§ Insects

Honey Ants

By Walter W. Froggatt

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HONEY ANTS.

By WALTER W. FROGGATT.

(PLATE 27).

Among the many interesting habits of the Formicidæ there is perhaps none so peculiar as that which certain species have adopted of turning some of their fellows into animated honey-pots. At certain seasons of the year many honeydew-producing insects infest the Eucalyptus, such as the larvæ of the lerp insects, *Psyllidæ*, and several kinds of Coccidæ (*Eriococcus coriaceus*), the latter often covering the foliage with a thin coating of sticky matter, so plentifully does the honeydew drop from the female Coccus. Many different species of ants frequent the bushes for this sweet food, and some of these species have the forethought to store up the surplus supplies; but instead of forming a comb, as the instinct of the honey-bees teaches them, the ants select a certain number of their workers, and after their return to the nest from foraging, disgorge the honey they have obtained down the throats of these chosen individuals, which soon causes the stomach to increase to such an extent that the intersegmental membrane becomes so distended that the chitinous plates of the segments simply become dark bands across the semi-transparent globular abdomen.

These ants are in all respects similar to their fellow workers, except in this enormously swollen body, and in this state are compelled to remain in the nest with only a limited power of progression, and constitute a reserve stock of honey in times of scarcity.

Three different species have up to the present been recorded which possess this remarkable habit. The first that were known were collected by Mr. W. Wesmael in Mexico, and described by him* under the name *Myrmecocystus mexicanus*. They were called by the natives "*hormiger mieleras*," or "*mochileras*," honey or pouched ants. They have since then been found by Mr. H. C. M'Cook in Colorado, and he has published a very interesting account of them† in his book on honey ants, and a short summary of this work upon their habits is given in the Proceedings of the Academy of Natural Science.‡

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* Bulletin de l' Acad. des Science de Bruxelles, 1838, p. 770.
† The Honey Ants of the Garden of the Gods, Phil., 1881.
‡ P.A.N.S. Phil., 1882, p. 303.

Though belonging to a different genus from ours their habits are not unlike, and as they are confined to a similar dry and drought-stricken country, probably the same surroundings have led to like habits. Mr. M'Cook says:—"Their nests are found in ridgy country with small truncated cones protecting the entrances, which fead into a vertical shaft from three to six inches in depth leading into galleries and chambers, cutting through gravel and sandstone to nearly eight feet in distance, and from two to four feet beneath the surface. The honey-bag ants were lound hanging in clusters to the roof of the chambers by the feet, their large globular bodies looking like bunches of grapes, and each nest contained from eight to ten chambers, each containing about thirty honey ants, which as soon as the nest was broken into were dragged below by the workers. They are nocturnal in their habits, the workers obtaining their supplies of honey from a sweet exudation from the galls of a kind of cynips which grew plentifully upon the oaks in that district."

The second species of honey ant belongs to the genus *Crematogaster*, the members of which construct their nests on the branches of trees, not unlike wasp nests, but the interior consists of many irregular galleries and chambers. Their abdomen is generally heart-shaped, and the peduncle by which it is attached to the thorax, being inserted at the top of the basal segment instead of beneath, gives them a very comical appearance when running about, as they carry their abdomen curved over the thorax.

Crematogaster inflatus, Smith,* is found at Singapore and Sarawak, but instead of having the abdomen formed into a honey-bag, Smith says:—"It has a swollen bladder-like formation on the metathorax furnished with a small circular orifice at the posterior lateral angles, from which the saccharine fluid doubtless exudes; portions of crystallised particles are visible within the orifices, and frequently scattered all over the surface of the inflation, and we may therefore reasonably conclude that this insect elaborates a suitable and necessary aliment for the nourishment of the young brood."

Our Australian honey ants belong to the genus *Camponotus*, members of which are found in all parts of the world, and are popularly known as "sugar ants" from their fondness for all kinds of sweets. Over thirty species are described from Australia, which generally construct their nests under stones or logs, and are nocturnal in their habits. *Camponotus inflatus* was described by Sir John Lubbock† from specimens received from Adelaide.

* B.M. Cat. Hym., pt. vi., 1858, p. 136, pl. ix., fig. 1.

† Jour. Linn. Soc. Zool., xv., 1880, p. 167.

During and subsequent to the visit of the Horn Expedition to Central Australia Professor Baldwin Spencer obtained, mainly through the kindness of Mr. E. C. Cowle, of Illamurta, a very fine series of this species, together with other honey ants, upon which he has sent me the following notes, together with the specimens to describe.

Professor Spencer says :—"The black honey ant (*Camponotus inflatus*, Lub.) is called "Yarumpa" by the natives, by whom it is esteemed a great luxury ; it is, *par excellence*, *the* honey ant of the central country, and ranges across to the Murchison in Western Australia. We found them plentiful in certain districts on the hard sandy plains, and also often very abundant in patches among the Mulga scrub. The ground all round Ayers Rock, to the south of Lake Amadeus, was strewn with heaps of sand where the natives had been digging them out. They construct no mound over their nests ; the entrance, which is an inch in length by a quarter of an inch in width, leads down into a vertical shaft or burrow from five to six feet in depth. About a foot below the surface horizontal passages about a foot in length lead off from the main shaft, at the end of which were three or four of the honey ants, while the bottom of the main shaft, which is excavated into a larger cavity, contained a considerable number. The 'honey ants' are quite incapable of movement and must be fed by the workers. Unlike all the other ants noticed in this country, these did not appear to collect twigs, leaves or grass to carry into their burrows."

The red honey ant (*Campanotus cowlei*, n. sp.) is a much rarer species. Professor Spencer says :—"I only came across a single nest of the golden yellow species, which was a small one, consisting of branching passages close to the surface, under a little block of quartzite in one of the gorges amongst the McDonnell Ranges. In this nest the honey ants, though considerably swollen out, seemed to be able to move about slowly. Perhaps it was a young colony and they were not fully developed." The natives call this species "Ittootoonee," and we are indebted to the energy of Mr. Cowle who afterward secured a very fine series of this honey ant in all stages of its growth.

Camponotus cowlei, n. sp. Figs. 1, 2, 3, 4, 5.

♂ Black, wings fuscus, cinereous hairs about the jaws and head, legs and antennæ dark chocolate-brown ; length four lines. Head longer than broad, ocelli small, close together, forming a triangle on summit behind the eyes, the latter circular, brown and not very prominent ; antennæ inserted below the eyes in deep clefts, scape long and slender, the flagellum about half as long again as the scape,

clypeus raised in centre, mandibles stout at base, hollowed in centre, swelling out at tip, terminating in a large tooth and four small teeth along inner edge; prothorax almost as wide as head at apical edge, with a slight ridge down the centre, mesothorax forming a boss in the centre, metathorax tapering towards the apex. Legs medium, slender, with stout spines at apex of tibiæ, and the tarsi thickly spined. Wings fuscus, nervures dark brown, subcostal cell and stigma small. Abdomen node small, rounded on sides, and produced in small angular points on the lower margin, the first segment broad at base, tapering towards the apex, lightly covered with reddish-brown hairs thickest upon the under side; the genitalia very distinct; the side lobes covered with stout cinereous hairs at the tip and inner edge.

♀ Dark reddish-brown, wings fuscus, length seven lines. Head large, quadrate, ocelli very small; eyes small, black oval, antennae long, scape nearly as long as the flagellum, fovea in centre below the antennæ, clypeus thickly fringed with long stout ferruginous hairs covering the jaws; mandibles stout, forming a sharp curved tooth at the tip, with a row of four angular teeth below; thorax broad, rounded in front, scutellum large, arcuate in front and slightly angular on the sides; legs stout and thick, tibiæ and tarsi very thickly covered with spiny ferruginous hairs; wings large, fuscus, nervures brown. Abdomen large, elongate, oval, smooth and shining, the whole of the upper surface finely coriaceous, but more in the pattern of fine striæ than in that of *C. inflatus*.

☿ Honey-worker dark reddish-brown, except the segmental membrane of the abdomen, which is pale yellow, head quadrate, ocelli in depression on summit of head above the eyes; eyes small, black, slightly oval, antennæ twelve-jointed, scape not quite as long as flagellum, a few short spines at the apex of the segment, but not bifurcated at the tip as in *C. inflatus*, covered with a fine silvery pubes, cence towards the apical joints, clypeus depressed in centre, thickly fringed with stout reddish hairs along the apical edge; mandibles large, hollowed out in centre, broadest toward the tip, which forms a stout curved fang with a row of four angular teeth below, the intermediate ones the smallest; thorax rounded in front, arched, and broadest at apex of prothorax, meso- and metathorax narrow, truncate at apex; legs long, slender, the tibiæ spined along either side, spines at apex of tibiæ, long and slender mid and hind legs, tarsi very spiny. Scale rounded, ridged in front and produced into an angular tip on the apical margin; abdominal segments swollen out so that the chitinous plates of the segments are widely separated from each other, but the abdomen is much more corrugated and constricted about the middle than in *C. inflatus*.

Besides the colour and shape this species differs from *C. inflatus* in several important particulars, the surface very closely covered with fine striæ, the body and head nothing like so hairy, the mandibles with two less teeth, and the genitalia of the males are very different in structure. The honey contained in the abdomen is of a slightly sour taste, not unlike that in the nests of our little native bees (*Trigona carbonarius*). I have much pleasure in naming this fine species after Mr. Cowle, who obtained this complete series of this new honey ant at no little trouble and inconvenience, digging them out under a semi-tropical sun. In another tube are several very slender golden yellow-coloured neuters, together with a lot of pupæ, which may belong to another species, but I think they are probably a minor form of neuter of this species.

Locality.—Illamurta in the James Range, Spencer Gorge in the McDonnell Range.

Camponotus inflatus, Lubbock. Figs. 10, 11, 12, 13.

Journ. Linn. Soc., xv., Zool., p. 167, 1880; Nature, xxiii., p. 258, 1881; Bees, Ants and Wasps, London, 1883, p. 428, pl. iv., fig. 1; Forel. Ann. Soc. Ent. Belg. xxx., p. 167, 1886.

♂ Black, clothed with cinereous pubescence, wings fuscus; length, three-and-a-half lines. Head thickly covered with long, stout hairs, broader than long; ocelli large, not very close together on summit of head. Eyes prominent, circular, antennæ scape not quite as long as flagellum, the latter covered with light brown pubescence. Mandibles slender at base, club-shaped at apex, with short, curved fang at tip, and flat, untoothed inner margin. Thorax rather oval in front, lightly clothed with long hairs, with short, impressed median line in front; mesonotum rounded and arched behind. Legs long, tarsi and spurs on tibiæ ferruginous; wings slightly fuscus, the nervures brown, stigma slender. Abdomen, node as in worker, the segments rounded in front, tapering to apex, the apical margin of each very lightly edged with pale brown. Genitalia light yellow, out-appendages very hairy on both sides, central appendage slightly lobed on the sides at tip.

♀ Black, with legs piceous and antennæ and mandibles dark reddish-brown; length, five lines. Head broadest behind, as broad as the thorax, sloping down to the mandibles; ocelli vitreous, forming a triangle, the lower one situated at the summit of furrow running down between the antennæ, carinate on either side, with the antennal tubercles in a depressed oval cleft. Eyes slightly oval, antennæ scape lightly spined at apex, about half the length of flagellum, the joints of which

are thickly covered with greyish pubescence. Clypeus elevated in the centre, rather truncate in front and covered with stout cinero-testaceous hairs, which lightly clothe the whole of the head. Jaws stout, with row of six short, regular teeth along the upper edge, covered with golden yellow hairs. Thorax broad, mesonotum raised above the pronotum and lightly impressed in centre, with short, parallel line; scutellum rounded and swelling up at apex, metanotum short. The legs moderate, the hind ones much the longest, covered with short, silvery hairs, with those on the tarsi golden. Wings large, testaceous, with nervures ferruginous and stigma dark brown. Abdomen, node seen from above heart-shaped; the rest large and rounded oval, with the apical margins of each segment edged with a narrow band of pale golden-yellow, and fringed with fine hairs of the same colour.

Locality.—Ayers Rock, Illamurta in the James Range. A considerable number of specimens were obtained during the Expedition, but we are indebted to Mr. Cowle for a large series since received, which included the various forms.

Camponotus midas, n. sp. Figs. 6, 7, 8, 9.

♀ Head, thorax, legs and antennæ dark reddish-brown, lighter on the sides, abdominal segment black as the base, with narrow transverse band of deep orange-yellow, followed by a broader, bright golden-yellow band, anal tip reddish-chestnut, only a few scattered hairs over clypeus and tip of abdomen; length, seven lines. Head broad, slightly round behind, tapering round to the mandibles, which are stout and curved, with six small, regular teeth; the two upper ocelli very small, lower one much larger, situated in base of cleft running down the centre of head. The antennal foveæ deep and elongate, the carina on either side forming a leaf-like projection, round at the tip. Eyes slightly oval toward the summit of the head, clypeus rugose, rather rounded and ridged in the centre. Antennæ scape not as long as flagellum, twelve-jointed, the first three joints of the flagellum are the longest, with fine spines at apex of scape and the following joints, the apical one clothed with fine ochreous pubescence. Thorax, pronotum narrow, slightly transversely ridged towards apex; mesonotum almost flat on summit, with impressed parallel line crossing it through the middle; scutellum small, rather truncate in front and rounded behind; metanotum short. Legs stout, the tarsi thickly spined, the tibial spur of fore legs large, inner edge of tibiæ lightly spined, the spines at apex of tibiæ upon the other legs fine and slender. Wings large, stigma long and slender, with the radial and second and third submarginal cells thickly clouded with fuscus, the rest of fore wing slightly clouded, hind wings much lighter. Node broad, rounded, with slight projection on either side in front and an angulated edge along the apex. Abdomen broad, rounded, slightly rounded towards tip.

☿ Worker major, similar in colour and sculpture, about the same length, seven lines. Head twice as broad as thorax, arcuate behind, swelling out on the sides and longer than broad; two distinct foveolets, the upper one including the lower ocellus and the lower between the antennæ, and not one extended cleft as in the female; the apical tooth on the mandibles largest and curved inwards. Pronotum ridged transversely and more swollen out on the sides; meso- and metanotum more elongated, rest as in previously-described female.

☿ Minor worker, four lines, very slender in form, head antennæ, the femur and tarsi of the mid and hind legs, metathorax and node reddish-brown, the rest of the legs, thorax, and first segment (except apical margin), and the base of the others underneath black; the rest of the abdomen brilliant golden yellow, with a few golden hairs at tip. Head elongated, rather broader than the thorax, rounded behind and rather straight on the sides; jaws large, with the two teeth at tip much longer than female; clypeus distinctly ridged in centre, mandibles covered with longish hairs; pronotum long, slender, mesonotum rounded on summit, metanotum very small. Node long, rather cylindrical, swollen out towards the apex, but contracted at junction with abdomen, elongate oval.

Locality.—Illamurta, in the James Range. A fine series of this species was obtained by Mr. Cowle subsequently to the return of the Expedition.

EXPLANATION OF PLATE XXVII.

Figures 1—5. **Camponotus cowlei.**

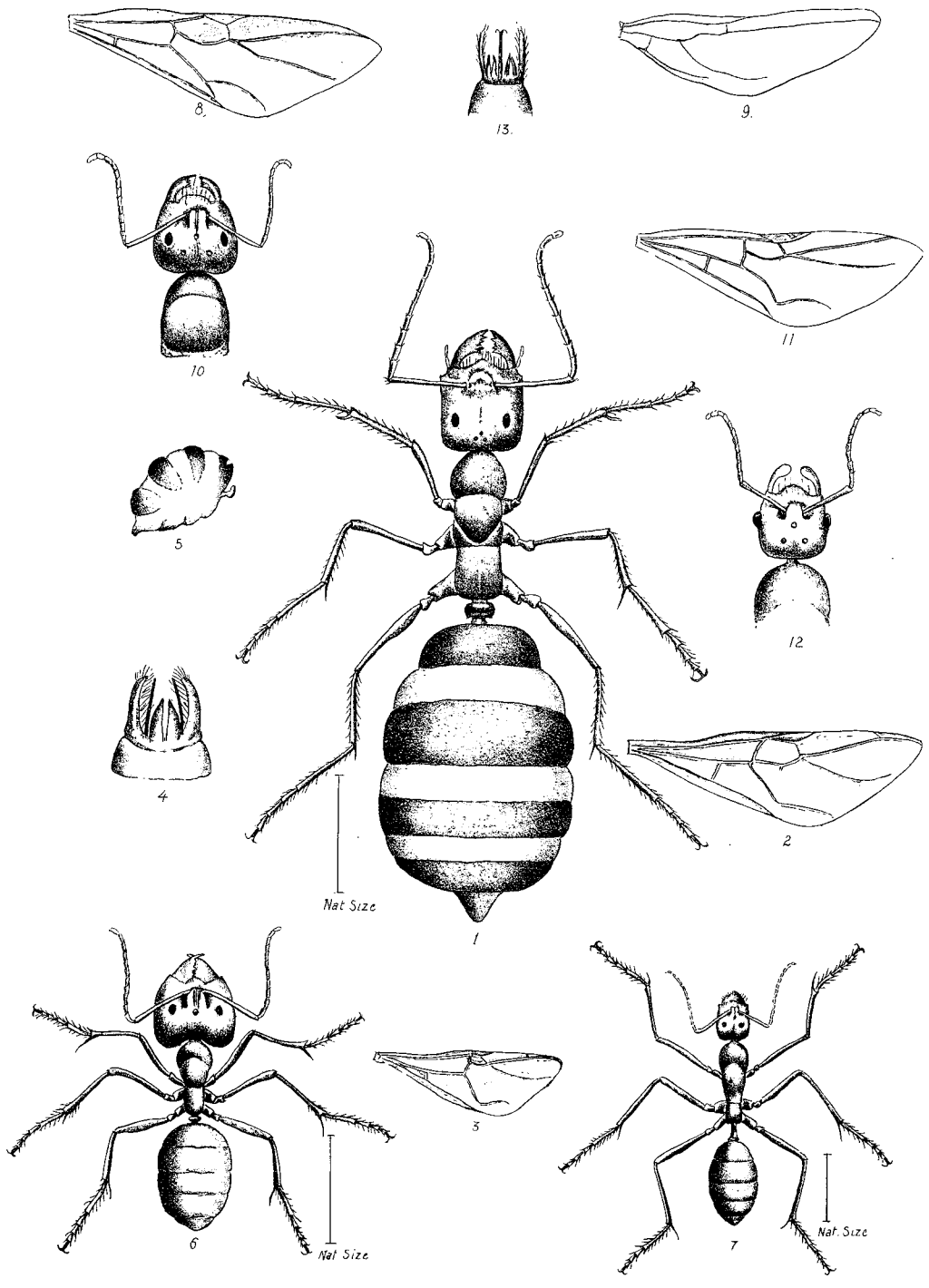
Fig. 1.—Honey ant worker.
„ 2.—Wing of female.
„ 3.—Wing of male.
„ 4.—Genitalia of male.
„ 5.—Side view of abdomen of honey ant.

Figures 6—9. **Camponotus midas.**

Fig. 6.—Major worker.
„ 7.—Minor worker.
„ 8.—Fore-wing of female.
„ 9.—Hind-wing of female.

Figures 10—13. **Camponotus inflatus.**

Fig. 10.—Head of worker.
„ 11.—Fore-wing of female.
„ 12.—Head of male.
„ 13.—Genitalia of male.



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