The two species now before me may be distinguished as below:—

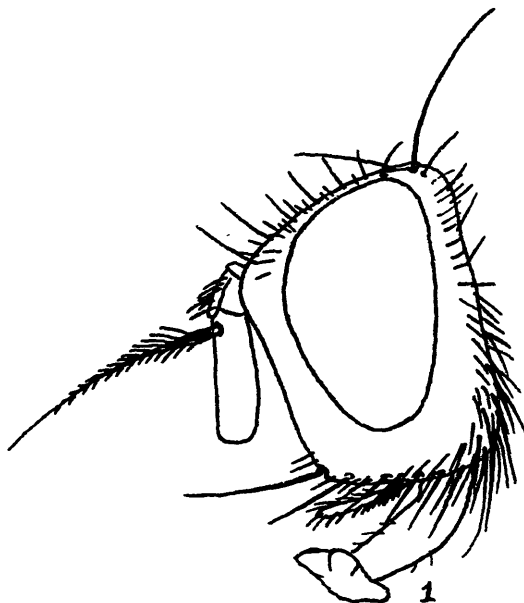
- | | |
|---|----------------------------|
| A. Antennae entirely ferruginous yellow. | .. <i>tonnoiri</i> , n.sp. |
| AA. Antennae with the third segment fuscous | .. <i>bicolor</i> , n.sp. |

Paracoenosia tonnoiri, n.sp.

Male, Female. A ferruginous to tawny yellow species, with the antennae and palpi entirely pale, the aristae fuscous except the basal two segments, the abdomen broadly brown on the dorsum, darker in the male than in the female, and with traces of a central line and a pair of faint darker spots on each tergite in the former, the sides of the tergites with greyish white dust, most distinct in the male. Head with yellow dust on frontal orbits and triangle and the occiput entirely yellow dusted, the dust becoming paler from upper part of face to epistome, almost white below and on the parafacials and genae; interfrontalia reddish yellow. Mesonotum without vittae, the entire thorax dull. Legs concolorous with thorax. Wings tinged with brownish yellow, especially anteriorly, the veins yellowish brown; squamae paler than wings; halteres brownish yellow.

Frons at vertex in male less than, in female more than, one-fourth of the head width, and much longer than wide, the orbits narrow, the triangle slender and continued to beyond middle. Vertex with the inner pair of bristles long in both sexes, the outer pair almost undeveloped in the male, small in the female; ocellars well developed, proclinate and divergent; postverticals widely divergent, smaller than the ocellars, and subequal to the incurved pair lower on occiput; each orbit with a very short outwardly and slightly backwardly directed bristle almost at level of the anterior ocellus, and about half a dozen strong incurved inner marginal bristles and

some much shorter setulae and short hairs. Profile as text-figure 1; longest hairs on the arista barely twice as long as its basal diameter. Eyes bare. Proboscis stout.



TEXT-FIG. 1.—*Paracoenosia tonnoiri*, head of ♂ in profile.

Mesonotum with 2 + 3 pairs of strong dorsocentrals, the prealar lacking, no presutural acrostichals, and the prescutellar pair present or lacking; sternopleurals usually three, occasionally four, and some setulose hairs between them, scutellum with short decumbent discal hairs and four strong and usually four much shorter and weaker bristles on the margin. The lower stigmatal bristle is represented by a weak upwardly curved setula. Mesonotum with numerous very short black hairs.

Legs moderately long, the femora stout. Fore femur with a series of setulae on anteroventral surface, an irregular series of bristles and setulae on posteroventral surface, and some long bristles on the posterodorsal and posterior surfaces; mid femur with an irregular series of long and short bristles on the anteroventral surface and a similar but closer series of longer bristles and stouter spinules on the posteroventral surface, the latter more than uniseriate apically; hind femur with the same irregular strong armature of the mid femur, but the bristles more numerous; fore tibia with a posterior bristle beyond middle, the apical ventral bristle not longer than the tibial diameter; mid tibia with a submedian posterior bristle and three apical bristles below that are stronger and longer than the one at apex of ventral surface of fore tibia; hind tibia with two anterodorsal and two posterodorsal bristles, no anteroventral, the preapical dorsal and preapical anterodorsal bristles not

transverse in position, the latter the shorter, and the apical antero-ventral longer than the tibial diameter and straight. Tarsi normal, claws and pulvilli a little larger in male than in female.

Wings of moderate size, about as long as thorax and abdomen combined, rounded at apex. Inner cross vein close to middle of discal cell and just beyond level of apex of first vein, outer cross vein about half its own length from apex of fifth vein, apical sections of third and fourth veins curved slightly downward, the first posterior cell not narrowed at apex, ultimate and penultimate sections of fourth vein subequal in length; costal thorn minute.

Abdomen of male narrowly cylindrical, of female rather broadly ovate. First visible tergite with a series of bristles on sides at middle and one or two at apex on sides, the others with lateral apical bristles except third and fourth in the male, which have an almost complete apical series; fifth tergite in male short and bare, sixth in same sex with a number of discal bristles. Hypopygium of male not very large, the processes of the fifth sternite broad, rounded at apices, where they are bare, and with a number of discal bristles.

Lower squama over twice as large as upper one, not very wide, rounded at apex.

Length, 8-9.5 mm.

Holotype, Male, allotype, and 1 paratype, Aniseed Valley, 1-4.xii.23 (A. L. Tonnoir); male paratype, Cobb Valley, 10.xii.22 (A. Philpott).

Named in honour of the collector of the type specimen.

Paracoenosia bicolor, n.sp.

Very similar to the genotype, of which in fact it may prove to be merely a variety. There are no intermediates in my material, all the specimens of both sexes in *tonnoiri* having the antennae entirely ferruginous, and all in *bicolor* having the third antennal segment entirely fuscous or almost black. In other respects the two are almost identical, though I have not investigated the structures of the hypopygia of the males, in which there may be differentiating features.

Length, 7.5-8 mm.

Holotype, Male, Kumara, 3.xi.29 (J. W. Campbell); allotype, Waiho, 24.i.22 (A. L. Tonnoir); paratypes, 2 females from Grey-mouth (Osten-Sacken coll., Berlin-Dahlem).

The last listed specimens were no doubt sent many years ago to Baron Osten-Sacken by either Hutton or some one of the older collectors and were never reported upon, passing into the collection of the Deutsches Entomologisches Institut, from whence they were sent to me by my friend Dr. Walther Horn for identification some time ago.

EXPLANATION OF FIGURES.

- FIG. 1.—*Wattia ferruginea*, head of female in profile.
 FIG. 2.—*Wattia ferruginea*, apex of wing of female.
 FIG. 3.—*Wattia petiolata*, apex of wing of female.
 FIG. 4.—*Wattia sessilis*, apex of wing of female.
 FIG. 5.—*Genotrichia tonnoiri*, head of male in profile.
 FIG. 6.—*Genotrichia tonnoiri*, apex of wing of male.
 FIG. 7.—*Arthuria dimorpha*, head of male in profile.
 FIG. 8.—*Arthuria dimorpha*, apex of wing of male.
 FIG. 9.—*Uclesiella irregularis*, head of male in profile.
 FIG. 10.—*Uclesiella irregularis*, apex of wing of male.
 FIG. 11.—*Plagiomyia turbidum*, apex of wing of male type.
 FIG. 12.—*Plagiomyia longipes*, head of female in profile.
 FIG. 13.—*Plagiomyia alticeps*, head of male in profile.
 FIG. 14.—*Plagiomyia longicornis*, head of male in profile.
 FIG. 15.—*Calcageria incidens*, head of female in profile.
 FIG. 16.—*Calcageria incidens*, apex of wing of female.
 FIG. 17.—*Calotachina tricolor*, head of male in profile.
 FIG. 18.—*Calotachina tricolor*, apex of wing of male.
 FIG. 19.—*Microhystricia gourlayi*, head of male in profile.
 FIG. 20.—*Engycera politiventris*, head of male in profile.
 FIG. 21.—*Engycera politiventris*, apex of wing of male.
 FIG. 22.—*Perrissina crocea*, a, head of male in profile; b, outer claw of fore tarsus of male from above.
 FIG. 23.—*Perrissina crocea*, posterior spiracles of puparium.
 FIG. 24.—*Asetulia nigropolita*, head of male in profile.
 FIG. 25.—*Asetulia nigropolita*, apex of abdomen of male in profile.
 FIG. 26.—*Prosenosoma greyi*, head of female in profile.
 FIG. 27.—*Xenorhynchia peeli*, head of male in profile.
 FIG. 28.—*Plethochaetigera fenwicki*, apex of abdomen of male in profile.
 FIG. 29.—*Plethochaetigera setiventris*, apex of abdomen of male in profile.
 FIG. 30.—*Plethochaetigera isolata*, apex of abdomen of male in profile.
 FIG. 31.—*Cerosomyia usitata*, head of male in profile.
 FIG. 32.—*Procissio albiceps*, fifth abdominal sternite of male from below.
 FIG. 33a.—*Procissio albiceps*, epistome from in front.
 FIG. 33b.—*Procissio cana*, epistome from in front.
 FIG. 34.—*Procissio cana*, fifth abdominal sternite of male from below.
 FIG. 35.—*Procissio lateralis*, head of male in profile.
 FIG. 36.—*Procissio lateralis*, fifth abdominal sternite of male from below.
 FIG. 37.—*Peremptor modica*, head of male in profile.
 FIG. 38.—*Peremptor modica*, fifth abdominal sternite of male from below.
 FIG. 39.—*Peremptor egmonti*, head of female type-specimen in profile.
 FIG. 40.—*Occisor versutus*, head of male type-specimen in profile.
 FIG. 41.—*Veluta albicincta*, head of male in profile.
 FIG. 42.—*Veluta albicincta*, fore tarsus of female from above.
 FIG. 43.—*Veluta albicincta*, apex of abdomen of male in profile.
 FIG. 44.—*Altaia geniculata*, head of male in profile.
 FIG. 45.—*Altaia geniculata*, apex of abdomen of male in profile.
 FIG. 46.—*Platytachina latifrons*, head of male in profile.
 FIG. 47.—*Platytachina latifrons*, apex of abdomen of male in profile.
 FIG. 48.—*Platytachina atricornis*, antenna of male.
 FIG. 49.—*Platytachina atricornis*, hypopygial forceps of male in profile.
 FIG. 50.—*Platytachina major*, section of costal vein of wing near humeral vein, dorsal view.
 FIG. 51.—*Platytachina difficilis*, section of costal vein near humeral vein, dorsal view.
 FIG. 52.—*Platytachina difficilis*, hypopygial forceps of male in profile.
 FIG. 53.—*Platytachina angustifrons*, fifth sternite of male, right half from below.
 FIG. 54.—*Neotryphera atra*, head of male in profile.
 FIG. 55.—*Neotryphera atra*, apex of wing.
 FIG. 56.—*Neotryphera atra*, squamae of right side from above, with base of costal vein of wing showing along right side.
 FIG. 57.—*Trypharina grisea*, head of male in profile.
 FIG. 58.—*Macquartia vexata*, head of male in profile. Type.
 FIG. 59.—*Macquartia vexata*, apex of abdomen of male in profile. Type.

- FIG. 60.—*Macquartia nigrihirta*, apex of abdomen of male in profile.
FIG. 61.—*Zealandotachina subtilis*, a, apex of abdomen of male in profile; b, dorsal view of hypopygial forceps; c, apex of penis of *nigri-femorata*.
FIG. 62.—*Zealandotachina subtilis*, fore tarsus of female from above. Diagrammatic.
FIG. 63.—*Zealandotachina varipes*, var. *strigipes*, right side of hypopygium of male, dorsal view.
FIG. 64.—*Zealandotachina infuscata*, fore tarsus of female from above. Diagrammatic.
FIG. 65.—*Zealandotachina tenuis*, apex of abdomen of male in profile.
FIG. 66.—*Zealandotachina tenuis*, hypopygium of male in profile.
FIG. 67.—*Medinella nigrifemorata*, head of male in profile.
FIG. 68.—*Medinella flavofemorata*, apex of abdomen of male in profile.
FIG. 69.—*Medinella albifrons*, apex of abdomen of male in profile.
FIG. 70.—*Graphotachina sinuata*, apex of wing.
FIG. 71.—*Graphotachina sinuata*, head of male in profile.
FIG. 72.—*Campylia temerarum*, head of male in profile.
FIG. 73.—*Campylia temerarum*, apical half of inferior forceps of male hypopygium.
FIG. 74.—*Campylia nudarum*, a, hypopygium of male in profile; b, fifth sternite of male, ventral view.
FIG. 75.—*Neotachina obtusa*, apex of abdomen of male in profile.
FIG. 76.—*Microphthalma disjuncta*, head of male in profile.