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1910-1911.

XIV. *New Fossorial Hymenoptera from Australia.* By  
ROWLAND E. TURNER, F.Z.S.

[Read June 1st, 1910.]

PLATE L.

MOST of the new species described in this paper are from the collection of Dr. R. C. L. Perkins, who has kindly handed them to me for identification and description. Most of the species from the Cairns district were taken by the well-known collector, Mr. F. P. Dodd. They include representatives of two genera, *Spilomena* and *Piagetia*, not hitherto recorded from Australia, also further species of the rare Australian genus *Sphedrotes*.

Family THYNNIDAE.

*Rhagigaster unicolor*, Guér., st. *mutatus*, st. nov.

Differs from the typical Sydney form in the following details:—

♀. The head is a little broader than long, the median segment much more strongly broadened from the base, the vertex and front more closely and coarsely punctured and the sixth dorsal segment narrower in the middle, not triangular as in *unicolor*, but more sharply narrowed from the base.

♂. The triangular space at the apex of the clypeus is much narrower, and is rugose instead of smooth.

*Hab.* S. QUEENSLAND, Tambourine Mts., Toowoomba.

The differences in the local races of the male are very slight, but the females differ much more especially in the shape of the head and median segment. In these points the S. Queensland form approaches the Victorian form *lyelli*, Turn., much more nearly than the Sydney form.

*Tachynomyia adusta*, Sm.

*Thynnus adustus*, Sm., Cat. Hym. B.M., vii, p. 43, 1859, ♀.

*Aelurus pilosulus*, Sm., Cat. Hym. B.M., vii, p. 56, 1859, ♂.

A male of this species from the Tambourine Mts., S. Queensland, has the legs black, the wings a little more

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clouded with fuscous and the hypopygium with only one lateral notch near the base. For this form I propose the name

*Tachynomyia adusta*, Sm., st. *uniformis*, st. nov.

*Agriomyia hermanni*, sp. nov.

♀. Head very thin, large, scarcely convex, more than half as broad again anteriorly as long, rounded at the sides, nearly as broad on the posterior margin as long, the front closely and microscopically punctured, with a median longitudinal sulcus, an obscure oblique depression on each side in the ocellar region, the vertex sparsely punctured. Clypeus with a short carina not extending to the apex. Eyes small, touching the base of the mandibles, the antennae inserted as far from each other as from the eyes. Pronotum much narrower than the head, more than half as broad again anteriorly as long, slightly narrowed posteriorly, slightly convex, the anterior angles depressed and produced into short spines, shining, with scattered punctures, a very short sulcus from the middle of the anterior margin, the propleurae finely aciculate. Scutellum narrow, a little longer than the breadth at the base, narrowed to the apex, sparsely punctured. Median segment closely punctured, thinly covered with cinereous pubescence, no longer than the scutellum, broadened from the base and obliquely truncate posteriorly. Abdomen shining, with a few scattered punctures, the first segment, with a broad depression before the feebly raised apical margin, the depression scarcely arched in the middle, second segment with four strong transverse carinae, including the raised apical margin, the fifth segment longitudinally subcarinate in the middle; pygidium elongate ovate, with a carina from the base to the middle.

Black; the mandibles, clypeus, antennae, legs, sides of the abdominal segments, carinae of the second dorsal segment and base of the pygidium fusco-ferruginous. Length 10 mm.

♂. Clypeus produced and narrowly truncate at the apex, sparsely punctured. Head rounded, finely and shallowly punctured, with a shining longitudinal line on the front, the antennae inserted a little nearer to the eyes than to each other. Thorax closely punctured; the scutellum shining, more sparsely punctured and rather strongly convex. Median segment obliquely depressed. Abdomen fusiform, shining, sparsely and shallowly punctured; hypopygium very broadly triangular, slightly rounded at the apex, with a short apical spine; the first ventral segment truncate at the apex and subtuberculate.

Black; the clypeus, the inner margins of the eyes broadly as high

as the base of the antennae, a short oblique line on each side between the antennae, a small spot on the vertex, the margins of the pronotum, tegulae, basal angles of the scutellum, a spot on the mesopleurae, postscutellum, a broad transverse band emarginate posteriorly on the median segment, a narrow transverse band narrowly interrupted in the middle on dorsal abdominal segments 2-6 and on ventral segments 2-4 pale yellow. Wings pale dull flavo-hyaline, nervures pale ferruginous. Length 13 mm.

*Hab.* DARNLEY ISLAND (*Elgner*).

The female is somewhat intermediate between *rotundiceps*, Sm., and *luctuosus*, Sm., differing from the former in the much flatter pronotum, from the latter in the different shape and more convex surface of the pronotum, and from both in the rather broader pygidium and the shallow depressions on the head. The male has the hypopygium much broader and more triangular than in either of the two species mentioned above, and the colour of the wings and median segment differs. Small colour variations in the males of *Agriomyia* seem often to be associated with structural differences in the females, and should not be treated as of no value. In some genera of the family, however, the yellow markings of the male vary very much in the same species.

*Agriomyia manifesta*, sp. nov.

♀. Head thin, large, not flattened but slightly convex, more than half as broad again anteriorly as long, rounded at the posterior angles, subopaque and without punctures, with a very short frontal sulcus; eyes small, oval, almost touching the base of the mandibles. Thorax shining and almost smooth, the median segment very sparsely punctured, pronotum a little broader anteriorly than long, narrowed posteriorly, raised in the middle of the anterior margin into an indistinct hump-like prominence which is divided at the apex by a very faint longitudinal sulcus, the anterior angles pointed. First dorsal abdominal segment transversely depressed at the apex, second segment with five transverse carinae including the raised apical margin, the basal carina low and very near the second. Pygidium elongate ovate, narrowed at the base, with a small tuft of bright fulvous hairs on each side.

Black; antennae, legs, second dorsal segment and pygidium fuscoferruginous. Length 9 mm.

♂. Clypeus produced and narrowly truncate at the apex, shining,

very sparsely punctured. Antennae inserted as far from each other as from the eyes, the front between them not raised, and divided by a well-marked, short, longitudinal sulcus. Head rounded, not large, closely punctured. Thorax closely punctured, the median segment almost smooth, oblique from the postscutellum. Abdomen very sparsely and shallowly punctured, the transverse line at the base of the segments not very deeply impressed. Hypopygium very broadly rounded at the apex, with a short apical spine.

Black; clypeus, front between the antennae, inner margins of the eyes very broadly as high as the base of the antennae, a small spot on the vertex, the anterior margin on the pronotum broadly, tegulae, a quadrate spot on the mesonotum, a small spot on the mesopleurae below the anterior wings, a small spot on each side at the anterior angles of the scutellum, postscutellum, the whole of the oblique slope of the median segment, a broad continuous band narrowly emarginate in the middle posteriorly on the second and third dorsal segments of the abdomen, a narrow band scarcely interrupted on the first segment, an interrupted band on the fourth and fifth segments, the apex of the tubercle on the first ventral segment and transverse bands on ventral segments 2-4 yellow. Wings hyaline, nervures fuscous. Legs and the undersurface of the scape ferruginous. Length 11 mm.

*Hab.* QUEENSLAND, Bundaberg (ex coll. *Perkins*); ♂ ♀ in cop.

The female closely resembles *rotundiceps*, Sm., but the head is a little smaller and slightly convex, not flattened as in *rotundiceps*. The hump on the anterior margin of the pronotum is more strongly developed in *rotundiceps*. The male closely resembles *A. maculata*, Guér., var. *variegata*, Klug., which may prove to be a good species; the clypeus in the present species is a little more convex, the bands on the second and third segments are continuous, and the depressed line on the base of the segments less distinct, the yellow mark on the median segment is not trilobed posteriorly, the scape is ferruginous beneath and the hypopygium is much more broadly rounded at the apex. The males of this genus are very difficult to distinguish, but colour differences appear to be more constant than in some genera of the *Thynnidae*. The female of *variegata* appears to be quite different, but I have not seen specimens which can be referred to that species with absolute certainty.

*Zeleboria longicornis*, Turn.

*Thynnus (Zeleboria) longicornis*, Turn., Proc. Linn. Soc. N.S. Wales, xxxiii, p. 108, 1908, ♂.

♀. Head shining, very sparsely punctured, half as broad again anteriorly as long, strongly rounded posteriorly, a short, deep, longitudinal sulcus on the front; the clypeus with a carina from the base to the apex. Thorax finely and not very closely punctured, the pronotum much narrower than the head, a little longer than broad, the sides almost parallel, a deep longitudinal sulcus from the anterior margin not reaching half-way to the middle. Median segment long, not much shorter than the pronotum, the dorsal surface flat, broadened from the base and almost vertically truncate posteriorly. First abdominal segment closely and shallowly punctured, the apical margin transversely depressed; second segment with six well-marked transverse carinae, including the raised apical margin; segments 3-5 shining, shallowly punctured; the fifth ventral segment more coarsely punctured. Pygidium deflexed, almost twice as long as the greatest breadth, sparsely punctured and rounded at the apex.

Black; the antennae, mandibles and spines of the tarsi fusco-ferruginous. Length 12 mm.

*Hab.* SOUTH QUEENSLAND, Tambourine Mts.

The female is nearly related to other species of *Zeleboria*. The locality, North-West Australia, given for the type male may have been erroneous, as it is not likely that the species ranges across the continent.

*Asthenothynnus kurandensis*, sp. nov.

♂. Clypeus produced and narrowly truncate at the apex, transversely depressed before the apex. Head shining, with a few scattered punctures, the interantennal prominence almost transverse at the apex, raised above the base of the scape and divided by a shallow sulcus. Antennae slender, as long as the head, thorax and median segment combined, the joints moderately arcuate beneath. Posterior ocelli nearly twice as far from the eyes as from each other. Thorax shining and sparsely punctured, the pronotum much narrower than the head, narrowed anteriorly and broadly emarginate on the anterior margin, scutellum broadly rounded at the apex. Median segment a little longer than the breadth at the base, finely aciculate. Abdomen flattened, elongate and slender, the sides nearly parallel, narrowed at the base; segments 1-4 depressed on the apical margin, most broadly in the middle; the first segment longer than the second,

more than twice as broad at the apex as at the base, shining, with a sulcus from the base to the middle. Hypopygium produced into an apical spine, with a very short spine on each side near the base; claspers rather broad at the base, narrowly produced and pointed at the apex.

Black; mandibles, clypeus, margins of the eyes broadly, narrowly interrupted on the summit by a ferruginous line, and continued across the vertex, the margins of the pronotum, a quadrate spot on the mesonotum, a spot on the scutellum, the tegulae, a broad band on the mesopleurae in front and a spot before the intermediate coxae, a spot in the middle of the median segment and a curved band on each side, a spot on each side near the apex of abdominal segments 1-5, the coxae and a line on the femora and tibiae bright yellow; an oblique line on each side on the vertex, a round spot on the yellow band behind the eyes, the abdomen and the legs ferruginous. Wings hyaline, slightly iridescent, nervures fuscous, stigma pale testaceous brown. The second abscissa of the radius is equal in length to the third, the first recurrent nervure is received at two-thirds from the base of the second cubital cell, the second at one quarter from the base of the third cubital cell. Length 6 mm.

♀. Clypeus short, with a carina. Head smooth and shining, almost semicircular, not quite twice as broad anteriorly as long, very slightly convex, the front concave on each side above the base of the antennae, the concave spaces much broader than long. Eyes small, situated close to the base of the mandibles; antennae no longer than the anterior breadth of the head. Thorax and median segment smooth and shining, the pronotum much narrower than the head, nearly twice as broad as long, the anterior angles produced acutely, an indistinct longitudinal carina in the middle, the sides almost parallel; scutellum much broader than long, rounded posteriorly; median segment shorter than the pronotum, obliquely truncate posteriorly, produced anteriorly into a pointed tubercle. Abdomen smooth with a few scattered punctures, the segments broadly depressed at the apex, the raised portion before the depression strongly bilobed, second segment with two transverse carinae in addition to the raised apical margin. Fifth ventral segment almost smooth. Pygidium deflexed, narrow, lanceolate, very slightly widened and rounded at the apex.

Light castaneous brown, the abdominal segments pale luteous on the sides and apical margins. Length 3 mm.

*Hab.* QUEENSLAND, Cairns.

A variety of the male has the abdomen black with yellow markings and the segments more or less fusco-

ferruginous at the apex, but I can find no structural difference. The tubercle on the median segment of the female is remarkable.

*Asthenothynnus rubromaculatus*, Turn.

*Thynnus* (*Aeolothynnus*) *rubromaculatus*, Turn., Proc. Linn. Soc. N.S. Wales, xxxiii, p. 118, 1908, ♂.

♀. Head and thorax smooth and shining; the head nearly half as broad again as long, slightly convex, very strongly rounded posteriorly, the clypeus without a carina; no sulcus on the front; the antennae very short, not equal in length to the distance between the eyes, which are very small and situated near the base of the mandibles. Thorax very narrow, not more than one-third as broad as the anterior margin of the head, the pronotum distinctly longer than broad, the sides parallel, without a sulcus, the anterior angles not produced; scutellum a little narrower than the pronotum; median segment slightly broadened from the base, obliquely sloped posteriorly, the dorsal surface before the slope only a little longer than the scutellum. Abdomen as broad as the head, shining, with a few scattered punctures at the base of the apical segments; second segment with a transverse carina close to the base, another, lower, just before the apex, the apical margin feebly raised; segments 3-5 with a strongly-raised mark rounded posteriorly on each side at the base. Fifth ventral segment punctured. Pygidium long and very narrow, almost linear, strongly compressed on the sides. Intermediate tibiae scarcely broader than the posterior pair, the intermediate tarsi slender.

Dark reddish brown, the sides of the abdomen and the apical portion of the dorsal segments pale luteous; the head beneath dull ferruginous. Length 4 mm.

*Hab.* SOUTH AUSTRALIA, Adelaide (*Perkins*); ♂ ♀ in cop.

This species differs considerably from others of the genus in the sculpture of the second dorsal segment of the abdomen and the absence of a frontal sulcus. The male also differs in the blunt hypopygium from most other species of the genus.

*Asthenothynnus minutissimus*, sp. nov.

♂. Clypeus produced and narrowly truncate at the apex, shining, finely punctured at the base, smooth at the apex. Head shining,

finely and sparsely punctured, with a short fronted sulcus, the interantennal prominence low and transverse at the apex. Antennae rather shorter than the thorax and median segment combined, the third joint of the flagellum much longer than the second, the apical joints as thick as the basal. Thorax shining, sparsely punctured, the median segment very minutely punctured; the pronotum narrower than the head, very feebly and widely emarginate anteriorly, scutellum convex, broadly truncate at the apex. Abdomen flattened, elongate fusiform, smooth and shining, the segment narrowly depressed on the apical margin. Hypopygium narrow, much longer than broad, the sides almost parallel, blunt at the apex and without a spine. Third abscissa of the radius longer than the second, the second recurrent nervure received at one-third from the base of the third cubital cell.

Black; the mandibles, the margins of the eyes narrowly (except at the summit), the margins of the pronotum, a spot on the mesonotum, the postscutellum, a small spot on each side at the apical angles of the median segment, the apex of the tegulae, a minute spot on the mesopleurae below the anterior wings, a lateral spot on each side of abdominal segments 2-6, narrowly produced on the apical margin of segments 5-6 and the anterior tibiae beneath pale yellow; legs testaceous brown. Wings hyaline, slightly iridescent, nervures pale testaceous brown. Length 3 mm.

*Hab.* S. AUSTRALIA, Adelaide (*Perkins*).

Nearly allied to *pygmaeus*, Turn., but is a smaller species and much more finely punctured.

*Asthenothynnus? perkinsi*, sp. nov.

♂. Clypeus produced and narrowly truncate at the apex. Head, thorax and median segment finely and very closely punctured; the head a little broader than the thorax; antennae filiform, a little longer than the thorax and median segment combined, the apical joints very feebly arcuate beneath; the interantennal carina transverse. Posterior ocelli half as far again from the eyes as from each other. Pronotum a little narrowed anteriorly; the scutellum very broadly rounded at the apex; median segment rounded. Abdomen elongate, tapering slightly at the extremities, flattened, the segments, very slightly depressed at the base, shining, finely and shallowly punctured, the four basal segments narrowly depressed on the apical margin. Hypopygium broad, the sides parallel, the apical angles produced into short spines, with a strong median spine. Third abscissa of the radius a little longer than the second; first recurrent nervure received at two-thirds from the base of the second cubital

cell. A very deep longitudinal sulcus reaches from the base to the middle of the first dorsal segment of the abdomen.

Black, with short whitish pubescence on the head and pleurae; the anterior margin of the clypeus, mandibles, the apex of the interantennal prominence, the margins of the pronotum, tegulae, a longitudinal line on the scutellum and the postscutellum yellow; an obscure spot on each side on the vertex, the second and third abdominal segments, the apex of the first and the base of the fourth dark ferruginous; the tibiae, tarsi and apex of the femora testaceous brown. Wings hyaline, nervures fuscous. Length 8-10 mm.

*Hab.* QUEENSLAND, Bundaberg (*Perkins*); two specimens.

This is not a typical *Asthenothynnus*, but is better placed in that genus than in any other.

*Epactiothynnus arcicl*, sp. nov.

♀. Head flattened, twice as broad anteriorly as posteriorly, not rounded at the sides, slightly raised in the middle and depressed on the sides, subopaque, with a few punctures in longitudinal rows on the front, and a very short frontal sulcus. Eyes oval, touching the base of the mandibles. Pronotum longer than broad, flattened, subopaque, with an obscure median carina, the sides almost parallel. Scutellum rounded at the apex; the median segment shorter than the scutellum, obliquely truncate posteriorly, shining, very sparsely punctured; the pronotum about half as long again as the scutellum and median segment combined. Abdomen broader than the thorax, shining, the segments very finely aciculate at the base, with a few deep punctures before the apex; the first segment with a transverse groove just before the apex, the second with three strong transverse carinae in addition to the less strongly-raised apical margin; the third and fourth segments narrowly depressed on the apical margin. Pygidium almost vertically truncate, very narrowly elongate ovate, with a tuft of golden hairs on each side. Fifth ventral segment coarsely punctured. Intermediate and posterior tibiae broad and spinose, tarsi slender.

Black, the abdominal segments on the sides and at the apex very pale luteous; tibiae and tarsi luteous brown; antennae and mandibles fusco-ferruginous; the posterior slope of the median segment thinly clothed with long white pubescence. Length 6 mm.

♂. Mandibles bidentate, the inner tooth very short and blunt. Clypeus produced and narrowly truncate at the apex, with a low carina from the base to the middle, clothed with long white pubescence, finely and closely punctured, more closely at the base than at the apex. Head, thorax and median segment finely and

closely punctured; with sparse grey pubescence, closer and longer on the head than on the thorax; antennae no longer than the thorax and median segment combined, scarcely narrowed to the apex, the joints slightly arcuate beneath, the third joint of the flagellum more than half as long again as the second, the carinae between the antennae only slightly oblique; the posterior ocelli a little further from the eyes than from each other. Pronotum short, strongly narrowed anteriorly; scutellum strongly convex; median segment rounded. Abdomen elongate, tapering slightly at the extremities, shining and shallowly and finely punctured, segments 2-5 strongly constricted at the base, the first segment with a longitudinal sulcus from the base to the middle. Hypopygium lanceolate, produced into a long acute spine on each side at the base. Second recurrent nervure received very near the base of the third cubital cell; second abscissa of the radius longer than the third.

Black; the apical half of the clypeus, marked with black on the centre, the base of the mandibles, the margins of the pronotum, the interantennal carinae, a spot on the tegulae, a small longitudinal spot on the posterior portion of the mesonotum, a small spot on the scutellum and a minute one at each of the anterior angles, a transverse line on the postscutellum, a spot on each side of the first abdominal segment and a short narrow band on each side of segments 2-5 near the apical margin pale yellow; legs fuscous brown, lighter on the anterior pair, calcaria white. Wings hyaline, nervures fuscous, the stigma pale testaceous. Length 10 mm.

*Hab.* QUEENSLAND, Cairns (ex coll. *Perkins*); 5♂, 2♀.

Very near *bipartitus*, Turn., especially in the male sex, but is a smaller and more slender species. In *bipartitus* the female has a strong tubercle on the pronotum. The colour of the legs in the male seems to be a constant difference in the limited number of specimens I have seen, though in some species of *Thynnidae* this character is quite unreliable.

*Acolothynnus lachrymosus*, sp. nov.

♂. Clypeus slightly advanced and narrowly truncate at the apex, finely and closely punctured and thinly clothed with whitish pubescence. Head and thorax closely punctured rugose; antennae as long as the thorax and median segment combined, of almost even thickness throughout, the third joint of the flagellum nearly half as long again as the second, but slightly shorter than the fourth,

the interantennal carina depressed in the middle, almost transverse. Pronotum almost as broad as the head, scarcely narrowed anteriorly, the anterior margin strongly and broadly emarginate; scutellum closely punctured, with an obscure median carina, broadly rounded at the apex. Median segment closely punctured, rounded. Abdomen elongate, the sides almost parallel, the segments punctured and very strongly constricted at the base, the sixth segment with an acute spine on each side at the apical angles beneath; hypopygium rather short, very broad, not narrowed at the apex, ending in three long spines, the central spine the longest. Second abscissa of the radius more than twice as long as the third, second recurrent nervure received at about one-eighth from the base of the third cubital cell.

Black; the base of the mandibles, a narrow transverse line close to the apex of the clypeus, a small transverse spot on each side above the base of the antennae, the anterior margin of the pronotum very narrowly and the postscutellum whitish yellow; calcaria whitish. Wings hyaline; nervures fuscous. Length 9 mm.

*Hab.* SOUTH AUSTRALIA, Adelaide.

Differs from *dimidiatus*, Westw., in the narrower clypeus, the broader hypopygium and the colour; from *armiger*, Turn., in the much broader hypopygium and the broadly emarginate pronotum. The very broad hypopygium separates it from *umbripennis*, Sm., as well as the smaller size and colour differences.

*Zaspilothynnus rufolatus*, Turn. (Plate L, fig. 1 ♂, fig. 2 ♀.)

*Thynnus rufoluteus*, Turn., Ann. Mus. Nat. Hung., 1910, p. 114.

♂. Clypeus longer than broad, convex at the base, deflexed towards the apex, the apical margin broadly truncate, finely longitudinally striated; the labrum produced far beyond the clypeus, broad and rounded at the apex, without an emargination. Mandibles slender, with a very feeble tooth on the inner margin near the apex. Head finely and closely punctured, the interantennal prominence narrowly rounded at the apex, almost touching the base of the clypeus. Antennae shorter than the thorax and median segment combined, of about equal thickness throughout, inserted as far from each other as from the eyes. Thorax very finely and closely punctured, pronotum not as broad as the head, narrowed anteriorly, the margin raised; scutellum convex, broadly rounded at the apex. Median segment minutely punctured, oblique. Abdomen elongate, longer than the head, thorax and median segment combined, tapering slightly towards the apex, minutely and sparsely punctured, the

seventh dorsal segment produced into a flattened plate which is narrowly rounded at the apex and closely longitudinally striated; a spine on each side at the apical angles of the sixth ventral segment; hypopygium with a blunt spine on each side near the base, thence sharply narrowed and elongate to the base of the acute apical spine.

Black; base of the mandibles; clypeus, a V-shaped mark between the antennae, the orbits of the eyes narrowly interrupted on the summit, a narrow transverse band on the vertex, a broad band on the posterior margin of the pronotum, the anterior angles of the pronotum, tegulae, a large quadrate spot on the mesonotum, a vertical band on the mesopleurae, the posterior half of the scutellum and a small spot at each of the anterior angles, the postscutellum, a broad band narrowed towards the apex on the median segment, a transverse band on dorsal abdominal segments 1-6, interrupted in the middle on segments 2-5, a transverse band interrupted in the middle on ventral segments 2-4, the intermediate and posterior coxae beneath and the process of the sternum between the intermediate coxae bright yellow, femora at the apex, tibiae and tarsi light reddish brown. Wings hyaline, nervures black, the stigma pale testaceous brown. Length 17 mm.

♀. A female from the same locality differs from the type in having the ground colour almost black instead of ferruginous.

*Hab.* CAPE YORK, Q. (*Elgner*).

The type female in the Hungarian National Museum is from Cooktown.

### Family SPHEGIDAE.

*Spilomena australis*, sp. nov. (Plate L, fig. 9.)

♀. Clypeus raised into a median carina, which broadens at the apex and forms a smooth triangular surface. Head very finely rugose, a carina from the anterior ocellus to the base of the clypeus, the inner orbits of the eyes raised and forming distinct carinae. Antennae inserted low down on the sides of the clypeus, much further from each other than from the eyes, the flagellum a little more than twice as long as the scape. Eyes at the base of the clypeus separated by a distance nearly equal to twice the length of the scape, on the vertex by less than three-quarters of that distance; the posterior ocelli a little nearer to each other than to the eyes. Thorax narrower than the head, very minutely punctured, the pronotum depressed, much narrower than the mesonotum, the angles reaching the tegulae, mesonotum and scutellum broader than long; a well-defined broadly triangular area almost covering the dorsal surface of the median segment, rugose and longitudinally

striated, the two median striae more distinct than the lateral; the posterior truncation of the segment finely transversely striated. Abdomen smooth and shining, fusiform, not petiolate. The second cubital cell is much higher than long, the first abscissa of the radius longer than the second, the recurrent nervure received just before the apex of the first cubital cell. Stigma nearly twice as long on the costa as its greatest breadth.

Testaceous; the head black, antennae testaceous. Wings hyaline, strongly iridescent, nervures and stigma pale testaceous. Length 3.5 mm.

*Hab.* N. QUEENSLAND, Kuranda, August (ex coll. Perkins).

This is the first species of *Spilomena* recorded from Australia; it is much larger than the European species, but only differs slightly in neurulation and structure. In colour there is a close resemblance to *Pison melanocephalum*, Turn., and to a species of *Halictus*, both found in the same locality. It is remarkable that this plan of colouring should be prevalent at Cairns, whereas at Mackay several degrees further south none of these species occur. It is possible that the colouring may have some connection with the conditions which prevail locally, Cairns being a district of dense tropical jungle, and open grass country largely predominating at Mackay.

*Sphex mimulus*, sp. nov.

♀. Mandibles with three teeth, the outer one long and pointed, the second, on the inner margin, strong and broad, the third small. Clypeus almost transverse on the apical margin, produced in the middle into two small teeth which are separated from each other by a shallow emargination. Head subopaque, very shallowly punctured, the front and clypeus clothed with very fine silver pubescence, with sparse, long, black hairs. Posterior ocelli a little further from the eyes than from each other; second joint of the flagellum half as long again as the third joint. Scutellum flat, post-scutellum without a groove or tubercles, median segment coriaceous, with a few indistinct striae on the sides. Abdomen shining, without punctures, the petiole of the basal segment as long as the third joint of the posterior tarsi. Second cubital cell rhomboidal, the third very short on the radial nervure; first recurrent nervure received close to the apex of the second cubital cell, almost interstitial with the second transverse cubital nervure; radial cell

truncate at the apex. Tarsal ungues with two teeth near the base.

Black; the fifth and sixth abdominal segments and the base and apex of the fourth bright chestnut brown. Wings fulvo-hyaline, broadly fusco-hyaline at the apex, nervures fuscous. Length 23 mm.

*Hab.* QUEENSLAND, Cairns.

This species closely resembles *Zaspilothynnus excavatus*, Turn., in size and colour. It is closely allied to *Sphex confrater*, Kohl., from New Britain, but the shape of the clypeus is different. As far as I know no Thynnus of similar colouring occurs in New Britain, nor is the plan of colouring one that is at all prevalent among Queensland Hymenoptera. The present species must be a rarity as I have never seen another specimen. *Z. excavatus* is a fairly common insect in the tropical scrubs of the Cairns district, and also occurs at Cooktown.

#### KEY TO THE AUSTRALIAN SPECIES OF THE GENUS *CERCERIS*.

♀ ♀

- A. Clypeus with a prominent lamina projecting from near the base.
  - a. The lamina arched, much longer than broad. Orange, mesonotum and fourth abdominal segment black . . . *C. aurantiaca*, Sm.
  - b. The lamina short. Black with yellow marks on front and thorax, second, fourth and fifth segments of abdomen with narrow yellow apical bands . . . . . *C. opposita*, Sm.
- B. Clypeus without a lamina.
  - a. Triangular space at the base of the medium segment smooth and shining.
    - a<sup>2</sup>. Clypeus with a small tubercle on each side near the middle, depressed from the middle to the apex.
      - a<sup>3</sup>. Reddish orange; vertex, mesothorax, third and fourth abdominal segments black . . . *C. victrix*, Turn.
      - b<sup>3</sup>. Black; three apical segments of abdomen more or less castaneous . . . . . *C. perkinsi*, Turn.

- b<sup>2</sup>. Clypeus without tubercles.
  - a<sup>3</sup>. Clypeus porrect, widely and deeply emarginate; abdomen smooth and shining . . . . *C. euchroma*, Turn.
  - b<sup>3</sup>. Clypeus less strongly porrect, very shallowly emarginate or transverse at apex; abdomen closely punctured.
    - a<sup>4</sup>. Clypeus shallowly emarginate; triangular space at base of median segment with two yellow spots; third abdominal segment only black entirely . . . *C. multiguttata*, Turn
    - b<sup>4</sup>. Clypeus transverse; triangular space unspotted; third and fourth abdominal segments black . . . . . *C. inexpectata*, Turn.
- b. Triangular space at base of median segment not smooth.
  - a<sup>2</sup>. Triangular space almost wholly striated.
    - a<sup>3</sup>. Triangular space finely transversely striated. . . . . *C. fluvialis*, Sm.
    - b<sup>3</sup>. Triangular space longitudinally or obliquely striated.
      - a<sup>4</sup>. The striae close and almost longitudinal. Black, second and fifth abdominal segments orange. . . . . *C. varipes*, Sm.
      - b<sup>4</sup>. The striae oblique, not reaching the apex. Black, marked with dull yellow and ferruginous . . . . *C. labeculata*, Turn.
  - b<sup>2</sup>. The triangular space striated in the corners only or entirely punctured.
    - a<sup>3</sup>. Clypeus porrect and broadly emarginate . . . . . *C. venusta*, Sm.
    - b<sup>3</sup>. Clypeus not porrect.
      - a<sup>4</sup>. First abdominal segment shorter than the breadth at the base.
        - a<sup>5</sup>. Black, two basal and fifth abdominal segments, legs

- and marks on head and  
 thorax red orange . . *C. gilesi*, Turn.
- b<sup>5</sup>. Black, marked with dull  
 yellow and ferruginous . . *C. antipodes*, Sm.
- b<sup>4</sup>. First abdominal segment as  
 long as broad or longer.
- a<sup>5</sup>. Abdomen, except basal seg-  
 ment, sparsely punctured ;  
 ochreous yellow, first and  
 third segments black . . *C. australis*, Sauss.
- b<sup>5</sup>. Three basal abdominal seg-  
 ments at least deeply and  
 closely punctured, abdo-  
 men marked with yellow  
 or yellow and ferruginous.
- a<sup>6</sup>. Fourth and fifth segments  
 more sparsely punctured  
 than the basal ones,  
 thorax wholly black . . *C. saeva*, Sm.
- b<sup>6</sup>. Fourth and fifth segments  
 as closely punctured as  
 the basal ones, post-  
 scutellum and a spot on  
 each side of the pro-  
 notum yellow.
- a<sup>7</sup>. Scutellum black,  
 abdomen marked  
 with yellow and  
 ferruginous . . *C. minuscula*, Turn.
- b<sup>7</sup>. Scutellum yellow,  
 abdomen with  
 yellow markings *C. praedura*, Turn.

*Cerceris victrix*, sp. nov. (Plate L, fig. 10.)

♀. Mandibles acute at the apex, notched near the middle of the inner margin, with a blunt tooth on the basal side of the notch. Clypeus broad, almost transverse at the apex, with four blunt teeth on the apical margin of the middle lobe, which is subconcavely depressed from near the middle, with a small tubercle on each side at the base of the depression, the apical half smooth and shining, the basal sparsely punctured. Front longitudinally rugose-striate, vertex punctured-rugose ; antennae inserted fully half as far again from the eyes as from each other, with an elevated carina between them, the second joint of the flagellum as long as the first and third combined,

the apical joint equal in length to the tenth and rounded at the apex; the base of the antennae separated from the base of the clypeus by a distance equal to the length of the third joint of the flagellum. Ocelli in a very broad triangle, the posterior pair fully half as far again from the eyes as from each other; the eyes separated from the posterior margin of the head by a space nearly equal to their greatest breadth. Thorax much narrower than the head, longitudinally rugose-striate on the mesonotum and scutellum, pleurae rugosely punctured. Median segment and abdomen strongly punctured, the triangular space at the base of the median segment smooth. First abdominal segment short, more than half as broad again as long; pygidial area rather broadly truncate at the apex, half as broad again at the base as at the apex, finely granulate.

Reddish orange; the vertex, mandibles, mesonotum, pleurae, thorax beneath, the apex of the median segment in the middle, the third and fourth abdominal segments and the apex of the pygidial area black. Wings flavo-hyaline, with a fuscous cloud along the costa near the apex, nervures ferruginous. Length 16 mm.

♂. Differs from the female in the following points: front, mesonotum and scutellum closely punctured, the triangular space at the base of the median segment transversely striated, the middle lobe of the clypeus much longer than broad, without tubercles in the middle and not depressed at the apex, the antennae separated from the base of the clypeus by a distance equal to the length of the first and second joints of the flagellum combined, and the extent of the black area on the vertex and median segment is much less. Length 14 mm.

*Hab.* QUEENSLAND, Cairns (♂ ex coll. *Perkins*); Moreton Bay (♀ ex coll. *F. Smith*).

I think there can be no doubt that these are sexes of the same species.

*Cerceris perkinsi*, sp. nov. (Plate L, fig. 12.)

♀. Clypeus short, strongly porrect and broadly emarginate at the apex, coarsely punctured, smooth and shining at the base. Mandibles shining, with a broad triangular tooth on the inner margin near the middle. Head much broader than the thorax, closely and deeply punctured, the punctures on the front confluent longitudinally. Antennae inserted near together on the front, fully twice as far from the eyes as from each other and half as far again from the anterior ocellus as from the base of the clypeus; the second joint of the flagellum a little longer than the third. The frontal carina is broad at the base of the clypeus, narrow and

strongly raised between the antennae and obscurely continued to the anterior ocellus. Eyes diverging towards the clypeus, the ocelli in a wide triangle, the posterior pair further from the eyes than from each other. Thorax subopaque, shallowly and sparsely punctured, the scutellum almost smooth. Median segment very sparsely and finely punctured, the triangular space at the base smooth and shining, with a faint median sulcus. Pleurae and abdomen deeply but not very closely punctured, the petiole about twice as broad as long; pygidial area rugulose, about twice as long as broad, truncate at the apex, the sides almost parallel, slightly narrowed at the apex.

Black; a large spot on each side of the front below the base of the antennae, the scape beneath and the tibiae beneath yellow; the fifth dorsal segment, the sides of the fourth more obscurely and a transverse spot on each side at the base of the second dark castaneous brown; a dull ochraceous spot on the tegulae. Wings hyaline, the costa as far as the apex of the radial cell rather broadly fuscous; nervures black. Length 12 mm.

*Hab.* QUEENSLAND, Cairns (*R. C. L. Perkins*).

*Cerceris euchroma*, sp. nov. (Plate L, fig. 11.)

♀. Clypeus short and broad, the middle lobe twice as broad as long, porrect and deeply and widely emarginate at the apex, sparsely and shallowly punctured. Head much broader than the thorax, closely but not very coarsely punctured, shallowly on the front, more deeply on the vertex; antennae inserted twice as far from the eyes as from each other, with a sharp longitudinal carina between them, the second joint of the flagellum as long as the first and third combined. Posterior ocelli fully twice as far from the eyes as from each other, the cheeks behind the eyes rather broader than the eyes. Thorax and median segment finely and rather sparsely punctured, shining, scutellum very sparsely punctured, the postscutellum and the triangular area at the base of the median segment smooth and shining. Abdomen smooth and shining, the basal segment more than half as broad again as long; pygidial area finely granulate, widest in the middle, a little broader at the base than at the apex; sixth ventral segment deeply emarginate at the apex, the angles produced and showing as blunt tubercles beyond the dorsal segment. Pleurae striated, the upper portion of the mesopleurae punctured, the lower portion rugosely striated.

Black; the base of the mandibles, clypeus, front, scape beneath, cheeks, a spot on each side on the vertex, pronotum, tegulae, scutellum, postscutellum, mesopleurae, legs, a broad curved band on each side of the median segment almost enclosing a large black spot, the third and fifth abdominal segments, the basal half of the second

dorsal segment and the whole of the two basal ventral segments orange yellow ; antennae and pygidium dull ferruginous, the apex of the flagellum fuscous above. Wings hyaline, fusco-hyaline along the costa, nervures fuscous, the stigma testaceous. Length 11 mm.

*Hab.* QUEENSLAND, Cairns (ex coll. *Perkins*).

*Liris ducalis*, Sm.

*Larrada ducalis*, Sm., Journ. Linn. Soc. Zool., p. 84, 1861.

*Hab.* QUEENSLAND, Cairns (coll. *Perkins*).

This wide-ranging species has not previously been recorded from Australia. It ranges westward as far as N. India. The Australian specimens are rather small, about 17 mm. in length, the wings a little paler, and the anterior margin of the clypeus less deeply notched in the middle.

*Tachysphex adcluidae*, sp. nov.

♀. Clypeus shining, very sparsely punctured, the apical margin very slightly rounded, almost transverse. Antennae inserted a little nearer to each other than to the eyes, slender, the second joint of the flagellum about twice as long as the first, but a little shorter than the third. Eyes separated on the vertex by a distance equal to the length of the first and second joints of the flagellum combined. Head smooth and shining, with a very obscure frontal sulcus, with a large shallow depression behind the posterior ocelli, the eyes almost touching the posterior margin. Thorax smooth and shining, the pronotum depressed below the mesonotum, but not very steeply sloped, the mesonotum without lateral furrows. Median segment opaque, a little shorter than the mesonotum, the posterior truncation very finely transversely striated. Abdomen highly polished beneath, subopaque above, the four basal segments very feebly depressed at the apex, more broadly in the middle than at the sides ; the pygidial area shining, very sparsely punctured, narrow and pointed. Comb of the anterior tarsi fairly long, the spines feeble. Third abscissa of the radius longer than the second, equal in length to the first ; the first recurrent nervure is received nearer to the second than to the base of the second cubital cell.

Black ; tegulae testaceous brown, mandibles and apex of the scape beneath fusco-ferruginous ; legs bright ferruginous, coxae and trochanters black. Wings hyaline, faintly tinged with fuscous, nervures fuscous. Length 8 mm.

*Hab.* SOUTH AUSTRALIA, Adelaide (ex coll. *Perkins*).

Near *T. pugnator*, Turn., from which it may be distinguished by the colour of the legs, the narrower space

between the eyes on the vertex, the slenderer antennae and the absence of parapsidal furrows on the mesonotum.

*Piagetia intaminata*, sp. nov. (Plate L, fig. 14.)

♀. Clypeus short, slightly convex in the middle, the apical margin feebly emarginate, clothed with short whitish pubescence which extends on to the front. Mandibles notched on the outer margin. Antennae inserted at the base of the clypeus, much nearer to each other than to the eyes, the second joint of the flagellum more than twice as long as the first, the third as long as the second, the scape nearly as long as the second and third combined. Eyes converging towards the vertex, separated on the vertex by a distance exceeding the length of the second joint of the flagellum. Head opaque, almost smooth, a very delicate frontal sulcus almost reaching the anterior ocellus; the space round the ocelli feebly depressed, the depression almost reaching the eyes. Posterior ocelli close together, very small. Thorax and abdomen opaque, without visible punctures, sparsely covered with very fine greyish pubescence, which is thicker and paler at the apex of the first abdominal segment; pronotum much narrower than the mesonotum, faintly transversely striated; median segment longer than broad, transversely rugose-striate. First abdominal segment more than half as long again as the breadth at the apex, very narrow at the base; pygidial area triangular, sparsely punctured, bare. The second abscissa of the radius is very short, a little more than half as long as the third, the first as long as the second and third combined; the first recurrent nervure is received nearer to the base of the second cubital cell than to the second recurrent nervure, which is received before the middle of the same cell.

Black; the anterior and intermediate tarsi fuscous above, testaceous beneath; the tegulae and the fourth and fifth abdominal segments on the extreme apical margin testaceous brown. Wings hyaline, with a pale blue flush in some lights, a pale fuscous band from the base of the radial cell not quite crossing the wing; nervures fuscous. Length 10 mm.

*Hab.* QUEENSLAND, Cairns (ex coll. *Perkins*).

No species of the genus has been previously recorded from Australia. There is no tubercle on the posterior femora in this species.

*Sphodrotes rubricatus*, sp. nov. (Plate L, fig. 13.)

♀. Clypeus short, very broadly rounded at the apex, clothed with silver-white pubescence, the extreme apical margin bare.

Mandibles acute at the apex, without a tooth on the inner margin, deeply notched near the base on the outer margin. Antennae inserted a little nearer to each other than to the eyes, the second joint of the flagellum nearly twice as long as the first and a little longer than the third. Head coarsely and closely, but shallowly, punctured; the posterior ocelli a little further from the eyes than from each other; the inner margins of the eyes parallel, the front slightly concave. Thorax closely and rather strongly punctured, the pronotum transverse, very slightly depressed below the mesonotum, mesopleurae strongly convex. Median segment very coarsely longitudinally rugose-striate; much broader than long, narrowed posteriorly and vertically truncated, the surface of the truncation coarsely transversely rugose-striate, with a deep median sulcus, the sides of the segment obliquely striated. Abdomen closely and rather strongly punctured, ovate, broad at the base, the apical segment pointed, without a pygidial area. Radial cell rounded at the apex, both recurrent nervures received by the second cubital cell, the first near the base, the second just before three-quarters from the base.

Black; the mandibles, tegulae, legs and abdomen ferruginous red; antennae ferruginous, more or less shaded with fuscous. Wings hyaline, tinged with fuscous, nervures fuscous, the stigma and costa testaceous. Length 8 mm.

The male differs in having the anterior margin of the clypeus almost transverse; the joints of the flagellum shorter, the second no longer than the third; the whole insect more coarsely punctured and the apical segments of the abdomen clouded with black.

*Hab.* S. AUSTRALIA, Adelaide (ex coll. *Perkins*); 3 ♀, 1 ♂.

Superficially this species closely resembles *Pison ruficornis*, Sm.

*Sphodrotes pilosellus*, sp. nov.

♂. Clypeus short and broad, broadly rounded at the apex, finely punctured and clothed with very short pale golden pubescence which extends on to the front. Mandibles deeply notched on the outer margin. Eyes parallel on their inner margin, separated at the base of the clypeus by a distance equal to twice the length of the scape; posterior ocelli as far from each other as from the eyes. Antennae inserted almost as far from each other as from the eyes, the second joint of the flagellum no longer than the third. Head, thorax, and abdomen coarsely and closely punctured; the dorsal surface of the median segment coarsely rugose, with a carina from the base not

reaching the apex, the sides of the segment striated, the surface of the posterior truncation transversely rugose. The neurulation differs from that of *S. punctuosus*, Kohl, in the position of the first recurrent nervure which is interstitial with the first transverse cubital nervure.

Black; the legs (except the coxae), tegulae, posterior angles of the pronotum, scape and flagellum beneath ferruginous brown; the first dorsal segment of the abdomen and the apical margin of the other segments fusco-ferruginous. Wings hyaline tinged with fuscous, nervures fuscous, the stigma testaceous. Length 7 mm.

*Hab.* QUEENSLAND, Cairns (ex coll. *Perkins*).

Extremely near *punctuosus*, Kohl, from which it may be separated by the difference in the position of the first recurrent nervure. The relationship of *Sphodrotes* to *Acanthostethus*, Sm., is very close, but in that genus the first transverse cubital nervure is missing, the angles of the median segment are produced into stout spines and the eyes converge towards the clypeus. The relationship to *Sericophorus*, Sm., does not seem to be nearly so close.

*Nitela nigricans*, sp. nov.

♀. Clypeus convex in the middle and subcarinate; antennae inserted low down on the sides of the clypeus, further from each other than from the eyes, the second joint of the flagellum very little longer than the first and a little shorter than the third. Posterior ocelli nearly twice as far from each other as from the eyes, which are separated on the vertex by a distance equal to the length of the scape and first joint of the flagellum combined. Head finely coriaceous, an obscure groove from the anterior ocellus reaching half-way to the base of the clypeus. Pronotum transverse, the angles not prominent, the margins raised, leaving a narrow transverse groove interrupted in the middle between them. Mesonotum opaque, without punctures, the scutellum smooth and shining. Median segment longer than broad, narrowed towards the apex, longitudinally striated, with finer and irregular transverse striae forming reticulations; the face of the posterior truncation transversely striated, with a deep median sulcus. Abdomen shorter than the thorax and median segment combined, smooth and shining, the segments broadly depressed at the apex. Hindwing almost entirely without nervures.

Black; the mandibles fuscous in the middle, spines of the tibiae pale testaceous. Wings hyaline, nervures fuscous. Length 5 mm.

*Hab.* QUEENSLAND, Bundaberg (ex coll. *Perkins*).

Very near *N. kurandae*, Turn., but differs in the colour

of the legs, antennae and wings and in the coarser sculpture of the median segment. There is a specimen of *N. kurandae* from Bundaberg in the same collection.

*Crabro erythrogaster*, sp. nov.

♂. Mandibles bidentate at the apex; clypeus broadly rounded at the apex, with a delicate median carina, clothed with fine silver pubescence. Eyes separated at the base of the clypeus by a distance equal to about three-quarters of the length of the scape; antennae inserted further from each other than from the eyes, 13 jointed, the second joint of the flagellum as long as the third and fourth combined; the posterior ocelli a little further from each other than the eyes. Head massive, as broad as the thorax finely punctured-rugose, broadly emarginate posteriorly, the eyes separated from the posterior margin of the head by a distance equal to half the length of the scape. Thorax rather more coarsely punctured-rugose, the pronotum very shallowly emarginate anteriorly, the margins raised, the narrow groove between them coarsely rugose; mesopleurae with a vertical sulcus below the anterior wing, with a shallow striated groove for the intermediate femora; median segment rounded at the apex, the dorsal surface very coarsely rugose-striate, the sides slightly concave and obliquely striated, the posterior truncation transversely striated. Abdomen oval, sessile, very closely and minutely punctured. The recurrent nervure is received just beyond two-thirds from the base of the cubital cell, the transverse cubital nervure before the middle of the radial cell.

Black; the base of the mandibles, scape, base of the flagellum apex of the femora, tibiae and tarsi brownish yellow; abdomen ferruginous red. Wings hyaline, nervures testaceous. Length 6 mm.

*Hab.* QUEENSLAND, Bundaberg (ex coll. *Perkins*).

Allied to *C. doddii*, Turn. The groove for the intermediate femora is very shallow, but the edges are raised, forming marginal carinae, which give the space between them an appearance of being depressed more than is really the case. The structure is similar in *C. doddii*.

EXPLANATION OF PLATE L.

[See Explanation facing the Plate.]

## EXPLANATION OF PLATE L.

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- FIG. 1. *Zaspilothynnus rufoluteus*, Turn. ♂, p. 417.  
2. *Zaspilothynnus rufoluteus*, Turn. ♀, p. 417.  
3. *Anthobosca arabica*, sp. n., p. 397.  
4. *Anthobosca flavopicta*, sp. n., p. 399.  
5. *Myzine rufinodis*, sp. n., p. 392.  
6. *Myzine nigrita*, sp. n., p. 391.  
7. *Dielis socotrana*, Kirby, p. 402.  
8. *Parasapyga mölleri*, sp. n., p. 405.  
9. *Spilomena australis*, sp. n., p. 418.  
10. *Cerceris victrix*, sp. n. ♂, p. 422.  
11. *Cerceris euchroma*, sp. n., p. 424.  
12. *Cerceris perkinsi*, sp. n., p. 423.  
13. *Sphodrotes rubricatus*, sp. n., p. 426.  
14. *Piagetia intaminata*, sp. n., p. 426.  
15. *Rhopalosoma abnormis*, sp. n., p. 386.



Horace Knight del. et lith.

West, Newman chr.

NEW FOSSORIAL HYMENOPTERA.