

Notes on Fossorial Hymenoptera.—XLV. *On new Sphegid Wasps from Australia.* By ROWLAND E. TURNER.

Genus SPILOMENA.

Spilomena Shuckard, in Westwood Intro. and class. Insec. ii. p. 80 (1840).

Microglossella Rayment, Cluster of Bees, p. 16, pl. i. (1935).

Rayment's figures leave no doubt that his genus is identical with *Spilomena*. He treats it as a bee, but notices that it has no plumose hairs.

Spilomena luteiventris, sp. n.

♀. Nigra; mandibulis, antennis, tegulis, abdomine pedibusque luteo-ochraceis; alis hyalinis, venis luteis.
Long. 3.5 mm.

♀. Clypeus convex, subtruncate at the apex, with a longitudinal carina from base to apex, the carina continued on the front to the anterior ocellus; clypeus almost smooth, front and vertex rugose-reticulate, a crenulate line along the inner margin of the eyes bounded outwardly by a carina. Eyes subparallel on the inner margin; ocelli near together, in an equilateral triangle, the posterior pair separated from the eyes by a distance about one and a half times as great as their diameter. Head strongly margined posteriorly; antennæ short, the fifth to ninth joints of the flagellum broader than long. Thorax punctured-rugulose, the sculpture much finer than that of the head, a depressed crenulate line separating the scutellum from the mesonotum. Pronotum transverse, depressed below the mesonotum; mesopleuræ closely obliquely striated. Median segment very coarsely reticulate, rounded posteriorly; the surface of the posterior truncation almost smooth, with a shallow longitudinal groove. Abdomen smooth and shining. Second abscissa of the radius about equal to the second transverse cubital

nervure, only a little longer than the first abscissa; stigma large, rounded on the inner margin, nearly as long on the costa as the radial cell; recurrent nervure interstitial.

Hab. Tambourine Mountain, S.E. Queensland; April 1936 (*Turner*).

I place this species in *Spilomena* with some doubt, the shape of the second cubital cell being nearer to the genus *Austrostigmus*, but in the depressed pronotum it agrees with *Spilomena*. There is no groove in front of the mesopleuræ for the reception of the fore femora.

Harpactophilus steindachneri Kohl.
race *deserticolus*, nov.

♀. Differs from the typical Queensland form in the much more strongly and closely striated scutellum and in the absence of black on the femora. I do not think the differences are more than subspecific.

Hab. Dedari, 40 miles W. of Coolgardie, W. Australia; January 20, 1936.

Cerceris dedariensis, sp. n.

♀. Nigra; opaca; scapo, flagello subtus, clypeo lamina porrecta, basi et fascia angusta præapicali nigris, macula obliqua utrinque supra oculos, pronoto, tegulis, scutello, metanoto, segmento mediano supra, tergitis duobus basibus, sternito primo, secundo lateribus pedibusque ferrugineis; clypeo lamina porrecta quadrata; segmento mediano area basali polita, impunctata; area pygidiali latitudine apicali duplo latiore; sternito secundo area basali elevata nulla; alis fusco-hyalinis, apice cellulaque radiali valde infumatis.

Long. 17 mm.

♀. Eyes strongly divergent below; clypeus with a large, strongly porrect, quadrate lamina from the base, the apical margin very widely and deeply emarginate; head large, much broader than the thorax. Closely punctured, more sparsely on the scutellum and metanotum; triangular basal area of the median segment smooth, divided by a longitudinal groove; petiole short and broad, at least twice as broad as long; pygidial area longitudinally rugulose, longer than the greatest breadth, the sides moderately convergent towards the truncate apex.

Pubescence on the face silver ; on the sides of the pygidial area longer and dull grey.

Hab. Dedari, 40 miles W. of Coolgardie, W. Australia ; January 1936 (*Turner*).

In the form of the clypeus this is nearest to *C. aurantiaca* Sm. and *C. hackeriana* Ckll. among Australian species, but the lamina is much more quadrate, the form of the apical margin also differs strongly. The pygidial area in *aurantiaca* is parallel-sided, and the present species is much larger and more robust. The colour is very different, but species of *Cerceris* usually take the dominant local colour.

Cerceris adæ, sp. n.

♀. Ochraceo-ferruginea ; mandibulis apice, flagello articulis 7 apicalibus, vertice late, mesothorace, macula subalis excepta, segmentoque abdominali quarto nigris ; alis subhyalinis, costa lata infumata ; clypeo lamina basali porrecta ; mesopleuris haud tuberculatis ; segmento mediano area basali nitida ; sternito secundo area basali elevata nulla ; area pygidiali apice late truncata, lateribus subparallelis.

Long. 15 mm.

♂. Ochraceo-ferrugineus ; mandibulis apice, flagello dimidio apicali, vertice latissime, mesothorace, segmento mediano, segmentisque abdominalibus quarto quintoque nigris ; clypeo convexo, apice subtruncato.

Long. 10 mm.

♀. Clypeus thickly produced from the base into a stout porrect lamina, which is broad at the base, narrowly truncate at the apex, sparsely punctured above, smooth beneath ; the anterior margin of the clypeus broadly truncate. Eyes divergent towards the base of the mandibles. The whole insect closely punctured and subopaque ; basal area of the median segment smooth, with a shallow longitudinal groove ; petiole nearly twice as broad as long ; pygidial area broad, finely rugulose, broadly truncate at the apex. Intermediate and hind tibiae with a row of spines, the serrations not well developed.

♂. Clypeus convex, broadly rounded at the apex, with a very short tooth in the middle of the apical margin, deeply, but rather sparsely punctured, the lateral lobes with a fringe of pale yellowish hairs. Closely and rather strongly punctured, pronotum and scutellum sparsely punctured, metanotum and triangular area of the median

segment smooth and shining. Petiole broader than long; pygidial area a little more than half as broad again at the base as at the apex, the apical margin truncate. Apical joint of the flagellum shorter than the penultimate, not curved, truncate at the apex. There is no raised area at the base of the second sternite in either sex.

Hab. 10 miles S.W. of Perth, W. Australia; February 16, 1936 (*Miss A. Raymond*). Ex coll. Turner.

This is most nearly related to *C. aurantiaca* Sm., a South Australian species, but the lamina of the clypeus in the female of that species is very different, the colour is golden yellow, the vertex is not black, and the whole insect is less robust.

Cerceris merredinensis, sp. n.

♀. Nigra; scapo, macula utrinque supra clypeum, pronoto, tegulis, mesopleuris dimidio superiore, scutello, metanoto, segmento mediano, segmentis abdominalibus primo secundoque, pedibusque rufo-ferrugineis; alis hyalinis, costate infumata; clypeo apice truncato, dimidio apicali oblique depresso; pronoto angulis anticis acute subtuberculato; mesopleuris subtus obscure tuberculatis; segmento mediano area basali nitida; petiolo longitudine duplo latiore; area pygidiali latitudine basali duplo longiore, rugosula, basi punctata.

Long. 13 mm.

♂. Niger; clypeo macula basali, facie utrinque maculaque mediana, scapo, flagelli articulo apicali subtus; pronoto, scutello, metanoto, segmento abdominali secundo, pedibusque rufo-ferrugineis; segmento mediano nigro, area basali oblique striata.

Long. 10 mm.

♀. Inner margin of the eyes parallel; the obliquely depressed apical portion of the clypeus sparsely punctured, the base more finely and closely punctured. Head closely, mesonotum sparsely, scutellum very sparsely and finely punctured, metanotum and basal area of the median segment smooth; sides of the median segment and the abdomen sparsely punctured. Pygidial area slightly wider in the middle than at the base or apex. Hind tibia with seven serrations on the outer margin. No raised basal area on the second tergite.

♂. Closely and rather coarsely punctured, more sparsely on the scutellum and metanotum. Clypeus convex, the

apical margin truncate. Apical joint of the flagellum no longer than the penultimate. Anterior angles of the pronotum less prominent than in the female; basal area of the median segment strongly obliquely striated; pygidial area very strongly, but rather sparsely punctured, the apex truncate, sides parallel, a little more than half as long again as broad.

Hab. Merredin, W. Australia; December.

In the form of the clypeus and the sculpture the female resembles *C. perkinsi* Turn. from Cairns, but the colour differences are very great, the raised basal portion of the clypeus is also less elevated than in *perkinsi*, and is not excised in the middle as in that species. The longitudinal groove of the triangular area of the median segment is very shallow in both species. The angles of the pronotum are much more prominent than in *perkinsi*. The colour is very similar to that of several W. Australian species of *Paralastor*, such as *fallax* Perk. and *nautarum* Sauss.

I associate the male described above with this female with some doubt, owing to the different sculpture of the triangular area of the median segment. The female is the type.

Cerceris raymenti, sp. n.

♀. Nigra; facie macula magna utrinque, vertice macula parva utrinque flavis; tergitis secundo dimidio apicali, quarto, quinto sextoque, sternitoque quinto rufo-aurantiacis; alis hyalinis, costa latissime infumata; clypeo basi paullo porrecta, bidentato; apice depresso, truncato; mesopleuris haud tuberculatis; segmento mediano area basali longitudinaliter striata; petiolo longitudine duplo latiore; area pygidiali lateribus valde convergentibus.

Long. 15 mm.

Inner margins of the eyes parallel; clypeus porrect at the extreme base and bituberculate, the rest of the clypeus almost flat and truncate at the apex. Angles of the pronotum not prominent. Closely and coarsely punctured; triangular area of the median segment coarsely longitudinally striated; pygidial area broad, closely, but not coarsely, punctured, the sides strongly convergent toward the apex; hind tibia with six serrations.

Hab. Gunbower Island, Murray River, Victoria; March 3, 1933 (*Tarlton Rayment*).

The form of the clypeus is somewhat similar to that of *C. victrix* Turn., but the sculpture of the basal area of the median segment is unique among Australian species of the genus; *C. opposita* S., has the area longitudinally striated, but the sculpture is quite delicate.

Cerceris armigera Turn.

Cerceris armigera Turn. Ann. & Mag. Nat. Hist. (8) xix. p. 104 (1917), ♀.

Subsp. *rufo-fusca*, nov.

♀. This race does not differ structurally from the typical form; the colour of the head and pronotum is also similar. Legs, except the hind coxæ, metanotum, apex of the petiole, second abdominal segment, and sixth segment, except at the apex of the pygidial area, dark rufo-ferruginous.

Hab. Mundaring Weir, W. Australia; February, 1936 (*Miss A. Raymond*). Ex Turner Coll.

The type came from Darra, near Brisbane. The colour differences are remarkable; but colour is extremely liable to be affected by local conditions in this genus.

Cerceris minuscula Turn.

Cerceris minuscula Turn. Proc. Zool. Soc. London, p. 347 (1910), ♀.

This species, originally described from North Queensland, occurs plentifully in the Merredin and Coolgardie districts of Western Australia. The colour is very variable, but the abdominal bands in W. Australian females are often bright reddish orange.

Bembex nigropectinatus, sp. n.

♂. Niger; mandibulis, apice nigris, labro, clypeo, scapo, orbitis supra late interruptis, tegulis basi, trochanteribus nigro-maculatis, femoribus tibiisque, supra nigro-lineatis, tarsisque flavis; flagelli articulis 6 basalibus subtus ochraceis; scutello macula parva utrinque, tergitisque 1-5 fascia undulata mediana, sordide albido-virescentibus; alis hyalinis, venis nigris; femoribus anticis dilatatis, femoribus intermediis serratis, tibiis anticis apice spina crassa armatis, metatarso antico dilatato, lamella lata albida dense nigro-maculata, extus spinis pluribus, nigris brevibus marginata; sternito secundo carina elevata, apice truncato, armato; sternito sexto haud carinato.

Long. 17 mm.

♂. Clypeus strongly convex, white in the middle, broadly, but shallowly depressed on the sides, the labrum also shallowly concave on the sides; front with three yellow maculae above the base of the antennae. Ninth to eleventh joints of the flagellum thickened, joints 8 and 9 broader than long, joints 7 and 8 with a minute spine at the apex. Fore femur dilated beneath from the base, the dilated portion flattened and widest in the middle, narrowing rapidly to the apex; spur of the fore tibia

Fig. 1.

*Bembex nigropectinatus*, sp. n. Fore tarsus of ♂.

long and stout, pointed at the apex. Basal joint of the fore tarsus very strongly dilated, the dilated portion flat and white, densely speckled with black, furnished without with a close-set comb of short black spines; tarsal joints 2-4 narrowly produced without, each bearing two long spines, black on the second, yellow on the third and fourth joints. The serration of the intermediate femora is feeble and does not extend to the apex, only commencing after a tooth-like projection at about one-quarter from the base; intermediate tibia somewhat dilated after the

middle; basal joint of the intermediate tarsi subtruncate in the middle. Second sternite with a strongly elevated carina, which is curved and subtruncate at the apex; sixth sternite very broad; seventh tergite very broadly rounded, subtruncate at the apex.

Hab. Mingenew, W. Australia; October 15-22, 1935 (*Turner*).

The colour is somewhat variable, in some specimens the yellow on the pronotum, reduced to a line in the type, is more extensive; and in one specimen the second and third sternites have a spot on each side. The grooves on the clypeus and labrum are not nearly so strongly defined as in *B. pectinipes* Handl. and *B. flavifrons* Sm., though somewhat similar. The structure of the fore legs is very remarkable.

Arpactus browni, sp. n.

♂. Niger; scapo, pronoto, callis humeralibus, tegulis, mesonoto lateribus anguste, scutello macula magna, metanoto macula parva, segmento mediano linea mediana nigra, segmento abdominali primo pedibusque aureo-ferrugineis; clypeo fronteque sub antennis pallide ferrugineis; alis subhyalinis, cellulis costali cubitalibusque infumatis.

Var. Scutello metanotoque fere omnino aureo-ferrugineis.

Long. 14 mm.

♂. Eyes strongly convergent towards the clypeus, at the base of which they are separated by a distance slightly greater than the length of the scape; second joint of the flagellum as long as the first and third combined, apical joint of the flagellum moderately curved, no longer than the penultimate. Closely and rather strongly punctured, opaque; clypeus shining, very finely and rather sparsely punctured, triangular basal area of the median segment smooth and opaque, with a deep longitudinal groove. Abdomen more closely and much more finely punctured, basal segment not narrowed. Sternites sparsely clothed with whitish pubescence, which is denser on the margin of sternites 2-3, forming a decumbent fringe; on sternites 4-5 the hairs are longer and denser, raised and of a dark fulvous-brown colour. Seventh tergite rather broadly truncate at the apex. Tarsi fuscous; basal joint of the fore tarsi long, flattened, and with three spines at the base; joints 2-4 produced into long spatulate spines, which

are whitish, black at the apex. Second cubital cell very short on the radius, first transverse cubital nervure strongly curved outward close to the cubitus and emitting a short vein inward towards the costa.

♂. Apart from the usual sexual differences the male is similar to the female, but the apical joint of the flagellum is more strongly curved, and the structure of the fore tarsi is very remarkable, as shown in the figure.

Hab. Dedari, 40 miles west of Coolgardie, W. Australia; January 11-21, 1936 (*Turner*). This belongs to the group of *ciliatus* Handl.

I dedicate the species to Mr. Horace Brown, the coleopterist, from whom I received much assistance on my recent visit to Western Australia.

Fig. 2.



Arpactus browni, sp. n. Fore tarsus of ♂.

Arpactus (Miscothyris) guttatulus, sp. n.

♀. Nigra; mandibulis, clypeo, fronte inter antennis, oculis margine inferiore, scapo, pronoto, callis humeralibus, metanoto, tergitis 1-3 fascia apicali utrinque, antice emarginata, quarto fascia apicali utrinque emarginata, haud interrupta, quinto macula magna rectangulari, femoribus anticis intermediisque apice, tibiisque apice pallide flavis; flagello, tegulis, segmento abdominali sexto, tibiis apice, tarsisque pallide ferrugineis, tarsis basi flavidulis; alis hyalinis, venis fuscis.

Long. 9 mm.

♀. Eyes diverging towards the clypeus, also divergent above, nearest to each other above the base of the antennæ,

a little further apart at the posterior ocelli than at the base of the clypeus; the facets in front much larger than at the sides; posterior ocelli only separated from the eyes by a distance less than one-third of the diameter of the ocellus. Clypeus much broader than long, truncate at the apex. Second joint of the flagellum as long as the first and third combined. Shining and finely punctured, the abdomen subopaque and very finely punctured rugulose, scutellum very sparsely punctured, metanotum smooth; the semicircular area at the base of the median segment finely punctured rugulose, the sculpture scarcely differing from that of the remainder of the segment; pygidial area pointed at the apex, longer than the basal breadth and clothed with fulvous setae. Second abscissa of the radius a little longer than the third, first recurrent nervure interstitial, second received close to the apex of the second cubital cell. Cubitellus originating far beyond the nervellus.

Hab. 10 miles S.W. of Perth, W. Australia; February 16, 1936 (*Miss A. Raymond*).

Described from one female.

Nearly allied to *duboulayi* Turn., but is a more robust insect and differently coloured. The posterior ocelli are nearer to the eyes, the sculpture is stronger, especially on the median segment, which is smooth in *duboulayi*, and the first abdominal segment is much broader, not almost subpetiolate as in *duboulayi*.

Sericophorus alicæ, sp. n.

♀. Chalybea; mandibulis, scapo subtus, tibiis anticis, tarsisque ferrugineis; tegulis luteis; alis hyalinis, venis fuscis.

♂. Feminae similis.

Long. ♀, 7.5 mm.; ♂, 6.5 mm.

♀. Clypeus very finely punctured, truncate at the apex, with two blunt teeth on each side at the angles. Scape short, first joint of the flagellum globular, third joint longer than the second, joints 5-8 as broad as long, apical joint forming a stout club as long as the two preceding joints combined, the whole flagellum gradually thickened towards the apex. Ocelli in a wide triangle, the posterior pair twice as far from each other as from the eyes. Pronotum sunk below the level of the mesonotum.

Head and thorax closely and minutely punctured, the sides of the face and the cheeks clothed with very delicate white pubescence. Mesonotum with two parallel grooves from the anterior margin not reaching the middle, a more obscure groove on each side. Median segment rather strongly obliquely striate, the striae not very near together, the middle of the segment occupied by a depressed ovate space margined by carinae. Abdomen microscopically punctured; pygidial area pointed, brown at the apex. Basal joint of the fore tarsi with six spines, pulvilli large and bilobed. Second cubital cell triangular, second abscissa of the radius scarcely two-thirds of the length of the first, appendiculate cell of the radius distinct.

♂. Similar to the ♀. The antennae are twelve-jointed, the club is obliquely truncate at the apex. Clypeus with an arched depression at the apex, without lateral teeth.

Hab. Mingenew, W. Australia; October 15-22, 1936 (Turner). Described from 2 ♀♀ and 1 ♂.

This is a much smaller species than *chalybæus* Sm. and *viridis* Sauss., and differs from both in the sculpture of the median segment, the colour of the legs, and other details.

Zoyphium tuberculatum, sp. n.

♀. Nigra; flagello, articulo primo nigro, femoribus dimidio apicali, tibiis, tarsis, tegulis abdomineque pallide rufis; scapo, mandibulis basi femoribusque anticis intermediisque subtus flavis; alis hyalinis, venis fuscis, stigmatibus fusco-ferrugineo; fronte longitudinaliter carinato.

Long. 7 mm.

♀. Antennae 12-jointed, third joint of the flagellum distinctly longer than the second, fifth to tenth joints much broader than long, the eleventh joint as long as the five preceding joints combined, forming a massive club rounded at the apex. Clypeus and face clothed with short, silver, pubescence; clypeus broadly truncate at the apex; front with a transverse ridge between the anterior ocellus and the base of the antennae, and with a short longitudinal carina, which is raised into a small tubercle before reaching the base of the antennae. Posterior ocelli twice as far from each other as from the eyes, separated from the eyes by a distance scarcely equal to the diameter of an ocellus. Head and thorax opaque, closely micro-

scopically punctured ; a transverse depression between the mesonotum and scutellum, and a transverse, depressed, and crenulate groove at the apex of the scutellum. Median segment with a narrow longitudinal groove, a very narrow crenulate transverse line at the base of the segment. Abdomen smooth, sixth tergite pointed at the apex. First recurrent nervure received before the base of the second cubital cell, second beyond the middle of the cell. The position of the recurrent nervures varies, the second on the left wing being received at three-quarters from the base, in the right wing at three-fifths.

Hab. Dedari, 40 miles W. of Coolgardie, W. Australia ; January 21, 1936 (*Turner*).

Nearest to *Z. splendidum* Hack. & Ckll., from Brisbane ; but differs in the presence of the frontal carina, in the black clypeus, in the greater distance between the posterior ocelli, and in the conspicuous black first joint of the flagellum.

Gastrosericus errans, sp. n.

♂. Niger ; pallide aureo-sericeo pilosus ; mandibulis, scapo, tegulis, abdomine pedibusque pallide rufo-ferrugineis ; tergitis quarto quintoque infuscatis ; alis hyalinis, venis flavo-ferrugineis.

Long. 7-8 mm.

♂. Head, thorax, and median segment covered with fine pale golden pubescence, which becomes silver on the mesopleuræ and sternum. Clypeus short, broadly subtruncate at the apex ; eyes diverging towards the clypeus, posterior ocelli not quite as far from the eyes as from each other ; second joint of the flagellum scarcely longer than the third. Front with a longitudinal groove reaching from the antennæ halfway to the anterior ocellus. Pronotum half as long as the mesonotum, narrowed anteriorly ; median segment as long as the mesonotum and scutellum combined, with a distinct longitudinal carina, the apical angles rounded. Abdomen smooth, tergites 1-3 with an apical band of silver pubescence. Second cubital cell triangular ; first recurrent nervure received by the first cubital cell just before the apex in the type, in another specimen interstitial with the first transverse cubital nervure ; second recurrent nervure received at the middle

of the second cubital cell. Radial cell very short, abruptly and broadly truncate at the apex.

Hab. Yanchep, 32 miles N. of Perth, Western Australia; January 29–February 8, 1936 (*Miss A. Raymond*).

The genus *Gastrosericus* is new to Australia, the nearest recorded being *G. rothneyi* Cam. from Bengal and Tenasserim. The present species is very similar to several of the African and Asiatic species, differing most markedly in the longer and less depressed pronotum.

Lyroda minima, sp. n.

♀. Nigra; mandibulis, segmento abdominali sexto, femoribus apice, tibiis apice tarsisque luteo-ferrugineis; tergitis 1–3 fascia apicali argenteo-pubescente; alis subhyalinis, venis fuscis.

♂. Feminae similis; tergito sexto apice septimoque luteo-ferrugineis.

Long., ♀, 5 mm.; ♂, 4 mm.

♀. Clypeus with a median carina, slightly produced in the middle of the anterior margin, with a row of small teeth on each side, the teeth decreasing in size from the angles of the clypeus towards the middle. A narrow frontal groove extends to the anterior ocellus; eyes divergent towards the clypeus; posterior ocelli as far from the eyes as from each other. Second joint of the flagellum a little shorter than the first and third combined. Head and thorax opaque; pronotum narrowed and rounded anteriorly, with a patch of silver pubescence in the middle; median segment coriaceous, narrowed towards the apex. Abdomen subopaque; pygidial area triangular, the sides longer than the base. Third abscissa of the radius a little longer than the first and twice as long as the second; first recurrent nervure interstitial with the first transverse cubital nervure, second received close to the middle of the second cubital cell.

Hab. Yanchep, 32 miles N. of Perth, W. Australia; January 1936 (*Turner*).

This is quite distinct from the other W. Australian species, *L. michaelsoni* Schulz, which is very much larger, and differs in the structure of the clypeus and pronotum and the colour of the apical abdominal segment.