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AUSTRALIAN FORMICIDÆ.

By J. CLARK.



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*With the Author's compliments.*

Australian Formicidae, by J. Clark.

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This paper is an addition to one previously read before the Society, wherein I added 10 new species to the sub-family *Cerapachyinae*,<sup>1</sup> with notes on the habits of a few of them. In that paper I showed that the females of the genus *Phyracaces* are of three forms—winged, wingless and ergatoid, and figured the two latter forms. In the present paper I describe eight new species, the female of a species previously recorded from Western Australia, and the male and female of a species found in New South Wales and Victoria. An interesting discovery recently made was that of two pseudogynes in a nest of *Ph. castaneus*, n.sp., this nest also contained winged males and females, one dealated female and a large number of workers; the pseudogynes differ from the workers only by the development of the thoracic sclerites. One specimen has the anterior ocellus present, the other specimen has no traces of ocelli; in size they equal the large workers. Although apparently a group of rare ants, scarcely represented in the collections of our various museums, I am confident that they are numerous, in both species and numbers, and widely spread throughout Australia, but owing to their small size, retiring habits, and method of hunting, they are rarely seen unless specially looked for. Most of the smaller species may be found early in the morning from day-break to eight or nine o'clock, and in the evening from about five o'clock until dark, when they are out raiding the nests of other ants. The larger species are frequently found raiding nests during the hottest part of the day. The nests are generally indicated merely by a small entrance on the surface of the ground, with no mound or other sign that a nest exists; occasionally they are found under stones and logs; as a rule, the nest extends about one foot below the ground level.

Unless otherwise stated, the types of the new species are in the author's collection.

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(1.) Jour. Roy. Soc. Western Australia, Vol. IX., pt. II., pp. 72-89, 1923.

## Sub-family—CERAPACHYINAE.

*Phyracaces angustatus*, n. sp. (Pl. VI., 7.)

*Female*: Length 4.4mm. Ergatoid.

Reddish-yellow; antennae and legs yellow; marginations, eyes and ocelli black. Hairs yellow, moderately long, semi-erect, longer and more numerous on the gaster than elsewhere, short and sparse on the head. A greyish pubescence on the antennae and legs.

Head much longer than broad, as broad in front as behind, occipital border widely concave, marginate, the angles sharp; frontal carinae erect, truncate and confluent behind, extending back to the middle of the eyes; carinae of the cheeks with a prominent angle in front, extending back to the anterior third of the eyes. Clypeus short and rounded. Eyes moderately large and convex, placed at the anterior third of the head, ocelli large and convex. Mandibles large, triangular, their external border feebly concave, the apical borders finely dentate, coarsely and sparsely punctate. Antennae robust, scapes reaching slightly beyond the posterior margin of the eyes, gradually thickened to their tips; funicular joints one to nine slightly broader than long, tenth longer than broad, apical joint barely twice as long as the preceding joint. Thorax  $2\frac{1}{4}$  times longer than broad, as broad through the pronotum as through the epinotum, sides slightly concave, mesonotal sutures feebly indicated; in profile the mesonotum and epinotum nearly flat, the pronotum convex and rounded, the epinotal declivity not abrupt; anterior border of the pronotum feebly marginate, the angles rounded, posterior border of the epinotum nearly straight, marginate, the angles sharp, lateral borders of the mesonotum, epinotum and sides of the declivity strongly marginate. Petiole broader than long, broadest at the posterior fourth, the anterior border concave, the posterior border nearly straight, the sides straight to the posterior fourth, then strongly rounded inward, the posterior corners produced backward as small teeth, all four sides of the dorsum strongly marginate; in profile feebly convex above, the anterior face rounded, the ventral surface in front produced, but without a tooth-like projection. Postpetiole as long as broad, broader behind than in front, anterior and lateral borders nearly straight, angles rounded, posterior border convex; the ventral surface with a small sharp projection in front. A deep constriction between the post-petiole and first abdominal segment, the latter being broader than long, with convex sides. Pygidium truncate, submarginate and minutely spinulose on the sides and tip. Legs moderately long and slender.

*Hab.* : Western Australia, National Park. (J. Clark.)

One specimen found under a stone. This distinct species is not near any other known to me. The sutures though feeble are well defined and mark a stage between the ergatoid females which show no traces of sutures, and those females with all the segments but have no wings.

***Phyracaces bicolor*, n. sp. (Pl. VI., 9, 10.)**

*Worker* : Length 4.6—5.2 mm.

Black ; head, petiolo, tarsi and apical segments of the gaster reddish. Hairs greyish, short, erect, very sparse on the head and thorax, more numerous on the petiole and gaster, abundant on the apical segment. A greyish pubescence on the antennae and legs.

Smooth and shining ; the whole insect covered with sparse shallow punctures, finer and more numerous on the antennae and legs.

Head longer than broad, as broad in front as behind, occipital border nearly straight ; frontal carinae erect, rounded, truncate behind ; carinae of the cheeks with a prominent angle, extending back to the anterior fourth of the eyes, a small branch extending inward to the antennal fovea ; clypeus short and broadly rounded. Eyes large and convex, placed behind the middle of the sides. Mandibles large, triangular, strongly bent at their base, the external border concave, apical border feebly dentate, coarsely and sparsely punctate. Antennae robust, scapes reaching the anterior margin of the eyes, gradually thickened to their apex ; funicular joints one and two as long as broad, three to ten broader than long, apical joint nearly as long as the three preceding joints together. Thorax  $1\frac{1}{2}$  times longer than broad, slightly broader through the pronotum than through the epinotum, constricted in the mesonotal region, mesonotal sutures feebly indicated, anterior border of the pronotum slightly convex, border of the epinotum nearly straight ; in profile convex and rounded above, the epinotal declivity abrupt ; all four sides of the dorsum and sides of the epinotal declivity strongly marginate. Petiole about  $1\frac{1}{2}$  times broader than long, slightly broader behind than in front, anterior border concave, feebly marginate, angles sharp, posterior border straight, lateral border nearly straight and strongly marginate, produced behind as small teeth ; the ventral surface in front not produced into a tooth-like process. Postpetiole broader than long, broader behind

than in front, anterior border nearly straight, marginate, the margination extending along the anterior third of the sides, which are slightly convex. A strong constriction between the postpetiole and first segment of the gaster, which is broader than long, and broader behind than in front. Pygidium truncate, submarginate and minutely spinulose on the sides and tip. Legs moderately long; hind coxae with a large translucent lamella at the tip on the inner side.

*Female*: Length 6–7mm. Ergatoid.

Differs from the worker in its much larger size, and in possessing ocelli; the scapes are longer, reaching beyond the posterior margin of the eyes. The mesonotal sutures are more clearly defined, and the mesonotum more constricted on the sides. The sides of the petiole and postpetiole are more convex. In the larger female the colour is brownish on the thorax and abdomen.

*Hab.*: Western Australia, Armadale (J. Clark.)

Described from two colonies; the members of the first colony were raiding a nest of a small *Iridomyrmex*, the second colony were apparently on a raiding expedition, but were only searching when found. Both nests were constructed in the ground, with open entrances, not under stones. This species approaches *P. gilesi*, Clark, in colour, but more closely in sculpture to *P. newmani*, Clark

***Phyracaces brevis*, n. sp. (Pl. VI., 5.)**

*Worker*: Length 2.4–2.8mm.

Brown, varying from reddish brown to dark brown on some specimens, petiole and two apical segments of the gaster red; mandibles, face in front of the eyes, antennae and legs testaceous, marginations black. Hairs yellow, sparse, more numerous on the gaster than elsewhere. A fine yellowish pubescence on the antennae.

Smooth and shining, mandibles coarsely and sparsely punctate; frontal area finely reticulate. Head very sparsely punctate, thorax and postpetiole with large shallow scattered piligerous punctures, finer on the petiole and gaster.

Head longer than broad, as broad in front as behind, occipital border concave, sides evenly convex; frontal carinae short, carinae of the cheeks prominent, forming a blunt angle, extending back to the anterior margin of the eyes. Clypeus short, nearly straight. Eyes large and convex, placed well in front of the middle of the sides. Mandibles large, sub-triangular, deflected, external borders concave, apical borders indistinctly dentate. Antennae robust, scapes bent near their base, gradually thickened to their apex,

extending to near the posterior margin of the eyes; first joint of the funiculus twice as long as broad, as long as the second and third together, two to five as broad as long, six to eight broader than long, ninth and tenth longer than broad, apical joint as long as the three preceding joints together. Thorax one and one-third times longer than broad, slightly broader through the pronotum than through the epinotum, sides feebly concave, anterior and lateral borders of the pronotum convex, angles rounded, lateral borders of the epinotum convex, posterior border nearly straight and feebly marginate, borders of the pronotum, mesonotum and epinotum submarginate: in profile the pronotum slightly convex and rounded, mesonotum and epinotum nearly flat above, epinotal declivity sloping, sides strongly rounded. Petiole broader than long, broader behind than in front, anterior border concave, submarginate, angles sharp, posterior border concave, emarginate, lateral borders evenly convex, marginate, angles not projecting; in profile convex above, the anterior face vertical, the ventral surface in front with a broad projection, nearly half the length of the surface, with a small sharp tooth in front directed backward. Postpetiole broader than long, anterior and lateral borders strongly convex. A deep constriction between the postpetiole and first abdominal segment, which is broader than long with convex sides. Pygidium truncate, submarginate and minutely spinulose on the sides and tip. Legs short, the hind coxae with a short, broad, rounded translucent lamella at the tip on the inner side.

*Hab.*: Western Australia, Hovea. (J. Clark.)

The nest of this species contained a large number of larvae and pupae, but the female was not found.

***Phyracaces castaneus*, n. sp. (Pl. VII. 7-14.)**

*Worker*: Length 6-6.5mm.

Bright castaneous; femora and tarsi darker, tibia and marginations brown. Hairs yellow, long and pointed, more numerous on the gaster than elsewhere, sparse on the head and thorax, a few short adpressed hairs on the petiole and postpetiole. A greyish pubescence on the apical joints of the antennae.

Smooth and shining, head and body very finely reticulate, petiole and postpetiole with some small shallow punctures, abdomen with scattered piligerous punctures, head and thorax very sparsely punctate.

Head longer than broad, as broad in front as behind, broadest at the eyes, which are placed behind the middle of the sides, and are large and convex, occipital border widely but not deeply concave; frontal carinae large, extending back to about the middle

of the eyes ; carinae of the cheeks forming a sharp prominent angle, extending back to near the middle of the eyes, a small branch directed inward to the antennal fovea. Clypeus short and rounded, Mandibles large, triangular, the external borders feebly concave. apical border edentate, coarsely and sparsely punctate. Antennae robust, scapes reaching the posterior margin of the eyes, gradually thickened to their apex ; funicular joints one to seven as broad as long, eighth and ninth broader than long, tenth longer than broad, apical joint longer than the two preceding joints together. Thorax about one and one-half times longer than broad, broader through the pronotum than through the epinotum, constricted in the mesonotal region, sutures feebly indicated, the anterior border of the pronotum convex, posterior border of the epinotum straight, sides of the pronotum and epinotum convex, sides of the mesonotum concave, anterior and lateral borders of the pronotum, posterior and lateral borders of the epinotum and sides of the declivity, strongly marginate. Petiole nearly twice as broad as long, broader behind than in front, the anterior border concave submarginate, sides convex, strongly marginate, the posterior angles produced backward and outward as broad flat, translucent teeth ; in profile convex and rounded above, the anterior face convex and protruding in front, the ventral surface in front with a short blunt tooth directed slightly forward. Postpetiole broader than the petiole, broader in front than behind, anterior and lateral borders convex and marginate, the margin ceasing abruptly at the posterior fourth of the sides. A deep constriction between the postpetiole and the first segment of the gaster, which is broader than the postpetiole and broader than long. Pygidium truncate, submarginate, minutely spinulose on the sides and tip. Legs long and slender.

*Pseudogyne* : Length 6-4mm. (Fig. 10.)

Differs from the normal worker in having the thoracic sclerites well developed, almost as in the female, but with no traces of wing sclerites. On one specimen the anterior ocellus only is present, it is large and convex, there are no traces of the posterior ocelli ; the other specimen has no traces of ocelli. In all other details they are identical with the workers.

*Female* : Length 7mm.

Resembles the worker, but larger and more robust ; eyes larger and more convex, and with large prominent ocelli. Thorax fully developed and winged ; wings hyaline, with yellowish veins, pterostigma dark brown ; on the fore wings all the veins before the costal, median and submedian cells becoming obsolete and indistinct, apical portion of the discoidal cell also becoming obsolete ; the veins of the hindwings obsolete and indistinct. Colour and pilosity as in the worker.

*Male*: Length 6.5mm.

Blackish brown; abdomen castaneous, mandibles and antennae testaceous, legs brown, tarsi reddish. Hairs yellow, long, pointed, suberect. A fine greyish pubescence on the antennae.

Smooth and shining, head coarsely punctate, frontal area finely and densely punctate, pronotum finely and densely punctate, anterior portion of the mesonotum coarsely and sparsely punctate, the disc with scattered shallow piligerous punctures, epinotum and petiole finely and densely punctate, gaster with scattered piligerous punctures.

Head, including the eyes, broader than long, strongly convex and rounded behind; frontal carinae erect, subparallel, reaching the anterior ocellus; frontal area represented by a deep pit, extending beyond the middle of the eyes. Clypeus short and rounded. Mandibles large, triangular, sharply bent at their base, external borders concave, apical borders indistinctly dentate. Antennae with thirteen joints, robust, scapes extending to the middle of the eyes, all the funicular joints longer than broad, cylindrical. Thorax one and two-third times longer than broad, broader through the pronotum than through the epinotum; pronotum convex in front of the sides, rounded on top, mesonotum strongly rounded and convex, without a mayrian furrow, but with parapsidal furrows distinct, epinotum with convex sides and straight, marginate, posterior border, epinotal declivity abrupt, marginate on the sides. Wings hyaline, veins yellowish, pterostigma dark brown; forewings long, reaching the tip of the abdomen, the costal, median and submedian cells complete, but all the veins between these and the apex are obsolete and indistinct; hindwings with only the basal portion of the costal vein showing. Petiole as broad as long, broader in front than behind, anterior border feebly concave, angles sharp and slightly projecting outwards in front, lateral and posterior borders convex. Postpetiole broader than long, broader behind than in front, broadest just behind the middle, anterior border straight, sides convex. First segment of the gaster about as long as broad. Pygidium rounded at the tip. Cerci absent. Genital appendages blunt, retracted. Legs long and slender.

*Hab.*: Western Australia, Hovea. (J. Clark.)

Described from a colony containing workers, females, males, and two pseudosynes, also many larvae and pupae. This species is close to *P. darki*, Crawley, and should perhaps have been described as a subspecies of that form, but the sexes of the latter being unknown, I prefer to regard *castaneus* as a species. It is distinguished by its smaller size and more slender build, larger petiole and postpetiole, longer and more slender legs. This species also resembles *P. punctatissima*, Clark, and like it, has the habit of hunting singly on the ground with the abdomen turned up over the back while running; the nests, too, are similar.



**Phyracaces inconspicuus**, n. sp. (Pl. VI., 1, 2.)

*Worker*: Length 2.6–3mm.

Red, antennae and legs brownish, marginations black. Hairs yellowish, short, numerous and adpressed on the petiole, long and erect on the apical segments of the gaster. A thin greyish pubescence on the antennae.

Smooth and shining; mandibles coarsely and sparsely punctate, head and thorax finely reticulate, and with sparse shallow punctures; petiole finely and densely punctured, postpetiole with scattered shallow piligerous punctures, the gaster sparsely punctate.

Head longer than broad, broader behind than in front, occipital border truncate, concave and marginate, the margination extending along the sides to near the eyes; frontal carinae erect, encircling the antennal insertions in front, extending back to near the middle of the eyes; carinae of the cheeks forming a prominent angle in front, extending back to near the posterior margin of the eyes, a small branch directed inward to the antennal fovea. Clypeus short and rounded. Mandibles large, triangular, their external borders concave, apical borders finely dentate. Antennae robust, scapes gradually thickened to their apex, extending slightly beyond the posterior margin of the eyes; funicular joints one to four as broad as long, five to ten broader than long, apical joint longer than the two preceding joints together. Thorax about  $1\frac{1}{2}$  longer than broad, slightly broader through the epinotum than through the pronotum, slightly constricted in the mesonotal region; anterior and lateral borders of the pronotum, and sides of the epinotum convex, posterior border of the epinotum concave, mesonotal sutures feebly indicated; in profile convex and rounded above, the epinotal declivity steep; all four sides of the dorsum and sides of the epinotal declivity strongly marginate. Petiole broader than long, broader in front than behind, the anterior border concave and submarginate, posterior border nearly straight and emarginate, lateral borders convex and strongly marginate, the posterior angles produced backward and outward as small sharp teeth; in profile slightly convex and rounded above, the anterior face vertical. Postpetiole broader than long, broader behind than in front, anterior border slightly convex, lateral borders convex and marginate. A strong constriction between the postpetiole and first segment of the gaster, the latter much broader than long, sides convex. Pygidium truncate, submarginate, minutely spinulose on the sides and tip. Legs moderately long and stout, the hind coxae with a large triangular translucent lamella on the inner side at the tip.

*Female* : Length 3.4mm. (Deälated.)

Resembles the worker, but larger and more robust ; eyes larger and more convex, ocelli large and convex. Thoracic sclerites fully developed, stumps of wings distinct, colour and pilosity similar.

*Hab.* : Western Australia, National Park. (J. Clark.)

***Phyracaces larvatus*, Wheeler. (Pl. VII., 1-6.)**

Wheeler, Proc. Amer. Acad. Arts and Sc., 53, 3, 1918, pp. 257-8, Fig. 15. *Worker*.

*Female* : (Hitherto undescribed). Length 6-6.7mm.

Resembles the worker, but much larger and more robust ; eyes larger and more convex, ocelli large and convex. Thoracic sclerites fully developed, winged ; wings hyaline, not reaching the tip of the gaster, veins yellow, pterostigma dark brown, all the veins before the discoidal cell obsolete and indistinct ; hindwings with the costal, subcostal, externomedian and anal veins well developed at their base, becoming obsolete at their apex, discoidal cell feebly indicated.

*Male* (hitherto undescribed). Length 5.9-6.4mm.

Black, terminal joints of the antennae and the tarsi brownish. Hairs grey, long and pointed, longer and more numerous on the apical segments of the gaster. A fine greyish pubescence on the antennae and legs.

Mandibles coarsely punctate ; frontal area finely and densely punctate, head rugose and finely punctate ; pronotum, disc of mesonotum, scutellum and epinotum coarsely rugose ; sides of the mesonotum very finely reticulate and with scattered shallow piligerous punctures.

Head, including the eyes, broader than long, broadly convex and rounded behind, occipital border strongly marginate, the margination extending along the cheeks to the middle of the eyes ; frontal carinae subparallel, extending back to the posterior third of the eyes, bending outward on top of the antennal fovea behind, frontal area with a deep excavation forming an antennal fovea. Clypeus short, feebly rounded. Mandibles large, triangular, sharply bent at their base, external borders concave, apical borders finely and sharply dentate. Antennae robust, thirteen jointed, scapes cylindrical, almost reaching the posterior margin of the eyes ; all the funicular joints longer than broad, cylindrical, apical joint pointed. Thorax  $1\frac{1}{2}$  times longer than broad, anterior border of the pronotum convex and marginate, sides convex, rounded

above; mesonotum large, convex and rounded above, mayrian and parapsidal furrows large, Scutellum convex and rounded above, twice as broad as long; posterior border of the epinotum straight and marginate, epinotal declivity abrupt, sides feebly marginate. Petiole slightly broader than long, anterior border straight and marginate, the marginations extending along the anterior half of the sides, which are convex, posterior border convex, angles rounded; the ventral surface in front with a broad flat projection directed forward, and a small sharp tooth behind directed backward. Postpetiole broader than long, broader behind than in front, anterior border convex and rounded, feebly margined at the angles which are produced as tooth-like projections, lateral borders convex and feebly marginate in front; the ventral surface with a long sharp tooth-like projection in front. First segment of the gaster much broader behind than in front. Pygidium convex and rounded. Cerci absent. Genital appendages retracted. Legs moderately long.

*Hab.*: Victoria, Ferntree Gully (F. P. Spry). Belgrave (F. E. Wilson).

Types in the National Museum, Melbourne.

I have to thank the authorities of the National Museum for permission to examine a large series of all phases of this species, which is the first of the genus to be found in Victoria. The type worker was found at Katoomba, New South Wales.

#### ***Phyracaces newmani*, Clark.**

*Worker*: Jour. Roy. Soc., W. Aust., Vol. IX., pt. II., p. 82, Fig. 7, 1923.

*Female*: Length 5.8mm. (Deälated).

Resembles the worker, but more robust, and with large convex ocelli. All the thoracic sclerites fully developed, wing stumps are present. Colour slightly darker. Hairs longer and more numerous, particularly on the gaster.

*Hab.*: Western Australia. Mundaring (J. Clark).

One female, with several workers, in a small colony under a stone.

#### ***Phyracaces nigriventris*, n. sp. (Pl. VI., 3, 4).**

*Worker*: Length 2.7-3.2mm.

Head, thorax, petiole and postpetiole red, face in front of the eyes yellowish, gaster and marginations black, carinae of the cheeks, tarsi, tibia, knees and coxae testaceous, femora brownish. Hairs

yellow, short and sparse on the thorax, petiole and postpetiole, a little longer on the abdomen. A thin greyish pubescence on the antennae and legs.

Smooth and shining, mandibles coarsely and sparsely punctate, and finely reticulate, frontal area very finely reticulate, head very sparsely and finely punctate; thorax, petiole, postpetiole and abdomen with scattered shallow piligerous punctures.

Head a little longer than broad, very slightly broader behind than in front, occipital border nearly straight; frontal carinae erect, truncate and confluent behind, extending back to the posterior third of the eyes; carinae of the cheeks forming a sharp angle in front, extending back to near the posterior margin of the eyes, a small branch extending inward to the antennal fovea. Clypeus short and rounded. Mandibles large, triangular, deflected, their external borders concave, apical borders dentate. Antennae robust; scapes, gradually thickened to the apex, extending a little beyond the posterior margin of the eyes, first funicular joint longer than broad, two to nine as long as broad, tenth longer than broad, apical joint as long as the two preceding joints together. Thorax nearly twice as long as broad, as broad through the pronotum as through the epinotum, anterior border convex, emarginate, lateral borders of the pronotum and epinotum convex and strongly marginate, lateral borders of the mesonotum concave and marginate, posterior border of the epinotum nearly straight, marginate; in profile convex and rounded above, the epinotal declivity abrupt, sides marginate. Petiole broader than long, as broad in front as behind, anterior border feebly concave and strongly marginate, posterior border emarginate, lateral borders evenly convex and strongly marginate, produced as blunt flat teeth behind, directed inward and upward; in profile cubic the anterior face vertical, the posterior face rounded from the top to the base; the ventral surface with a broad blunt tooth in front, directed backward. Postpetiole broader than long, convex and rounded in front and on the sides. A strong constriction between the postpetiole and the first segment of the gaster, which is broader than long, sides convex. Pygidium truncate, submarginate and minutely spinulose on the sides and tip. Legs short and stout, hind coxae with a small rounded translucent lamella on the inner side of the tip.

*Female*: Length 3.5mm. (Ergatoid.)

Resembles the worker, but with larger eyes and large convex ocelli. The mesonotal sutures are more clearly defined. The abdomen is brownish black instead of black as in the worker. The hairs are longer and more numerous.

*Hab.*: Western Australia. National Park (J. Clark).

This species comes nearest to *P. elegans* Wheeler.

***Phyracaces picipes*, n. sp. (Pl. VI., 8.)**

*Worker* : Length 4.7mm.

Castaneous, mandibles, antennae and legs brownish, margins black. Hairs yellowish, long and pointed, abundant on the apical segments of the gaster and on the under side. A thin greyish pubescence on the apical joints of the antennae.

Smooth and shining, head, thorax, petiole and postpetiole very finely reticulate, and with sparse shallow piligerous punctures.

Head longer than broad, broader behind than in front, convex above and on the sides, the occipital border concave, with rather acute inferoposterior corners; frontal carinae erect, extending back to the anterior margin of the eyes; carinae of the cheeks with a prominent angle in front, extending back to the anterior third of the eyes. Clypeus short, broadly rounded. Eyes large and convex, placed in front of the middle of the sides. Mandibles large, triangular, strongly bent at their base, external borders concave, apical borders feebly dentate. Antennae robust; scapes gradually thickened to their apex, extending slightly beyond the posterior margin of the eyes; all the funicular joints longer than broad, the apical joint longer than the two preceding joints together. Thorax nearly twice as long as broad, broader through the epinotum than through the pronotum, constricted in the mesonotal region, mesonotal sutures feebly indicated, anterior border of the pronotum convex, the angles sharp, posterior border of the epinotum concave, angles sharp; in profile convex and rounded above, the epinotal declivity abrupt; all four sides of the dorsum, and sides of the declivity sharply marginate. Petiole slightly broader than the epinotum,  $1\frac{1}{2}$  times broader than long, broader in front than behind, the anterior border convex, posterior border nearly straight, lateral borders straight to a little beyond the middle where they suddenly bend inward, forming a feebly concave border behind, the posterior angles forming a feeble tooth-like projection; in profile cubic, feebly convex and rounded above, the anterior face vertical, forming a right angle with the dorsum, the ventral surface in front with a small hook-shaped tooth directed backward. Postpetiole broader than long, broader behind than in front, anterior border convex and marginate, the margination extending to the anterior third of the sides, which are slightly convex. A strong constriction between the postpetiole and the first segment of the gaster, which is broader than long, and broader behind than in front. Pygidium truncate, submarginate and minutely spinulose on the sides and tip. Legs moderately long and thin, the posterior coxae with a large rounded translucent lamella on the inner side of the tip.

*Hab.*: Western Australia. Tammin. (J. Clark.)

Described from several workers found running amongst dead grass at the side of the road, no nest of the species was found. The tooth-like projection on the ventral surface of the node is more developed on some specimens than on others. This species is readily separated from all the known forms by the shape of the petiole.

***Phyracaces senescens*, Wheeler.**

Proc. Amer. Acad. Arts and Sc. 53, 3, p. 259, Fig. 16, 1918.

*Worker.*

New South Wales: Salisbury Court (Type locality) (Wheeler.)

Victoria: Broadmeadows. (C. Oke.)

The specimens found at Broadmeadows by Mr. Oke, agree perfectly with cotypes which I received from Prof. Wheeler.

***Phyracaces varians*, n. sp. (Pl. VI., 6.)**

*Worker*: Length 4.5–4.8mm.

Castaneous; sides of the mesonotum and epinotum, the whole of the petiole and postpetiole and marginations brownish black, antennae, anterior portion of the face in front of the eyes, and the legs testaceous. Hairs yellow, long and erect, more numerous on the gaster than elsewhere. A fine greyish pubescence on the apical joints of the antennae and on the legs.

Smooth and shining; mandibles coarsely and sparsely punctate; head, thorax and petiole with sparse, scattered, piligerous punctures, more numerous on the postpetiole and gaster. All the body very finely reticulate.

Head longer than broad, as broad in front as behind, occipital border nearly straight, marginate, the margination branching at the inferoposterior corner, one branch extending upward and forward, reaching the posterior margin of the eyes, the other going forward and downward, extending beyond the middle of the eyes; frontal carinae erect, truncate behind; carinae of the cheeks prominent, forming a blunt tooth in front, extending back to the middle of the eyes, a small branch extending inward to the antennal fovea. Eyes large and convex, placed near the middle of the sides. Clypeus short and rounded. Mandibles large, triangular, strongly

bent near their base, their external borders nearly straight, apical borders dentate. Antennae robust, scapes gradually thickened to the apex, reaching the posterior margin of the eyes; funicular joints one to nine broader than long, tenth longer than broad, apical joint as long as the two preceding joints together. Thorax one and three-fourths times longer than broad, as broad through the pronotum as through the epinotum, concave in the mesonotal region, mesonotal sutures feebly indicated, anterior border of the pronotum nearly straight the sides convex, angles sharp, posterior border of the epinotum nearly straight, sides convex; in profile convex and rounded above, epinotal declivity steep; all four sides of the dorsum and sides of the declivity strongly marginate. Petiole broader than long, broader in front than behind, anterior border slightly concave and marginate, posterior border submarginate, lateral borders convex and strongly marginate, the posterior angles projecting backward and upward as strong blunt teeth; in profile cubic, nearly flat above, the anterior face slightly convex, posterior face vertical; the ventral surface in front with a broad flat tooth-like projection, with a fine sharp tooth on the front edge. Postpetiole broader than long, broader behind than in front, the anterior border nearly straight, the lateral borders straight to the posterior fourth, then rounded to the posterior border; anterior and lateral borders strongly marginate; the ventral surface in front with a sharp projection. A deep constriction between the postpetiole and first segment of the gaster which is large and convex. Pygidium truncate, submarginate and minutely spinulose on the sides and tip. Legs moderately long and stout, hind coxæ with a large triangular lamella at the tip on the inner side.

*Hab.*: Western Australia. Lion Mill. (J. Clark.)

The colour of this species varies considerably; in one specimen it is almost castaneous throughout, and in others the petiole and postpetiole are just a shade darker than the thorax; the front of the face and the legs are, however, always testaceous.

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## EXPLANATION OF PLATES.

## VI.

- 1.—*Phyracaces inconspicuus*, n.sp., female.
- 2.— " " " worker.
- 3.— " *nigriventris*, n.sp., female.
- 4.— " " " worker.
- 5.— " *brevis*, n.sp., worker.
- 6.— " *varians*, n.sp., worker.
- 7.— " *angustatus*, n.sp., female.
- 8.— " *picipes*, n.sp., worker.
- 9.— " *bicolor*, n.sp., worker.
- 10.— " " n.sp., female.

## VII.

- 1.—*Phyracaces larvatus*, Wheeler, female.
  - 2.— " " " male.
  - 3.— " " " fore-wing of female.
  - 4.— " " " hind wing of female.
  - 5.— " " " fore wing of male.
  - 6.— " " " hind wing of male.
  - 7.— " *castaneus*, n. sp., worker.
  - 8.— " " " male.
  - 9.— " " " thorax of female.
  - 10.— " " " thorax of pseudogyne
  - 11.— " " " fore wing of female.
  - 12.— " " " hind wing of female.
  - 13.— " " " fore wing of male.
  - 14.— " " " hind wing of male.
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