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ANTS OF THE GENUS AMBLYOPONE ERICHSON.

BY WILLIAM MORTON WHEELER.

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THE following revision of the hitherto somewhat neglected ants of the very primitive Ponerine genus *Amblyopone* is based on specimens taken while I was in Australia and New Zealand during the winter of 1914-15 and collections since received from the Museum of South Australia, from Messrs. A. M. Lea, Henry Hacker, James Clark and others. Mr. Clark has generously permitted me to describe two very interesting species which he recently discovered in Western Australia. These species (*A. clarki* and *aberrans*), and one discovered by Mr. Hacker (*hackeri*), show that the genera *Amblyopone* and *Stigmatomma* Roger are very closely allied. Most of the distinctive characters mentioned by Emery in the "Genera Insectorum," such as the type of sculpture, dentition of mandibles and clypeus and degree of approximation of the frontal carinae may be elusive. Thus both genera have the clypeus denticulate (with certain exceptions like *S. rothneyi* Forel in the genus *Stigmatomma*), though the denticles in *Amblyopone* are very minute, and *A. hackeri* has the teeth in two rows, a character supposed to be distinctive of *Stigmatomma*. Moreover, the sculpture in the group of species comprising *A. ferruginea*, *hackeri*, *clarki* and *aberrans*, is unlike that of *A. australis* and *michaelseni* and more like that of *Stigmatomma*. The discovery of additional species in Australia and New Guinea may not improbably lead to the reduction of *Stigmatomma* as well as its subgenus *Fulakora* Mann and Santschi's genus *Xymmer* to subgeneric rank under *Amblyopone*. Mr. Clark suggests (*in litteris*) that the form I call *clarki* be placed in a new subgenus, *Neoamblyopone*, and the species *aberrans* in another subgenus, *Protamblyopone*, but I deem this inadvisable, since *hackeri* and *ferruginea* obviously connect the two aberrant species with the typical forms of the genus, *australis* and *michaelseni*.

The genus *Amblyopone* ranges over the whole of Australia, Tasmania, the north island of New Zealand, New Caledonia, Lord Howe and Norfolk Islands and at least a portion of New Guinea. It has therefore very much the same distribution as another interesting genus belonging to the Myrmicinae, namely *Orectognathus* F. Smith. One of the species of *Amblyopone*, (*australis*) represented by a number of subspecies and varieties, covers the whole of the territory men-

¹ Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University. No. 266.

tioned. Unlike *Stigmatomma Roger*, which is cosmopolitan, *Amblyopone* is therefore confined to the Australian and part of the adjacent Papuan Region. I deem it more probable that the genus had its origin in Papua or in Australia, where the majority of the species still occur, than that it entered this continent from Antarctica. An ancient Papuan origin is also indicated by the presence of the allied genus *Myopopone Roger* throughout the East Indies and Papua and its recorded occurrence in Eastern Australia and by the somewhat more remotely related genus *Mystrium* in the East Indies and Madagascar. Furthermore, the presence of *Amblyopone* in New Caledonia, Lord Howe and Norfolk Islands and New Zealand would seem to indicate that it must date back to the late Cretaceous or early Tertiary when all these islands were connected with the Australian land-mass. According to Tillyard¹: "During the Upper Cretaceous the sea again began to encroach on a gulf between Tasmania and New Zealand, the western and eastern halves of the Australian Continent were reunited with a large lake in the center, and Australia was connected on the north with Papua and to the north-west with Timor and Malaya proper. The gulf between Tasmania and New Zealand grew in size, reaching farther and farther northwards as a long arm of the sea right up to North Queensland. During this time New Zealand undoubtedly received the greater part of its insect fauna in the form of a stream of immigrants from the north, which passed down through New Caledonia by a continuous land mass. A closely similar type of fauna poured into eastern Queensland. This accounts for the many strong relationships shown between the faunas of New Zealand and of the tropical and subtropical forests of the Queensland and New South Wales coasts." The subspecies and varieties of *Amblyopone australis* illustrate Tillyard's concluding remark, since the New Zealand subsp. *cephalotes* and its var. *howensis* and *norfolkensis* on the two small islands of Lord Howe and Norfolk are more closely related to the subsp. *levidens* of New Guinea and its var. *queenslandica* than to the other Australian forms of the species.

The species of *Amblyopone* form small colonies which nest in the soil under stones and logs. Their movements are rather sluggish. So far as I have been able to observe, their habits closely resemble those of *Stigmatomma*. The colonies are more frequently found than those of *Stigmatomma*, but are nevertheless rather local. Our North American *S. pallipes* Haldem. and the Mediterranean *S. denti-*

¹Origin of the Australian and New Zealand Insect Faunas. Rep. Austral. Assoc. Adv. Sci. 16, 1923, p. 407-413.

culatum Roger nest in rich woods, but I have often found the *Amblyopones* in open fields near Auckland, New Zealand and in clearings in the open Eucalyptus forests in New South Wales.

The workers of the various species, subspecies and varieties, which I am able to recognize in the material I have examined, may be separated by means of the following key:—

1. Head behind smooth, merely coarsely punctate or coarsely rugose-punctate.....2.
Head less shining, densely and finely rugulose-punctate....15.
2. Head longer than broad, without teeth at anterior corners; mandibles punctate, striate only at the extreme base. Length 7-8 mm. West and South Australia....*michaelsenii* Forel.
Head as broad as long, or slightly broader than long, its anterior corners dentate; mandibles longitudinally striate.....3.
3. Eyes with only about 20 ommatidia. Length 5-6 mm. Lord Howe Island.....*leæ* sp. nov.
Eyes with about 30 ommatidia.....4.
4. Cephalic rugæ extending back only to the eyes or slightly beyond.....5.
Cephalic rugæ extending nearly or quite to the posterior border of the head.....10.
5. Striæ on mandibles sharp, external borders not smooth...6.
Striæ on mandibles less sharp, external borders smooth...14.
6. Average length 6 or 6.5 mm.....7.
Average length more or less than 6 mm.....8.
7. Punctures on head and pronotum small and rather sparse. Tasmania, South Australia, Victoria, New South Wales. Length 4-7 mm.....*australis* Erichs. (typical).
Punctures on head and pronotum coarse. West Australia. Length 6 mm.....subsp. *foveolata*, subsp. nov.
8. Head broader than long. Length 7-8.7 mm. Queensland.
var fortis Forel
Head as broad as long.....9.
9. Postpetiole without elongate foveolæ at the base. Length 5.2-6.2 mm. Queensland.....*var. minor* Forel
Postpetiole with elongate foveolæ at the base. Length 6.5 mm. New Caledonia.....subsp. *nana* Emery.
10. Second and third funicular joints $1\frac{1}{2}$ times as long as broad. Length 6.5-8 mm. New Zealand.subsp. *cephalotes* F. Smith.
Second and third funicular joints distinctly less than $1\frac{1}{2}$ times as long as broad.....11.

11. Small forms, 4.5–6 mm. in length, with somewhat shorter and more separated cephalic rugæ.....12.
Large forms, 5–8 mm. in length, with the cephalic rugæ nearly or quite reaching the posterior border of the head.....13.
12. Epinotal declivity striae-punctate on the sides. Length 4.5–6 mm. Norfolk Island.....var. *norfolkensis* var. nov.
Epinotal declivity smooth and shining throughout. Length 5.5–6.5 mm. Lord Howe Island.....var. *howensis* var. nov.
13. Body deep castaneous brown or blackish. Length 5–8 mm. New South Wales, Queensland....subsp. *obscura* F. Smith.
Smaller and paler, ferruginous red. Length 6.5–7 mm. New South Wales.....var. *pallens* var. nov.
14. Large forms. Length 9–9.5 mm. New Guinea
Subsp. *levidens* Emery.
Smaller forms. Length 7–7.5 mm. Queensland
var. *queenslandica* var. nov.
15. Head as long as broad or very nearly so.....16.
Head very distinctly broader than long.....17.
16. Mandibles not expanded at their tips, their median teeth in two rows, directed backwards; fourth and sixth tooth not much larger than the others. Length 3–3.5 mm. Queensland.
hackeri sp. nov.
Mandibles expanded at tip; median teeth vestigial. Length 3–3.5 mm. West Australia.....*aberrans* sp. nov.
17. Ferruginous yellow; mandibles with a conspicuously large, erect tooth near the middle; pronotum not marginate anteriorly, without a smooth, raised line in the middle, anterior corners of head often with minute teeth. Length 4–4.5 mm. Victoria, New South Wales.....*ferruginca* F. Smith.
Ferruginous red; head broader; mandibular teeth all small; pronotum marginate in front, with a smooth, raised line in the middle; anterior corners of head without teeth. Length 4.5–5 mm. West Australia.....*clarki* sp. nov.

Amblyopone australis Erichson.

Erichson, Arch. f. Naturg. 8, 1842, p. 260, pl. 5, fig. 7, ♂ ; F. Smith, Cat. Hym. Brit. Mus. 6, 1858, p. 109, pl. 7, figs. 21–24, ♀ ♀ ♂ ; Emery, Ann. Mus. Stor. Nat. Genova (2) 5, 1887, p. 22, p. 446 *nota*, ♀ ; Dalla Torre, Cat. Hymen 7, 1893, p. 13, ♀ ; Ern. André, Rev. d'Ent., 1896, p. 260, ♀ ♀ ; Froggatt, Agric. Gaz. N. S. W., 1905, p. 8; Forel, in Michaelsen and Hartmeyer, Fauna Südwest-

Australiens, 1907, p. 264, ♀; Forel, Rev. Suisse Zool. 18, 1910, p. 1, ♂ ♀ ♂; Emery, Gen. Insect. Ponerinae, 1911, p. 25, ♂ ♀ ♂; Emery, Boll. Lab. Zool. Gen. Agrar. Portici 8, 1914, p. 179; Forel, Ark. f. Zool. 9, 1915, p. 1, ♂ ♀; Crawley, Ent. Month Mag. (3) 8, 1922, p. 120, ♂; Clark, Victor. Nat. 42, 1925, p. 137, ♂ ♀ ♂. *Worker*. Length 4-7 mm.

Head nearly square, slightly narrowed behind, sides straight and subparallel in front, somewhat rounded behind, the posterior corners more acute in the larger than in the smaller individuals, the posterior

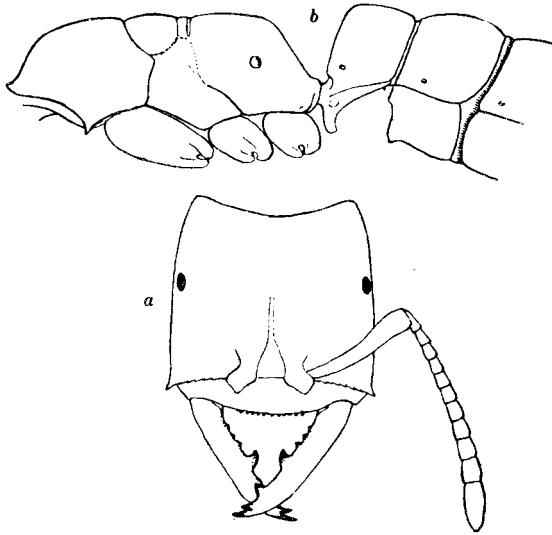


FIGURE 1. *Amblyopone australis* Erichson (Tasmania) worker, a. head, dorsal view; b. thorax, petiole and postpetiole in profile.

border very broadly and feebly excised; the anterior corners with a small but stout spine. Eyes very small, feebly convex, consisting of about 30 minute ommatidia, situated a little less than three-fifths the distance from the anterior to the posterior corners of the head. Mandibles 7-toothed, the first, third and fourth, counting from the apex, large, the last or most basal, smallest and often lacking. The teeth are not very perceptibly directed backwards. Scapes distinctly thickened at the apex; all the funicular joints longer than broad, the second and third not more than one and one-fourth times as long as broad, the three penultimate joints nearly as broad as long.

Clypeus short, with vertical surface, its anterior border in the middle with a row of about a dozen very minute, acute denticles, which vary in the regularity of their arrangement. Thorax through the pronotum in large specimens not much more than half as broad as the head, depressed above, somewhat narrowed anteriorly and rounded on the sides, excluding the neck as long as broad, its inferior corners with pronounced, acute teeth. Promesonotal and mesoëpinotal sutures strongly impressed; the mesonotum convex, transverse, nearly three times as broad as long, its anterior outline rounded, its posterior nearly straight. Epinotum one and one-half times as long as broad, flattened on the sides and with flat and subequal base and declivity meeting at an obtuse angle, the sides of the declivity almost submarginate, the metasternal angles small and inconspicuous. Petiole in profile obliquely truncate anteriorly, the truncated surface forming nearly a right angle with the shorter, feebly convex dorsal surface of the node, the ventral surface with a large, compressed, more or less translucent spine which is directed downward and forward and somewhat truncated at its tip; seen from above the node is twice or a little less as broad as long, rounded in front and on the sides. Postpetiole nearly twice as broad as long; first gastric segment one and one-third times as long as broad. Legs moderately long.

Shining; mandibles subopaque, sharply and rather coarsely longitudinally striate, with indistinct elongate punctures between the striæ. Sides of head, cheeks and sides of front as far back as the posterior fifth of the head less shining than the occiput and front, covered with straight but rather fine longitudinal rugæ, diverging posteriorly. Between the rugæ there are coarse elongated punctures. Middle of front and posterior fifth of head covered with rather small, uniform, round punctures, somewhat larger but much sparser than those on the cheeks. Thorax, petiole and postpetiole above punctate, the punctures rather evenly distributed, on the upper surface of the pronotum smaller and sparser than on the occiput; those on the petiole and postpetiole also small and much scattered, longitudinal with sharper anterior borders ("eingestochen," as the Germans say); sides of thorax subopaque, finely longitudinally rugulose, declivity of epinotum finely punctulate; scapes and legs sparsely punctulate.

Hairs golden yellow, delicate, moderately abundant, of uneven length and erect on the body, longest on the dorsal surface, suberect, somewhat shorter and less abundant on the scapes and legs.

Rich ferruginous red; often with a black spot on the vertex; mand-

ibles concolorous with the head, their teeth and inner borders and the corners of the clypeus black. In most specimens the mesonotum, stridulatory surface of the petiole and basal halves of the postpetiole and first and second gastric segments are darker, almost black; legs and antennæ reddish yellow or testaceous.

Female. Length 8.5–10 mm.

Resembling the worker but with coarser sculpture; the mesonotum with large, scattered punctures, the epinotal declivity finely punctate, with a smooth, shining streak in the middle. Wings distinctly brownish, with dark brown veins and stigma.

Male. Length 6–7 mm.

Head broadly and transversely elliptical; broadly and evenly rounded behind, the eyes and ocelli rather small. Mandibles small, narrow and convex, with two well-developed apical teeth. Clypeus broad and convex, with rounded anterior border. Antennæ rather short; scapes less than twice as long as broad, joints 2–4 a little over one and a half times as long as broad, remaining joints, except the last, but slightly longer. Thorax with swollen pronotum; the mesonotum with strong but narrow Mayrian furrows, the spaces between them convex, as is also the scutellum; epinotum rounded, without distinct base and declivity, very feebly longitudinally grooved in the middle behind. Petiole resembling that of the worker but less strongly truncate in front. Legs more slender.

Mandibles, head and thorax opaque; mandibles finely and indistinctly rugulose; head reticulately, pronotum and epinotum more irregularly and rather coarsely punctate-rugulose, the rugules on the pronotum and base of epinotum transverse; mesonotum and scutellum very coarsely punctate, the latter somewhat shining. Petiole subopaque, coarsely punctate or foveolate. Gaster shining, with small, scattered piligerous punctures. Legs somewhat shining, very finely punctulate.

Pilosity much as in the worker, but hairs whitish and less numerous on the legs, the tibiae covered with short, dense pubescence.

Black; tips of mandibles, the antennæ and legs brownish yellow, the femora, except at their bases and tips, dark brown. Wings distinctly paler than in the female.

The type from which Erichson's description was drawn was taken by Schroyer at Woolnorth, in the north-western corner of Tasmania. I have seen specimens from the following localities which show that this form is widely distributed in Tasmania, Victoria, South Australia, West Australia and New South Wales. I have drawn the description

of the worker and female from Tasmanian specimens, of the male from specimens taken in South Australia.

Tasmania: Cradle Mt., 4000 ft. (R. J. Tillyard); Burnie, Marranah, Sheffield, Hobart, Stanley (in tussocks) and Dimorlan (A. M. Lea); south-east coast (C. French).

South Australia (J. Rau); Kangaroo Island (A. M. Lea); Mt. Lofty and Adelaide (J. G. O. Tepper); Mt. Lofty (A. H. Elston); Meningie (L. H. Mincham); Lucindale (Feuerherdt); Corney Point (Mus. S. Austr.).

Victoria (Mus. S. Austr.): Ferntree Gully (C. Barrett); Belgrave and Ringwood (F. C. Wilson).

New South Wales: Katoomba, Leura and Uralla (W. M. Wheeler); Leura (W. M. Mann); Sulphur Creek (W. W. Froggatt); Jenolan Caves (J. C. Wiburt and H. J. Carter); Armidale; Lismore (C. Deuquet).

A. australis has been previously recorded from the following localities:

Tasmania: Launceston (Beccari and E. D'Albertis).

Victoria: Ferntree Gully (F. P. Spry, J. E. Dixon, L. B. Thorn, C. Barrett); Beaconsfield (F. E. Wilson); Healesburg to Narbethong (R. Kelly).

South Australia: Mt. Lofty (F. Silvestri).

West Australia: Bridgetown, Boyanup, Yallingup (Hamburg Exped.); Manjimup (J. Clark).

New South Wales: Sidney, Kurrajong (W. W. Froggatt).

Queensland: Blackal Range, Mt. Tambourine, Malanda, Herberton (E. Mjöberg).

Amblyopone australis var. *fortis* Forel.

Forel, Rev. Suisse Zool. 18, 1910, p. 1, ♀; Emery, Gen. Insect. Ponerinae, 1911, p. 25, ♀; Emery, Boll. Lab. Zool. Gen. Agrar. Portici 8, 1914, p. 179.

The length of the worker of this variety is given as 7-8.7 mm. The head is distinctly broader than long and less narrowed behind than in the typical *australis*. The whole body is larger and more robust, the petiole and postpetiole more transverse, the sculpture somewhat coarser, the head more shining, the mandibular and pronotal teeth stronger, the head and thorax darker than the gaster, which is the reverse of the coloration in the typical form.

The types were from Kuranda, Queensland (Roland Turner). A specimen from Staudinger in my collection, labelled merely "Australia" evidently belongs to this variety but is even larger than the

type, measuring 10.5 mm. It agrees very closely with Forel's description. The head seems to be more flattened than in typical *australis* and the cephalic rugæ are finer and rather strongly divergent. The color is the same as in Forel's specimens. To this variety I refer also four declated females taken by Mr. A. M. Lea in the Cairns District, Queensland (presumably at Kuranda). They measure 10–11.5 mm. The sculpture of the head is coarser, that of the mandibles rather fine; the punctures on the front and the occiput are coarse and round, those on the pro- and mesonotum small and scattered; the whole epinotal declivity is very distinctly transversely rugose in three of the specimens, but in the two others there is a smooth shining area in the middle.

Amblyopone australis var. *minor* Forel.

Forel, Ark. f. Zool. 9, 1915, p. 1, ♀.

Forel described all three phases of this form from specimens taken by E. Mjöberg on Mt. Tambourine, Queensland. The worker measures only 5.2–6.2 mm. and is said to differ from typical *australis* in the greater width of the petiole and the shorter funicular joints, the eighth and ninth of which are as broad as long. The head is smoother, less densely punctate and the color is deeper. The female measures 10–10.5 mm. and except for the stronger sculpture exhibits the same differences as the worker. The male is 6.3 mm. long, with the antennæ and legs entirely black, the wings somewhat darker than in typical *australis* and the head narrower.

A single worker topotype (A. M. Lea) in my collection agrees with the description. The punctures on the pronotum are very coarse but these and the remaining sculpture are finer than in the subsp. *foveolata*.

Amblyopone australis subsp. *foveolata* subsp. nov.

Worker. Length about 6 mm.

Differing from the typical *australis* in having the punctures on the head and pronotum much larger and closer together, those on the front being as large as those on the occiput; the rugæ are further apart and much less numerous. The mandibles are more shining and somewhat less sharply striate. The punctures on the petiole, postpetiole and first gastric segment are more pronounced. Color and pilosity as in the typical form.

Female. Length 10–10.5 mm.

Even more coarsely punctured than the worker; the declivity of

the epinotum more subopaque, more densely and finely punctate or granular and more sharply submarginate on the sides.

Male. Length 6.5–7 mm.

Head and thorax somewhat more coarsely sculptured than in the male of the typical *australis*. Legs darker, the trochanters and femora except their tips, black. Veins and stigma of wings also darker, very dark brown, nearly black.

Described from several specimens of all three phases taken at Denmark, West Australia by Mr. James Clark. He has also sent me series of workers from Nannup and Albany in the same commonwealth. To the same variety belong also a single worker and dealated female taken by W. D. Dodd at Warren, West Australia.

Amblyopone australis subsp. *obscura* F. Smith.

A. obscura F. Smith, Cat. Brit. Mus. Hym. 6, 1858, p. 109, ♂; Dalla Torre, Cat. Hymen. 7, 1893, p. 13, ♀.

A. australis var. *obscura* Froggatt, Agric. Gaz. N. S. W., 1905, p. 8; Forel, Rev. Suisse Zool. 18, 1910, p. 2; Emery, Gen. Insect. Ponerinæ, 1911, p. 25, Pl. 1, Fig. 14, ♂; Clark, Victor. Natural. 42, 1925, p. 138, ♂ ♀.

Worker. Length 5–8 mm.

Readily distinguished from the preceding forms by the sculpture of the head, the shape of the petiole, the proportions of the funicular joints and the color. The cephalic rugæ are coarse and moderately divergent, continued back nearly or quite to the occipital border and the punctures between them are very coarse and elongate, especially on the occiput. Around the antennal foveæ and on the sides of the front, the rugæ are distinctly reticulate and the interrugal punctures lacking. Mandibles subopaque, rather finely but sharply longitudinally striate, with very indistinct interstitial punctures. Punctures on thorax coarse but scattered, conspicuous on the pronotum; the petiole, postpetiole and first gastric segment with large scattered foveolæ, with indistinct posterior contours. Declivity of epinotum very smooth and shining in the middle, punctate along the sides. Petiole from above distinctly subrectangular, about one and one-third times as broad as long, with rather straight subparallel sides and nearly straight anterior border. In profile the angle formed by the anterior and dorsal surfaces is sharper and more rectangular, the dorsal surface of the node more flattened. Color deep castaneous brown, almost black; mandibles and anterior portion of head often slightly reddish; terminal gastric segments and borders of preceding

segments yellowish red; legs yellowish brown, darker than in typical *australis*. The funicular joints of the antennæ are somewhat shorter, the second and third only slightly longer than broad, the two penultimate joints nearly as broad as long.

Female (decalated). Length 10 mm.

Closely resembling the worker but with coarser sculpture. Mesonotum coarsely punctate; declivity of epinotum also like that of the worker, very smooth and shining in the middle and transversely striate above and on the sides. The node of the petiole is broader but with sharp and nearly straight anterior border as in the worker.

New South Wales: Kurrajong (W. W. Froggatt); Jenolan Caves (J. C. Wiburt); Mittagong (A. M. Lea); Dorrigo (W. Herron); Clifton and Brooklawn (W. W. Froggatt); Fish River (Health Dep.).

Queensland: National Park (H. Hacker); North Queensland (Clark). Forel records this variety also from Tasmania (Walker).

Smith's description of *A. obscura* is puzzling and very inadequate but I believe that it refers to the form here described. Of the two females which I have seen, one from National Park and one from Jenolan Caves, the latter has the epinotal declivity less distinctly striate.

Amblyopone australis subsp. *obscura* var. *pallens* var. nov.

Worker. Length 6.5–7 mm.

Differing from the typical *obscura* in the following characters: Head somewhat broader, with the rugæ somewhat finer and more irregular and reaching the occipital border. The punctures, though large, coarse and elongate, are shallower and more crowded and therefore less pronounced. The striæ on the mandibles are feebler, so that they are more shining and their elongate punctures more apparent. Punctures on the pronotum and base of epinotum very large and coarse; epinotal declivity distinctly transversely striate above and on the sides and also obscurely punctate; smooth and shining in the middle. Color paler than in the typical *obscura*, the head, thorax, and abdomen being rich ferruginous red as in paler specimens of the typical *australis*, with the bases of the first and second gastric segments infuscated. Mandibles, except their teeth, paler than the head, more yellowish red; antennæ and legs testaceous yellow.

Four specimens from the same colony from Dorrigo, New South Wales (W. Herron).

Amblyopone australis subsp. *levidens* Emery.

A. levidens Emery, Ann. Mus. Civ. Genova 25, 1887, p. 447, ♀ ; Dalla Torre, Cat. Hymen, 7, 1893, p. 13, ♀ ; Emery, Gen. Insect. Ponerinae, 1911, p. 26, ♀ .

This form was described by Emery in 1887 from workers taken by Beccari at Hatam, New Guinea as a distinct species, very similar to *australis* but differing as follows: "Length 9-9.5 mm. In this species the antennae are more slender than in *A. australis*, but less so than in *cephalotes*; the funicular joints 2 and 3 being about one-third longer than broad. The mandibles are smooth and shining on their external portion, which has scattered, round punctures. Towards the dentigerous margin the punctures become elongate and in part converted into oblique striae. As in the preceding species *cephalotes*, the mandibles have three strong apical teeth, which are followed by a smaller one and between this and the base by two or three small teeth." Emery admits that this form, *australis* and *cephalotes* are so closely related as probably "to represent geographical races rather than distinct species."

Amblyopone australis subsp. *levidens* var. *queenslandica* var. nov.

Worker. Length 7-7.5 mm.

Apparently much smaller than the New Guinea type of the subspecies but with the same mandibular sculpture and the small teeth in the diastema between the third and fourth (from the apex) very distinct. The sculpture of the head is very much like that of typical *australis*, the rugae being fine and not extending beyond the level of the eyes, reticulate in the antennary fossae. The punctures on the shining front and occiput are rather small, round and sparse. The punctuation of the thorax and abdomen is also very much as in typical *australis*, the antennal funiculi are more slender as in *levidens* and the epinotal declivity is very smooth and shining, without sculpture. From above the petiolar node is nearly twice as broad as long. Color as in the typical *australis*, rich ferruginous red, the postpetiole and gaster a little paler; antennae and legs more yellowish.

Female. Length 10 mm.

Darker and more coarsely sculptured than the worker.

Three workers from Kuranda, Queensland (type-locality), two taken by F. P. Dodd and one by myself, also a single dealated female and nine workers from Malanda, North Queensland (G. F. Hill), received from Mr. James Clark.

Amblyopone australis subsp. *cephalotes* F. Smith.

Amblyopone cephalotes F. Smith, Trans. Ent. Soc. London, 1876, p. 490, ♀; Hutton, Catal. New Zealand Dipt., etc., 1881, p. 112, ♀; Kirby, Trans. Ent. Soc., London, 1881, p. 41; Mayr, Verh. zool. bot. Ges. Wien. 36, 1886, p. 364; Emery, Ann. Mus. Civ. Genova 25, 1887, p. 446, ♀; Forel, Mitteil. Schweiz. Ent. Ges. 8, 1892, p. 336, ♀; Dalla Torre, Catal. Hym. 7, 1893, p. 13, ♀; Cameron, Trans. Proc. New Zealand Inst. 35, 1903, p. 299; Froggatt, Agric. Gaz. N. S. W., 1905, p. 8; Emery, Gen. Insect. Ponerinae, 1911, p. 25, ♀; Stitz, Sitzb. Gesell. Naturf. Freunde, Berlin, 1911, p. 351, ♀ ♀.

A. cephalotes var. *maculata* Stitz, *ibid*, p. 351, ♀.

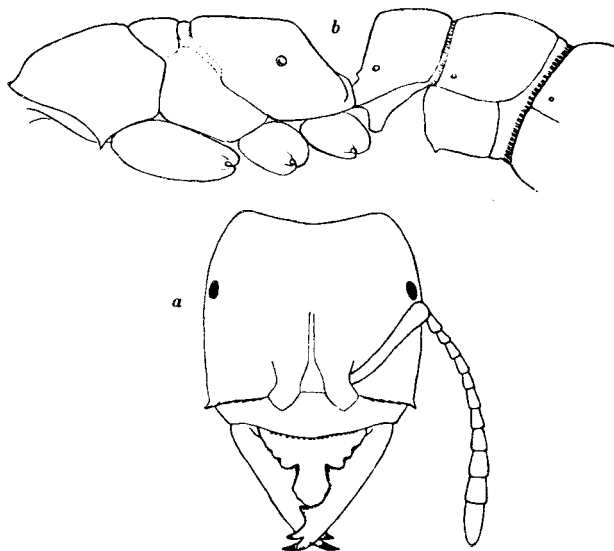


FIGURE 2. *Amblyopone australis* subsp. *cephalotes* F. Smith, worker (New Zealand); a, head, dorsal view; b, thorax, petiole and postpetiole in profile.

Worker. Length 6.5–8 mm.

Differing from the typical *australis* in the following particulars: mandibles distinctly longer and slightly more convex externally. Antennae decidedly more slender, the funiculi longer, with longer joints, the second and third being one and one-half times as long as broad. Petiole longer, about one and one-third times as broad as

long, shaped very much as in subsp. *obscura*. Mandibles distinctly less sharply striate and more shining, especially along their external borders and therefore approaching the condition in *levidens*. Sculpture and punctuation of head and punctuation of thorax and abdomen somewhat coarser than in the typical *australis*, the cephalic rugæ more divergent and reaching beyond the eyes, fine and more vermiculate in the antennary fossæ; punctures on front and vertex coarse and round; declivity of epinotum smooth and shining, transversely striate and punctate on the sides; longitudinal striæ on sides of thorax only on lower half, the upper half shining and coarsely punctate. Pilosity somewhat paler, longer and coarser than in *australis*, the long hairs on the tibiæ more numerous. Color dark as in the subsp. *obscura*, mandibles, except their teeth distinctly paler than the head; antennæ, legs and tip of gaster reddish yellow, or testaceous.

Female. Length about 10 mm.

Very similar to the worker and differing mainly in the coarser sculpture. Mandibles more sharply striate, pro- and mesonotum more coarsely punctate than in typical *australis*, the declivity of the epinotum striatopunctate on the sides as in the worker. Wings of the same color as in *australis*.

Male. Length about 7 mm.

Antennæ decidedly longer than in *australis*, the scapes and second and third funicular joints more than twice as long as broad. Head and thorax more coarsely reticulate and punctate, the Mayrian furrows of the mesonotum much broader and deeper, crossed by series of sharp ridges which are absent in the Australian form. Color of body as in *australis*, except that the femora are somewhat paler. Wings as deeply colored as in the female.

Described from numerous workers, two females and a male from the following localities in the North Island of New Zealand: Waikino, near Auckland (E. M. Ehrhorn); Mt. Eden, Auckland (W. M. Wheeler); Dargaville, Wangaroa and New Plymouth (W. W. Smith).

As Emery has remarked, Smith's description of this form from Auckland (Lawson) is very defective. He erroneously supposed it to be "very distinct" from *australis*, although he noticed its greater affinity to *obscura*. The smooth external borders of the mandibles show that *cephalotes* is related to *levidens* and that it is connected through the varieties *norfolkensis* and *howensis* (*vide infra* p. 15) with that subspecies in New Guinea and its variety in Northern Queensland and with the subsp. *obscura* of Eastern Australia in coloration and in the proportions of the funicular joints.

Stitz has described a var. *maculata* of *cephalotes* from Auckland. The color of this subspecies is variable and as I have taken immature specimens much like *maculata* in colonies with very dark mature individuals, I believe that Stitz's varietal name should be relegated to the synonymy.

Amblyopone australis subsp. *cephalotes* var. *norfolkensis* var. nov.

Worker. Length 4.5–6 mm.

Differing from the typical *cephalotes* of New Zealand in its smaller size. The rugæ on the front and sides of the head are more regular and extend back much further, in fact nearly to the occipital border, the punctures between them becoming larger and more elongate on the vertex and occiput. Mandibles as in *cephalotes*, i. e., with the striæ somewhat effaced along the external borders so that they are smooth and shining. Declivity of epinotum striate-punctate on the sides, smooth and shining in the middle. Funicular joints of antennæ as in *cephalotes*, but the second and third joints somewhat shorter, about one and one-third times as long as broad, more elongate than in *australis* and its various forms, except *levidens*. Pilosity more yellow, coloration dark as in *cephalotes*.

Described from 25 workers from Norfolk Island (A. M. Lea).

Amblyopone australis subsp. *cephalotes* var. *howensis* var. nov.

Worker. Length 5.5–6.5 mm.

Averaging somewhat larger than the preceding variety, with the proportions of the funicular joints, the sculpture of the head, mandibles and thorax very similar, except that the epinotal declivity is smooth and shining throughout with only feeble indications of punctures at the outer margins. Punctures on the petiole and postpetiole distinctly smaller than in *norfolkensis* and less elongate. Pilosity and color the same.

Female (decalated). Length 8–9 mm.

Smaller compared with the female of *cephalotes*, the funiculi stouter, their first and second joints shorter in proportion to their length and therefore approaching the conditions in the Australian *obscura*. Sculpture of head much like that of *cephalotes* but the rugæ are less divergent and the mandibles are more sharply striate, though shining. Epinotal declivity strongly transversely striate above and especially on the sides, very smooth and shining in the middle (in *cephalotes* more extensively striate on the sides, with elongate punctures among the striæ).

Male. Length 5.5 mm.

Considerably smaller than the male of *cephalotes*, with the sculpture of the head, thorax and petiole finer and with shorter antennal joints. The scapes are only one and two-thirds times as long as broad (in *cephalotes* fully twice as long as broad), the second and third funicular joints are less than double their length (in *cephalotes* two and one-half times). In the latter form the femora are infuscated, the tibiae and tarsi brownish yellow, in *howensis* the tibiae, except at their ends, and the metatarsi are also distinctly infuscated. Wings pale brownish hyaline with dark brown veins and stigma, as in *cephalotes*.

Thirteen workers, six females and a male from Lord Howe Island. (A. M. Lea.)

In the structure of the antennæ of the worker and male, this and the preceding variety are distinctly transitional to *australis* and especially to its subspecies *obscura*.

Amblyopone australis subsp. *nana* Emery.

A. nana Emery, in Roux and Sarasin, Nova Caledonia Zool. 1, 1914, p. 394, ♂ ♀.

Described from single worker and female specimens from Mt. Panie and Mt. Canala, New Caledonia (Roux and Sarasin). The former measures 6.5 mm., the latter 7 mm. According to Emery, the sculpture is precisely like that of *A. australis*. "The head is broader and more nearly square, scarcely narrowed behind, more broadly and more deeply excised posteriorly and with the posterior corners less acute. The petiolar node is more rounded; postpetiole at the base with elongate foveolæ." These characters and those mentioned for the female are so variable in series of *australis* from the same colony that they can hardly have specific value. I have therefore reduced this form to the rank of a subspecies characterized mainly by its smaller size.

Amblyopone lea sp. nov.

Worker. Length 5-6 mm.

Resembling the typical *australis* Erichson. Head rather convex, nearly square, as broad as long, very slightly narrowed behind, with straight sides and broadly, moderately excavated posterior border, the posterior corners more rounded than in *australis*, the teeth at the anterior corners more minute, very slender and acute. Eyes very small, consisting of less than 20 ommatidia. Mandibles

rather short and narrow, about three-fourths as long as the head, their teeth resembling those of *australis* but the two basal denticles are proportionally larger and much further apart, the more basal is the larger and there is often an additional minute denticle proximal to the basal; moreover, all the teeth, except the terminal one, are more acute and directed more backward; this is especially noticeable in the three basal teeth. Antennæ somewhat more slender than in *australis*, the scapes less incrassated at their tips, which reach to or

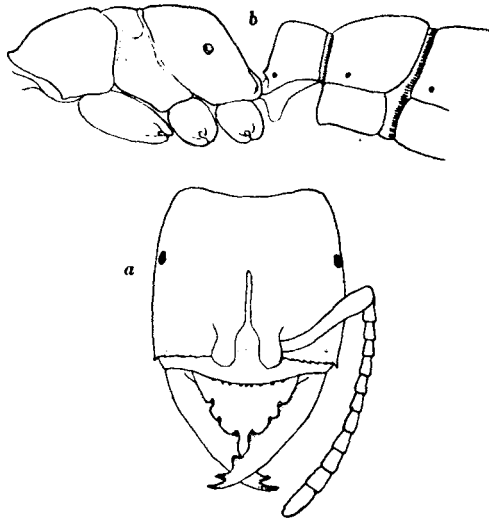


FIGURE 3. *Amblyopone læa* sp. nov., worker (Lord Howe Island); a, head, dorsal view; b, thorax, petiole and postpetiole in profile.

slightly beyond a line connecting the eyes; the proportions of the funicular joints much as in *australis*, all of them longer than broad, the second and third about one and one-fourth times as long as broad, the penultimate joints broader. Border of clypeus with an even series of very minute denticles as in *australis*. Thorax shaped much as in that form but the tooth on the inferior corner of the pronotum is usually reduced to a sharp angle, the mesonotum is shorter in proportion to its width, and the epinotum is not longer than broad, with the base more convex and only as long as the declivity. Petiole fully twice as broad as long, rather rounded in front, its ventral tooth shorter and more rounded at the tip. Postpetiole about one and one-fourth times as long as broad. Legs as in *australis*.

Shining; mandibles and clypeus subopaque, the former strongly and densely striate over their whole surface as in *australis*, the latter indistinctly rugulose in the middle, longitudinally rugulose on the sides. Front and vertex more sparsely and finely punctate than in the typical *australis*, the cheeks and sides of front more finely and regularly longitudinally rugose, the rugæ less diverging posteriorly, fading out at the level of the eyes and therefore distinctly shorter than in *australis*. Punctures on the pro- and mesonotum much sparser and finer and leaving more of the median region impunctate; striæ on the sides of the thorax finer and more restricted, i. e., leaving more of the region above them smooth, especially on the pronotum. Punctures on the petiole even finer and sparser, those on the post-petiole and first gastric segment very sparse but coarser, with sharp anterior borders.

Pilosity and pubescence golden yellow, distinctly less abundant, both on the body and appendages, than in *australis*.

Ferruginous; noticeably paler and more yellowish than the typical *australis*, mandibles and clypeus darker, teeth and inner border of former black; borders of clypeus infuscated; antennæ and legs yellow; head with an indistinct brownish spot on the vertex.

Described from 24 workers from two colonies taken by Mr. A. M. Lea on Lord Howe Island. One of these was nesting on the summit of Mt. Gervis in rotting leaves.

This form seems to resemble *A. nana* Emery of New Caledonia, but the latter is somewhat larger and darker, with nearly black head and has precisely the same sculpture as *australis*. The form of the head seems to be much like that of *leæ*. The postpetiole has elongated foveolæ at the base.

Amblyopone michaelsoni Forel.

Forel, in Michaelson and Hartmeyer, Fauna Südwest-Australiens 1, 1907, p. 264, ♀; Emery, Gen. Insect. Ponerinæ, 1911, p. 26, ♀. Worker. Length 7-8 mm.

Head distinctly longer than broad, more narrowed behind than in *australis*, without teeth at its anterior corners. Mandibles short and broad, the eyes very small, consisting of only about 15 ommatidia. Antennæ longer than in *australis*, the scapes reaching to the posterior third of the head, the funicular joints of much the same proportions but more cylindrical. Frontal carinæ more prominent, frontal groove much broader and more sharply marked behind. Thorax more flattened dorsally and on the sides, the pronotum longer than

broad, the mesonotum flat, much longer, only about one and one-half times as broad as long; the epinotum longer, its base very flat and decidedly longer than the declivity, which is nearly vertical, slightly concave in the middle and bluntly submarginate on the sides. Petiole similar to that of *australis* but the anterior slope of the node is concave in profile and shorter in proportion to the dorsal surface, which, seen from above, is one and one-half times as broad as long, more rounded at the anterior angles and with sharper anterior border; ventral spine unciform, directed downward and backward. Post-

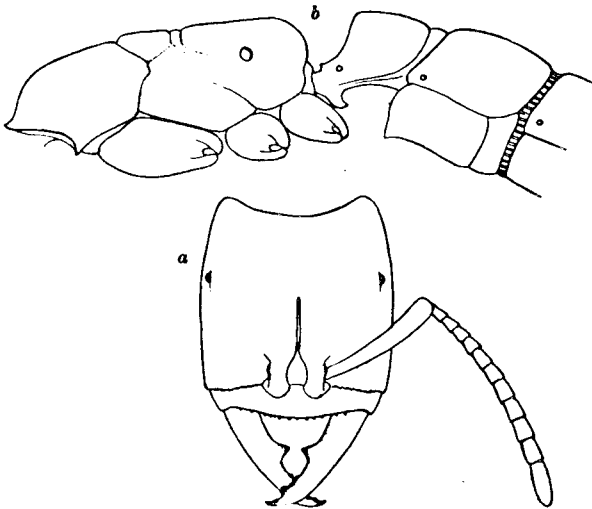


FIGURE 4. *Amblyopone michaelsensi* Forel, worker, (West Australia); a, head dorsal view; b, thorax, petiole and postpetiole in profile.

petiole about one and one-third times as broad as long, the posterior border of its stridulatory surface with strong longitudinal ridges, its ventral surface strongly projecting and angulate anteriorly.

Surface of body smooth and shining, mandibles smooth and finely punctate, striated only at the basal inner border. Clypeus longitudinally rugulose. Head smooth with small, scattered punctures, the rugae fine and confined to the sides of the front, not reaching to the eyes, with a few coarse punctures at their posterior ends. Punctures on thorax and abdomen small and sparse, declivity of epinotum very smooth and shining, impunctate.

Pilosity yellow, distinctly longer and less abundant on the dorsal surface and appendages than in *australis*.

Rich ferruginous red, like the typical *australis*, with paler antennæ and legs; mandibles scarcely paler than the head, their teeth and the borders of the clypeus black.

The type of this very distinct species is from Jarrahdale, West Australia. I have drawn the description from a single specimen from Lucindale, South Australia (Fr. Secker) and a topotype from Jarrahdale sent me by Mr. James Clark.

Amblyopone ferruginea F. Smith.

A. ferruginea F. Smith, Cat. Hym. Brit. Mus. 6, 1858, p. 110, ♀ ; Dalla Torre, Cat. Hymen. 7, 1893, p. 13, ♀ ; Ern. André, Rev. d'Ent., 1896, p. 261, ♀ ; Froggatt, Agric. Gaz. N. S. W., 1905, p. 8; Emery, Gen. Insect. Ponerinæ, 1911, p. 26, ♀ ; Crawley, Ent. Month. Mag. (3) 8, 1922, p. 120, ♀ ; Clark, Victor. Natural. 42, 1925, p. 138, ♀ ♀ .

A. ferruginea var. *longidens* Forel, Rev. Suisse Zool. 18, 1910, p. 1, ♀ ; Froggatt, Agric. Gaz. N. S. W., 1905, p. 8; Emery, Gen. Insect. Ponerinæ, 1911, p. 26, ♀ .

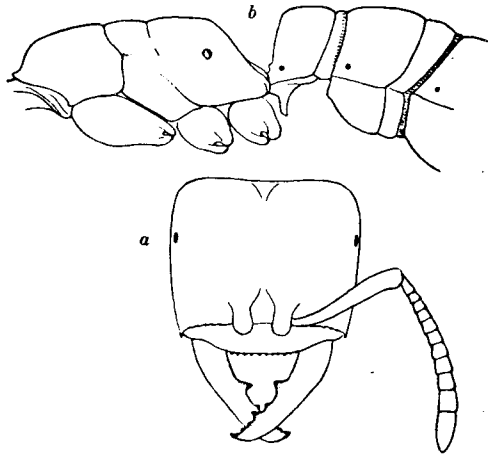


FIGURE 5. *Amblyopone ferruginea* F. Smith, worker (New South Wales), a, head, dorsal view; b, thorax, petiole and postpetiole in profile.

Worker. Length 4-4.5 mm.

Head rectangular, distinctly broader than long, not narrowed behind, the sides straight and subparallel, the posterior corners rounded, the posterior border broadly and feebly excised; the teeth at the anterior corners minute and slender, and sometimes absent on one or both sides. Eyes very small, with about 15 ommatidia. Mandibles about three-fifths as long as the head, their outer borders rather straight, more convex at the base; the inner borders very oblique at the apex, bearing six teeth, the terminal one large, the second and fourth (counting from the apex) small, the fifth tooth followed by a diastema and a large, erect, pointed tooth which is about midway between the fifth and the base of the appendage. In some specimens there is also a very minute denticle in the diastema. Clypeus rather evenly convex in the middle, its anterior border with a series of 8 or 9 minute denticles which are more widely spaced and more distinct than in *australis*. Frontal groove narrow and rather indistinct but continued as a line to the occipital border. Antennal scapes reaching nearly to the posterior fourth of the head, gradually thickened towards the tip; joints 2-10 as broad as long, terminal joint shorter than the three penultimate joints together. Thorax short, flattened above and on the sides, pronotum broader than long, as broad in front as behind, rounded anteriorly and laterally, the inferior angles neither acute nor armed with teeth. Mesonotum about twice as broad as long, broadest in front; epinotum short though longer than broad, with subequal base and declivity, the latter flat, moderately sloping, scarcely submarginate on the sides. Petiole very short, its truncated anterior surface nearly one and one-half times as long as the dorsal surface, with which it forms a blunt and rounded angle; the node from above nearly three times as broad as long, its anterior border straight, its sides convex, its posterior border somewhat excised, the ventral spine long and slender, directed downwards. Postpetiole and first gastric segment fully twice as broad as long, remaining segments and legs short; the tibiae somewhat swollen, the middle pair nearly three times as long as their greatest diameter.

Mandibles somewhat shining, longitudinally punctate-striate, the punctures more distinct, the striae somewhat more irregular than in *australis*. Head subopaque, densely and finely longitudinally rugulose, the rugae diverging somewhat behind. Clypeus opaque and very densely punctate, vaguely longitudinally rugulose on the sides. Pronotum a little more shining than the head, regularly longitudinally

rugulose, with rows of elongate punctures between the rugules, which are a little coarser and sharper than those of the head. Sides of thorax very finely longitudinally rugulose; base and declivity of epinotum shining, the mesonotum coarsely punctate, the base of the epinotum with very sparse, small piligerous punctures, the declivity very smooth, impunctate. Gaster smooth and shining, very sparsely punctulate, legs somewhat less shining, more densely and finely punctulate.

Pilosity yellow, similar to that of *australis* but shorter, more abundant and more even on the head and thorax.

Head, mandibles, antennæ and pronotum yellowish ferruginous, remainder of body and legs yellow; mandibular teeth and borders of clypeus dark brown.

Smith's meager description of this very distinct species was based on specimens from Melbourne, Victoria. My description is drawn from numerous specimens which I took from rather populous colonies nesting in sandy soil under stones at Katoomba and Hornsby, New South Wales, a few specimens taken by Dr. W. M. Mann at Leura in the same commonwealth and a specimen from Malden, Victoria (J. C. Goudie). Clark records this species from the following localities in Victoria: Ferntree Gully (F. P. Spry), Belgrave (F. E. Wilson); Woori Yallock (L. B. Thorn).

Forel has described a variety *longidens* of this species from Bombala, N. S. W. All the specimens I have seen agree with his description of the mandibular teeth, and since he has not compared his specimens with Smith's types I can see no reason for recognizing his variety as distinct. Because Smith in his very superficial description failed to mention the prominent, erect mandibular tooth is no reason for supposing that it was small or absent in his specimens.

Amblyopone hackeri, sp. nov.

Worker. Length 3-3.5 mm.

Head nearly square, as broad as long, not broader behind than in front, the sides straight and subparallel, more convex behind, posterior corners rounded, posterior border broadly and feebly excised, anterior corners with very minute, short, acute denticles. Clypeus vertical, somewhat concave in the middle, its anterior border straight, with about 6-8 minute, widely spaced denticles. Frontal carinæ prominent, rounded; frontal groove obsolete in front and behind represented by a distinct, elongate impression at the middle of the head. Eyes extremely small, degenerate, concave and unpigmented, con-

sisting of about 6 to 8 minute irregular facets, situated just in front of the posterior third of the head. Mandibles about two-thirds as long as the head, rather narrow, parallel-sides, the external borders straight, except at the base, 8-toothed, the median teeth in two rows, the larger teeth, i. e., the first, fourth and sixth (from the apex) are only slightly larger than the smaller and the fourth to eighth are acute and strongly directed backward, so that the series gives the internal border a serrate appearance like the mandibles of *Mystrium* and some species of *Stigmatomma*. Antennæ rather short, scapes reaching

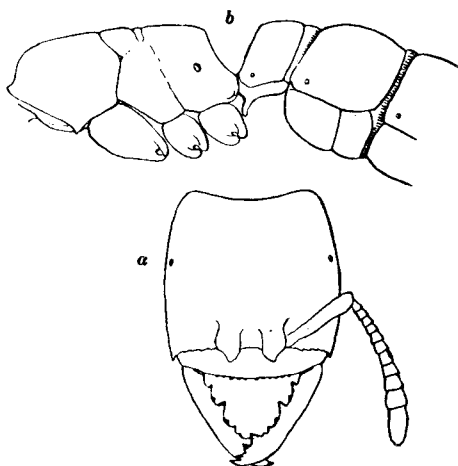


FIGURE 6. *Amblyopone hackeri* sp. nov., worker, (Queensland); a, head, dorsal view; b, thorax, petiole and postpetiole in profile.

to the posterior third of the head, thickened at their tips; first funicular joint large, fully twice as long as the two succeeding joints together; joints 2-10 as broad as long, the last four thickened to form an indistinct club, the terminal joint very nearly as long as the three preceding subequal joints together. Thorax stout, through the pronotum about three-fifths as broad as the head, depressed dorsally and rather flat on the sides, in profile with the dorsal outline nearly straight, only feebly impressed at the promesonotal and mesoëpinotal sutures. Pronotum broader than long, with straight subparallel sides, convex anterior and concave posterior border, the inferior corners with short but distinct teeth. Mesonotum about three times as broad as long, its anterior border convex in the middle, its posterior

border straight. Epinotum short, but longer than broad, the base a little longer than the declivity, which is distinctly concave in profile, with about the same slope as in *ferruginea*, the sides indistinctly submarginate. Petiole resembling that of *ferruginea*, but the anterior and lateral borders of the node are straight and not convex, the posterior border is less concave in the middle and the downwardly directed ventral tooth is rather acute and spine-like. Postpetiole and first gastric segment about two-fifths broader than long. Legs short and stout, the tibiae swollen, the middle pair very short, scarcely more than twice as long as their greatest diameter.

Mandibles distinctly shining, with small, scattered, elongate punctures and traces of irregular longitudinal rugules. Clypeus opaque, without distinct sculpture in the middle, on the sides finely longitudinally striate. Head subopaque, finely and densely longitudinally rugulose, the rugules diverging on the posterior corners, the narrow spaces between the rugules with elongate punctures. Remainder of body shining; dorsum of pronotum smooth in the middle, on each side longitudinally rugulose but more finely and less densely than the head. These regions also bear rows of coarse punctures, which greatly diminish in size at the posterior border. Sides of thorax very finely and densely striate, the striae on the sides of the epinotum very delicate so that they are more shining. Remainder of body with very fine, scattered, indistinct, piligerous punctures. Declivity of epinotum very smooth and shining, altogether impunctate.

Hairs golden yellow, fine, short, erect or suberect, on the appendages more uneven and oblique.

Color similar to that of *ferruginea* but distinctly darker; mandibles, clypeus and head brownish ferruginous; remainder of body paler, more brownish yellow; appendages clear yellow; mandibular teeth dark brown.

Described from a dozen specimens taken by Mr. Henry Hacker in the National Park of Queensland.

At first sight this species may be confused with *ferruginea* but it differs from it very decidedly in its small size, very minute and degenerate eyes, the dentition and sculpture of the mandibles, shape of the antennae, sculpture of the pronotum, etc.

Amblyopone clarki sp. nov.

Worker. Length 4.5-5 mm.

Head subrectangular, very distinctly broader than long, as broad in front as behind, with rather deeply and angularly excised posterior

border, rather straight, subparallel sides and nondentate anterior corners. Eyes minute, flat, consisting of only 6 or 7 facets, situated at the posterior third of the head. Mandibles with straight or slightly concave external borders, broadened in the middle, their apical two-thirds with 9 teeth, the first, fourth, sixth and ninth larger than the others, the basal third with a few minute, blunt, vestigial teeth in two rows. Clypeus rather flat, its anterior border perfectly straight and transverse, with a small, rectangular tooth on each side near the insertion of the mandible and an even row of minute denticles between. Frontal area large, triangular; frontal groove broad, ex-

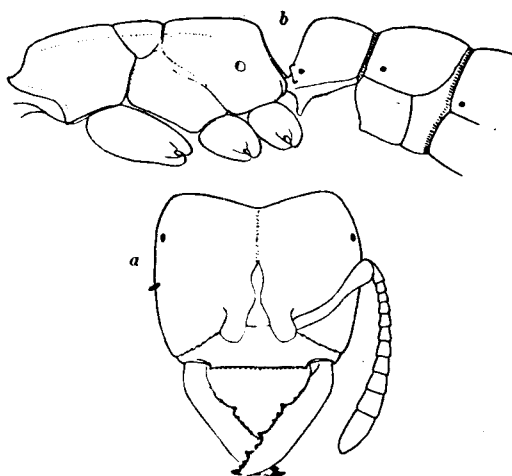


FIGURE 7. *Amblyopone clarki* sp. nov., worker (West Australia), a, head, dorsal view; b, thorax, petiole and postpetiole in profile.

panding into a deep elliptical impression at the center of the head. Antennal scapes rather slender, not reaching to the eyes; funicular joints 2-10 distinctly broader than long. Thorax flattened above, the pronotum anteriorly and laterally very distinctly, the mesonotum and basal half of epinotum less sharply submarginate. Promesonotal and mesoepinotal sutures deeply impressed. Pronotum, excluding the neck, broader than long, nearly as broad behind as in front, with parallel, arcuate anterior and posterior borders, rounded sides and a smooth, elevated line in the middle; the inferior corner on each side angulate but not dentate. Mesonotum much narrower than the pronotum, but broader than long; epinotum subcuboidal, with nearly

straight, subequal base and declivity, the latter nearly vertical. Petiole nearly twice as broad as long, with flattened anterior and very feebly convex dorsal surface, the former sharply dentate on each side below, the midventral spine subtranslucent, slender, truncated at the tip, directed downward. Postpetiole broader than long, its ventral surface large and protuberant, bluntly subangular in profile.

Shining; mandibles rather finely longitudinally punctate-striate; clypeus indistinctly punctate-rugulose. Upper surface of head, pro- and mesonotum finely longitudinally rugulose, with rows of coarse, elongate punctures between the rugules. Sides of thorax delicately longitudinally striate; dorsal surface of epinotum, petiole and postpetiole with sparse, coarse, shallow punctures, or foveolæ; remainder of gaster with finer scattered punctures.

Hairs pale yellow, short, erect, of uneven length, rather abundant, somewhat longer on the gaster, investing both the body and the appendages.

Reddish ferruginous; epinotum, abdomen and appendages more yellow; mandibular teeth deep reddish.

Female (deälated). Length 6.5 mm.

Resembling the worker. Eyes much larger, but flattened, sub-circular, about one and one-half times their greatest diameter from the posterior corners of the head. Lateral ocelli small and indistinct. Mandibular teeth more acute than in the worker.

Sculpture coarser, especially the punctures on the pro- and mesonotum. Scutellum with similar punctures. Epinotum more finely punctate, the declivity also vaguely transversely striate.

Pilosity as in the worker. Dorsal portions of head, thorax and petiole deep castaneous, almost black, anterior portion of head, gula, sides of thorax and petiole deep red; mandibles ferruginous, with dark brown teeth and borders; antennæ, legs, postpetiole and gaster somewhat darker ferruginous yellow than in the worker.

Described from eight workers and a female taken by Mr. James Clark at Ludlow, West Australia.

This species is very distinct in the shape and dentition of the mandibles, the conformation of the head and thorax and in having the very small eyes in the worker placed more posteriorly than in the other species of the genus.

Amblyopone aberrans sp. nov.

Worker. Length 3-3.5 mm.

Head subrectangular, as long as broad, as broad in front as behind,

with feebly excised posterior border and feebly and evenly convex sides. Eyes small, flat, varying from three or four to about a dozen facets, according to the size of the individual, and situated at the posterior two-fifths of the head. Mandibles narrow and linear basally, broadened and truncated at the tip where they bear five teeth, the first, third and fifth larger, and the fifth turned somewhat backward; on the base there are two separated, backwardly directed vestigial denticles. Clypeus short, its anterior border straight and transverse, bearing a row of rather sparse median denticles and with-

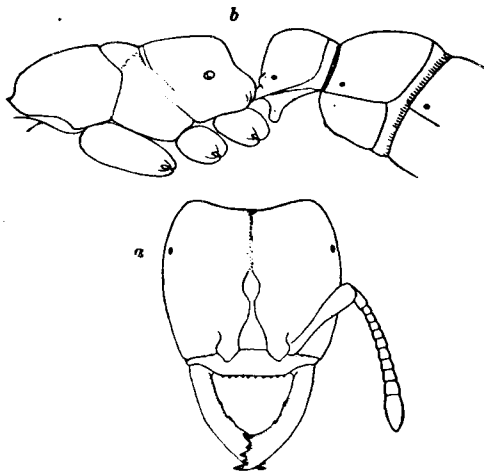


FIGURE 8. *Amblyopone aberrans* sp. nov., worker (West Australia); a, head, dorsal view; b, thorax, petiole and postpetiole in profile.

out teeth on the sides near the insertions of the mandibles. Frontal area distinct, large, triangular; frontal groove broad, expanding into a shallow, elliptical impression at the center of the head. Antennal scapes rather short and slender; second funicular joint longer than broad; joints 3-10 as broad as long. Thorax short, somewhat flattened above; pronotum bluntly submarginate anteriorly, semi-circular, broader than long; mesonotum rather convex, twice as broad as long, transversely elliptical; epinotum subcuboidal, the base subrectangular, flattened above, a little broader than long and slightly broader behind than in front, the declivity abrupt, somewhat concave. Postpetiole one and one-half times as broad as long, with convex sides and dorsal surface, the anterior surface flat, with two

bluntly rounded projections below in the place of teeth; ventral spine scarcely translucent, long, truncated at the tip, directed downward. Postpetiole broader than long, its ventral surface rounded, without distinct angle in profile.

Shining; mandibles finely striate-punctate; head and dorsal surface of pronotum finely longitudinally rugulose, with elongate punctures between the rugules. These punctures are rather fine and shallow on the head, but coarse and conspicuous on the pronotum. Sides of thorax very delicately striate, remainder of body smooth, with indistinct, scattered, piligerous punctures.

Hairs yellow, erect, abundant, very short on the head, longer on the thorax and still longer on the abdomen, short and oblique on the legs.

Mandibles, antennæ, head, pronotum and legs ferruginous yellow; clypeus, coxæ, meso- and epinotum and abdomen paler, clear yellow.

Female. Length 6 mm.

Resembling the worker, but head broader than long, the teeth of the mandibles more acute, the eyes larger, subcircular, situated about twice their diameter from the posterior corners of the head. Ocelli well-developed.

Sculpture similar to that of the worker but coarser; rugules and punctures on the pronotum transverse; mesonotum and scutellum coarsely punctate, the latter smooth in the middle, the former finely and rather indistinctly striate. Sides of thorax and epinotal declivity subopaque, delicately striate, the former longitudinally, the latter transversely. Abdomen with sparse piligerous punctures.

Pilosity similar to that of the worker. Mandibles, clypeus, antennæ and legs ferruginous; a spot on the middle of the clypeus, the head, thoracic dorsum and petiole above brownish black; sides of thorax, trochanters and middle portions of femora dark brown; gaster yellowish ferruginous, the tergites, except their borders and the intersegmental regions, dark brown. Wings faintly yellowish hyaline, with brown veins and dark brown stigma.

Male. Length 4.5-5 mm.

Head broader than long, the occipital portion short and very broadly rounded. Mandibles very small but well-developed, tridentate. Clypeus and front rather flat. Antennal scape not longer than the second funicular joint, first joint as broad as long. Pronotum transverse, convex and projecting. Mesonotum somewhat flattened, with deep Mayrian furrows crossed by a series of coarse

ridges. Epinotum in profile forming an obtuse angle, the base and declivity nearly straight and subequal. Petiole anteriorly much less angular in profile than in the worker but with a very similar ventral spine. Gaster and legs slender.

Head and pronotum subopaque, very finely rugulose and reticulate, the occiput and pronotum transversely. Remainder of body more shining. Mesonotum and scutellum longitudinally rugulose and coarsely punctate; mesopleuræ in part smooth and shining; remainder of pleuræ and epinotum densely punctate-rugulose, or granular. Petiole above loosely and irregularly rugose. Postpetiole and gaster smooth, sparsely and indistinctly punctate.

Pilosity grayish; longer on the head and thorax than in the worker.

Black; tips of mandibles whitish; coxæ and femora dark picceous brown; tibiæ, tarsi and tips of trochanters ivory yellow; the tibiæ somewhat infuscated in the middle. Wings grayish hyaline, with grayish veins and brown stigma.

Described from three workers, two males and a female taken by Mr. James Clark at Mundaring, West Australia.

The worker and female of this species differ in the structure of the mandibles not only from all the other species of *Amblyopone* but from all other known ants.