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THE OCCURRENCE OF WINGED FEMALES IN THE ANT GENUS *LEPTOGENYS* ROGER, WITH DESCRIPTIONS OF NEW SPECIES¹

BY WILLIAM MORTON WHEELER

In a recent paper² Dr. J. W. Chapman and I have shown that among the ponerine ants of the genus *Diacamma* the winged female, so characteristic of the Formicidæ, is no longer represented but is replaced by a fertile worker externally indistinguishable from her sterile sisters. A similar condition is known to exist also in the larger and more important genus *Leptogenys*, but specimens I have recently received show that the development of the female in this group exhibits a much greater "morphological restlessness," to use Osten Sacken's expression, than we had supposed. I therefore undertake in this paper to review our knowledge of the subject and to describe and discuss the new data.

The genus *Leptogenys* comprises 120 described species and extends over the tropics of both hemispheres. One species, *L. elongata* Buckley, occurs in the Gulf States from Texas to Florida and north to Colorado and the District of Columbia. In the 'Genera Insectorum' Emery has divided the genus into four subgenera: *Leptogenys* Roger *sensu stricto*, which is tropicopolitan; *Machærogenys* Emery, peculiar to Madagascar; *Odontopelta* Emery, peculiar to Australia; and *Lobopelta* Mayr, which is tropicopolitan. The described species are distributed among the subgenera as follows: *Leptogenys sensu stricto*, 37; *Machærogenys*, 3; *Odontopelta*, 1; *Lobopelta*, 79 (exclusive of the species described in this paper). The structure of the mandibles shows that the species of *Lobopelta* constitute the more primitive, the three other subgenera the more specialized portion of the genus. The genetic relationships of the subgenera are therefore distorted by the rules of taxonomy, since, except for them, the *Lobopelta* group would naturally bear the name of the genus. Hence we should expect to find the more primitive types of female in *Lobopelta*, the more specialized in the other subgenera.

¹Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University. No. 227.

²'The Mating of *Diacamma*,' 1922, *Psyche*, XXIX, pp. 203-211, 4 figs.

WILLIAM L. BROWN

Although quite a number of species of *Leptogenys sensu stricto* had been described by the end of the nineteenth century, no one had ever seen a female. To those acquainted with these insects in the field this would not be surprising, because the great majority of them form small colonies in the soil or in old logs, are rare and very sporadic, and when their nests are disturbed escape so rapidly into the surrounding vegetation that usually only a few specimens can be secured. In a few species, however, like *Lobopelta diminuta*, *processionalis*, *fallax*, etc., which form populous colonies a conspicuous mother queen, possibly like the dichthadiigynes of *Dorylus* and *Eciton*, might be expected to exist. In 1899 Forel¹ published the following remark:

Notwithstanding the considerable number of species of *Leptogenys* scattered throughout the world, the female has hitherto been sought in vain. One might contend that she does not exist, as Mr. Emery has supposed, and that she is replaced by the workers. At my request Mr. Wroughton dug out to a considerable depth an immense formicary of *L. diminuta* and sought in vain among the thousands and thousands of workers. All he could discover was a worker whose abdomen was very considerably distended by the ovaries. In other respects this worker differs absolutely in nothing from the others, and even the condition of its abdomen presents nothing very extraordinary.

In 1900, while studying the habits of *Lobopelta elongata* in Texas, I succeeded in proving that the female is actually represented in each of the colonies by a worker with an enlarged abdomen.² I found that the node of the petiole of these fertile individuals was more conical than that of the worker and the pilosity longer. There were no ocelli.

In 1903 one of my students, Miss Margaret Holliday,³ undertook a more searching examination of the females and workers of *L. elongata*. In both she found two to three ovarioles in each ovary. There was a receptaculum seminis in the females and also in a single worker which contained a few normal, fully developed eggs. She discovered two types among the females, one with long ovarioles consisting of five follicles, the other with short ovarioles of only one or two follicles, and remarked: "It is interesting to note that in regard to external anatomy also the queen is represented by two types; one in which the node, the distinguishing characteristic, is like that of the worker; in the other type it is like that of the male. Seven of the former and two of the latter were found."

¹'Les Formicides de l'Empire des Indes et de Ceylan,' 1899, Journ. Bombay Nat. Hist. Soc., XIII, p. 312.

²'A Study of Some Texan Ponerinae,' 1900, Biol. Bull., II, pp. 1-31, 10 figs. See also my paper: 'A Crustacean-eating Ant, *Leptogenys elongata* Buckley,' 1904, Biol. Bull., VI, pp. 251-259, 1 fig.

³'A Study of Some Ergatogynic Ants,' 1903, Zool. Jahrb. Abt. Syst., XIX, pp. 293-328, 17 figs

In 1911 Forel described the female of *Lobopelta iheringi* from specimens taken by Prof. H. von Ihering at São Paulo, Brazil.¹ He found this female to be somewhat larger than the worker (6 mm., the worker 5.3–5.5); the head broader, with more convex sides; larger eyes; shorter antennal scapes; the whole thorax broader and shorter; the epinotum much more convex; the gaster more voluminous. "This confirms," he says "the discoveries of Wroughton and Wheeler concerning the female of *Leptogenys* (*Lobopelta*), and at the same time also Wheeler's contention that there are definite differences in the structure of the thorax, petiole, and even of the head between the worker and the ergatomorphic female."

Arnold in 1915² described the female of *Lobopelta arnoldi* Forel. It is considerably larger than the worker (9 mm., worker 6.3 mm.) and differs in the "proportionally longer abdomen. It is also a duller insect, which is due to the denser pilosity, especially on the abdomen, which has a short pubescence intermingled with the pilosity. The mesonotum is also larger and longer than in the worker."

In 1914, while collecting in Queensland, I found two females of *Lobopelta fallax* Mayr subsp. *fortior* Forel and described and figured them in connection with an account of the similar females of *Onychomyrmex*.³ They are larger than the workers, with broader head, larger eyes and a single median ocellus. The gaster is very voluminous when the ovaries are mature; the petiole is much more compressed anteroposteriorly and bent forward than in the worker; the thorax is more convex, with larger mesonotal and a small but distinct scutellar sclerite.

Mann, in 1919, in his valuable study of the ants of the Solomon Islands,⁴ described the female of *Lobopelta diminuta* subsp. *santschii* Mann as differing from the worker merely in having the gaster more voluminous and the petiole slightly thinner in profile. In 1921 he observed similar but somewhat more pronounced differences in the female *L. letilæ* which he described from Fiji.⁵ The petiole of this insect is much higher than long (in the worker as long as high) and more truncated anteriorly and there is a feeble mesoëpinotal suture.

¹'Ameisen des Herrn Prof. v. Ihering aus Brasilien (São Paulo usw.) nebst einigen anderen aus Südamerika und Afrika,' 1911, Deutsch. Ent. Zeitschr., pp. 285–312.

²'A Monograph of the Formicidæ of South Africa,' 1915, Ann. S. Afr. Mus., XIV, p. 99.

³'The Australian Ants of the Genus *Onychomyrmex*,' 1916, Bull. Mus. Comp. Zoöl., LX, pp. 45–54, 2 pls.

⁴'The Ants of the British Solomon Islands,' 1919, Bull. Mus. Comp. Zoöl., LXIII, pp. 273–391, 59 figs., 2 pls.

⁵'The Ants of the Fiji Islands,' 1921, Bull. Mus. Comp. Zoöl., LXIV, pp. 401–499, 38 figs.

Finally, in my work on the Congo ants¹ I described and figured a female under the name of *Lobopelta ergatogyna* taken from the stomach of a toad (*Bufo polycercus*) and differing from the forms hitherto reported in possessing large eyes, three ocelli and a thorax with well-developed mesonotum, tegulae, paraptera and scutellum, but lacking wings. The gaster was not enlarged, probably because the ovaries were still very immature.

It will be seen, therefore, that the females of seven species and one subspecies of *Lobopelta* are known from widely different regions and that they are all wingless but range from forms practically indistinguishable from the conspecific workers to that of *L. ergatogyna*, which, except in being apterous, is almost precisely like the normal winged female ant. A consideration of this series suggests that in all probability no females have been observed in the three specialized subgenera, *Leptogenys sensu stricto*, *Machærogenys*, and *Odontopelta*, for the simple reason that their females are so highly ergatomorphic as to be externally indistinguishable from the conspecific workers. In these subgenera the conditions would seem to be precisely like those in *Diacamma*. The case of *L. ergatogyna* suggests the probable occurrence among the more than seventy species of *Lobopelta*, known only from workers and males, of some species with females of the normal winged type, thus completing within the subgenus a finely graded series of retrogressions to the worker type. This now proves to be the case for Mr. Herbert Lang has kindly sent me among much material which he very recently collected in the interior of British Guiana a small undescribed *Lobopelta* with winged females! The specimens comprise twenty-six workers, one dealated and three winged females, numerous pupæ and several larvæ. The cocoons, unlike those commonly seen in the genus *Leptogenys*, are very light in color. The larvæ are tuberculate and not unlike those of *L. elongata* described and figured in my paper of 1900. I append descriptions of the worker and female of the new species taken by Mr. Lang and of some other *Lobopeltas* taken by Dr. F. M. Gaige and myself in British Guiana, Colombia, and Guatemala, and by Dr. W. M. Mann in Florida. In the nest of one of these species (*L. dasygyna*) I took three ergatomorphic females, which are also described. The types are to be deposited in The American Museum of Natural History.

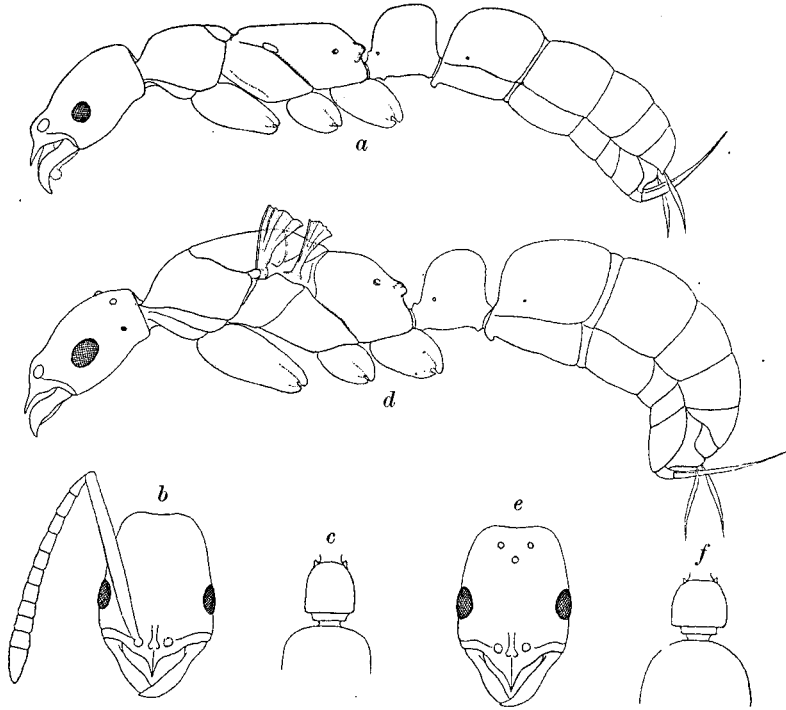
¹ 'Ants of the American Congo Expedition, A Contribution to the Myrmecology of Africa,' 1921-22, Bull. Amer. Mus. Nat. Hist., XLV, p. 95, Fig. 26.

Leptogenys (Lobopelta) langi, new species

Figure 1

WORKER.—Length, 3.5–4 mm.

Head about one-fourth longer than broad, distinctly broader in front than behind, with straight sides, rounded posterior corners and nearly straight posterior border. Eyes moderately large, very feebly convex, situated about their own length from the anterior border of the head. Mandibles about two-thirds as long as the head, narrowed at the base and gradually enlarged and somewhat spatulate at the tip, edentate except for the short, acute and scarcely curved terminal tooth; the

Fig. 1. *Leptogenys (Lobopelta) langi*, new species.

a, worker in profile; b, head; c, petiole, seen from above; d, female in profile, with wings removed; e, head; f, petiole, seen from above.

external border nearly straight. Clypeus strongly carinate, distinctly concave in profile, in the middle produced as a narrow, acute spine, its lateral borders concave and feebly bisinuate. Frontal carinae rather prominent. Antennae moderately stout, the scapes somewhat enlarged distally and surpassing the posterior corners of the head by a little over one-fourth their length; the three basal joints of the funiculus subequal, about twice as long as broad, the second slightly longer than the first and third; joints 5–7 shorter, about one and one-half times as long as

broad; joint 8 as broad as long, joints 9 and 10 slightly broader than long, terminal joint as long as the two preceding joints together. Thorax long and narrow, scarcely narrower through the epinotum than through the pronotum, the latter somewhat broader than long, slightly depressed above, the promesonotal suture sharp, the mesonotum transversely elliptical, sloping backward, separated from the base of the epinotum by a sharp suture and a very distinct but short impression. Epinotum long, the base straight in profile and fully one and one-half times as long as the sloping declivity, which is rather convex, not marginate on the sides and with a prominent roughened tubercle on each side below. Petiole in profile as high behind as long, truncated anteriorly and posteriorly, the anterior truncation only half as high as the posterior, rounded above; seen from above the node is a little longer than broad and slightly broader behind than in front, convex anteriorly and laterally. Ventrally the petiole bears a very small acute tooth near its anterior end and there is a stronger tooth on each side of the peduncle above. Gaster sub-cylindrical, the first segment strongly constricted behind. Pygidium subcarinate; sting long.

Very smooth and shining; antennæ finely and densely, mandibles coarsely and very sparsely punctate; neck and declivity of epinotum transversely rugose, remainder of body with fine, scattered, indistinct, piligerous punctures.

Hairs pale yellowish, erect on the body, of uneven length and rather bristly, moderately long and abundant; on the antennæ and legs short, oblique and rather numerous; pubescence lacking.

Varying from deep castaneous brown to piceous black; mandibles, clypeus, antennæ, legs and posterior segments of gaster brownish red or testaceous.

FEMALE.—Length, about 4.5–4.8 mm., wings 3 mm.

Head as in the worker, but the eyes are distinctly larger and there are three well-developed ocelli. Thorax of the typical form in winged female ponerine ants, with well-developed mesonotum, scutellum, metanotum and paraptera, more convex than in the worker and as broad through the mesosterna as the head. Pronotum about twice as broad as long, mesonotum large, as long as broad, broadly rounded in front, narrowed behind; scutellum rather convex; epinotum short, with indistinct, subequal base and declivity. Petiole differing from that of the worker in being higher than long, with somewhat more sharply truncated posterior surface; from above it is if anything slightly broader behind than long. Gaster decidedly more voluminous than in the worker, with more extensively developed stridulatory surface between the first and second segments. Wings rather small and narrow, with large pterostigma and the venation like that of the males of other species of *Lobopelta*.

Sculpture, pilosity and coloration precisely as in the worker. Wings grayish hyaline, finely and densely pilose, veins and pterostigma pale brownish.

Described from twenty-six workers and four females taken by Mr. Herbert Lang at Kamakusa, British Guiana, November 2, 1922.

This species is obviously related to the Argentinian *L. australis* Emery, but has a broader head, a much more acute clypeal lobe, larger eyes, a differently shaped epinotum, longer pilosity, etc.

Leptogenys (Lobopelta) gaigei, new species

Figure 2

WORKER.—Length, 6.5–7 mm.

Long and slender; head, without the mandibles, about one and one-half times as long as broad, scarcely broader in front than behind, with rather straight sides, rounded posterior corners and nearly straight posterior border. Eyes large, moderately convex, situated in front of the middle of the head and about their own length from its anterior corners. Mandibles a little more than half as long as the head, rather broad, deflected at the tips, which bear only the terminal tooth. This is short; the blade is narrowed at the base but its median third is of uniform width; the external border is nearly straight, with a slight, abrupt impression at the basal third. Clypeus carinate, its median lobe triangular, not very acutely pointed, the carina distinctly convex in profile; lateral borders feebly bisinuate. Antennae long, scapes rather thick, narrowed basally and apically, extending somewhat less than one-third their length beyond the posterior corners of the head. All the funicular joints longer than broad, the second nearly twice as long as the first, the third

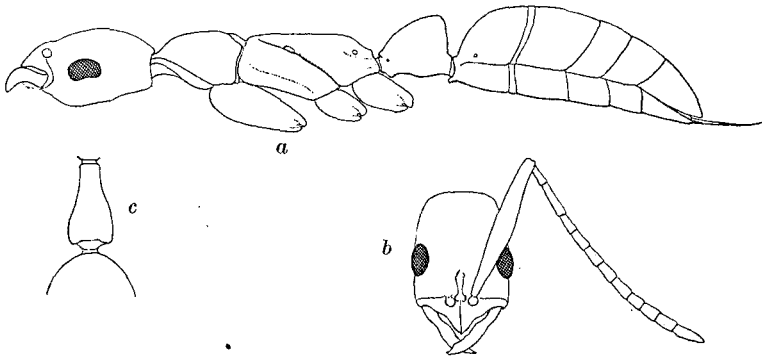


Fig. 2. *Leptogenys (Lobopelta) gaigei*, new species.
a, worker in profile; b, head; c, petiole, seen from above.

more than half as long as the second, the remaining joints, except the last, less than twice as long as broad. Thorax long, laterally compressed, its dorsal outline straight, except in the region of the mesoepinotal suture, where there is a distinct notch. Pronotum rounded on the sides, longer than broad; promesonotal suture distinct, mesonotum small, transversely subrectangular, not very convex; base of epinotum more than twice as long as the sloping declivity, which is not marginate on the sides and bears below a couple of small but distinct tubercles. Petiole much compressed laterally, the sides very concave anteriorly; in profile somewhat longer than high, truncated only behind, the anterior and dorsal surfaces forming together a continuous, evenly ascending curve; the ventral border with a small blunt tooth near its anterior end. From above the petiole is fully twice as long as broad, narrowed in front, with straight sides, somewhat concave anteriorly. Gaster small, constriction between first and second segments obsolete; sting and legs long.

Shining; mandibles with a few coarse punctures; head finely and superficially punctate, somewhat less shining than the remainder of the body, which is much more sparsely though somewhat more coarsely punctate. Antennæ and legs subopaque, very finely and densely punctate. Neck and declivity of epinotum transversely rugose.

Hairs yellowish, long only on the front, clypeus and tip of gaster, elsewhere very short but rather abundant, erect on the thorax and petiole, more reclinate on the gaster, finer, more abundant and subappressed on the antennæ and legs. Scapes each with an erect bristle near the base on the anterior surface. Pubescence long and conspicuous on the head, especially on its sides and gular surface.

Piceous black, petiole more reddish; mandibles, antennæ and legs brown, coxæ, femora and scapes darker; trochanters, borders of gastric segments and the whole of the terminal segments golden yellow. The head, thorax and abdomen in certain lights display a beautiful blue iridescence like that of *L. iridescens* Smith and *chinensis* Mayr.

Described from four specimens taken by Dr. F. M. Gaige at Dunoon, British Guiana, August 17-20, 1914.

♂: **Leptogenys (Lobopelta) gaigei** var. **defuga**, new variety

WORKER.—Length, 6.5 mm.

Differing from the preceding form in having the body and especially the head more shining, owing to the punctures being shallower and more indistinct. The pubescence on the head is much shorter and less abundant and the hairs on the body are less numerous.

Three workers taken by me at Kartabo, British Guiana, August 12, 1920, from a small colony nesting under an old log. This insect is extremely rapid in its movements.

L. gaigei can be readily distinguished from the other described neotropical species of the subgenus by the shape of the thorax and petiole, the large lateral concavities of the latter and the beautiful blue iridescence of the body in strong sunlight.

♂: **Leptogenys (Lobopelta) dasygyna**, new species

Figure 3

WORKER.—Length, 4.8-5.5 mm.

Moderately slender; head subrectangular, about one and one-third times as long as broad, a little broader in front than behind, with rather straight sides and straight, distinctly marginate posterior border, the posterior corners rather rounded. Eyes rather small, flattened, situated in front of the middle of the head and a little more than their length from its anterior corners. Mandibles slightly more than half as long as the head, rather broad, of uniform width, except at the extreme base and tip, deflected apically, edentate, except for the short, acute terminal tooth. Clypeus strongly carinate, its median lobe triangular, with rather blunt tip, the carina distinctly convex in profile, the lateral border feebly bisinuate. Antennæ not very robust, scapes reaching a little more than one-fourth their length beyond the posterior corners of the head; first funicular joint twice as long as broad, second

about two and one-half times as long as broad, third as long as the first, fourth to sixth a little longer than broad, remaining joints, except the last, very nearly as broad as long. Thorax elongate, in profile with the dorsal border straight, except for a very slight interruption at the promesonotal suture, which is very distinct; pronotum as long as broad, rounded on the sides; mesonotum small, transverse; mesoepinotal suture obsolete but indicated by a faint transverse groove. Base of epinotum long and straight in profile, fully one and one-half times as long as the very sloping declivity; the latter concave in the middle, with a well developed, roughened tubercle on each side below, the sides crenulately submarginate. Petiole as long as high, laterally compressed, narrowed in front and rather concave on the

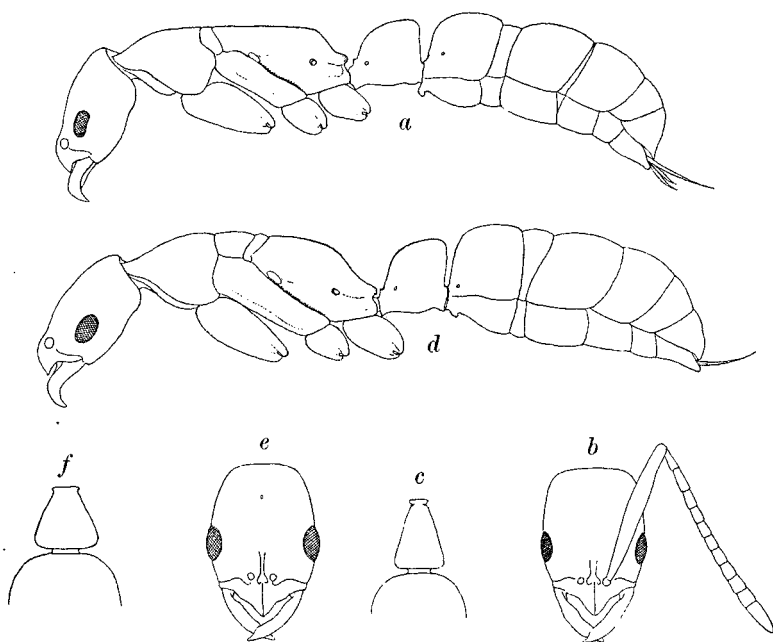


Fig. 3. *Leptogenys (Lobopelta) dasygyna*, new species.

a, worker in profile; b, head; c, petiole, seen from above; d, female in profile; e, head; f, petiole, seen from above.

sides; in profile truncated anteriorly and posteriorly, the anterior truncation short and passing rather gradually into the ascending curved outline of the dorsal surface; the peduncle on each side above minutely dentate and with a small, indistinct tooth on the anterior end of the ventral surface. Seen from above the node is triangular, about one and one-half times as long as broad, with rather straight sides, anteriorly more concave. Gaster rather short, constriction between the first and second segments pronounced. Legs moderately long.

Shining; gaster and petiole more so than the head and thorax. Mandibles subopaque, densely and finely striate. Clypeus indistinctly rugulose on the sides. Head and pronotum densely and finely but rather superficially punctate; epinotum, meso- and metapleuræ more coarsely punctate and rugulose; neck and declivity of epinotum transversely rugose. Petiole and gaster somewhat more coarsely and sparsely punctate than the head and pronotum. Antennal scapes subopaque, finely and densely punctulate; legs also finely punctulate but more shining.

Hairs pale yellow, rather long, abundant and of uneven length, clothing the whole body and appendages, erect or suberect on the former, shorter and more oblique on the latter. Pubescence dense and abundant on the head and pronotum but not concealing the punctured surface. Middle and hind pairs of legs also with rather long, dense pubescence.

Brownish black; mandibles, antennæ and legs reddish brown; borders of mandibles blackish; clypeus and cheeks tinged with reddish; borders of gastric segments and whole of three terminal segments yellowish or golden brown.

FEMALE.—Length, 5.6–6 mm.

Head somewhat broader in front than in the worker, with distinctly larger and slightly more convex eyes and a minute median ocellus or pit for the same. Thorax a little more robust, with a larger mesonotum, which is about one and one-half times as broad as long. There is also a scutellum but the sutures separating it from the mesonotum and epinotum are very indistinct. Epinotum with the base shorter than in the worker. Petiole distinctly higher than long, with the anterior truncation more distinct; seen from above the node is shorter, scarcely longer than broad. Gaster more voluminous but not much longer than in the worker.

Sculpture somewhat coarser than in the worker, especially the punctures on the petiole and gaster.

Pilosity and pubescence very distinctly longer and more abundant, especially on the head, thorax and abdomen.

Body castaneous brown; the borders of the gastric segments, the three terminal segments and the appendages colored as in the worker.

Described from eleven workers and three females taken from a colony of about forty individuals nesting in a rotten log in the jungle at Kartabo, British Guiana, July 20, 1920.

This species seems to be sufficiently distinct in the shape of the thorax, in sculpture and pilosity. The female, like that of *L. fallax* var. *fortior*, is a little less ergatomorphic than the females of *elongata*, *diminuta* and *iheringi*. Probably all three of the females had recently emerged since there were a number of cocoons in the nest and since, so far as known, each colony of *Lobopelta* contains only a single mother queen.

√ √ **Leptogenys (Lobopelta) quiriguana**, new species

Figure 4

WORKER.—Length, 4–4.3 mm.

Head subrectangular, about one and one-third times as long as broad, very slightly broader in front than behind, with straight sides, rounded posterior corners

and nearly straight, marginate posterior border. Eyes rather small and flat, in front of the middle of the head and distinctly farther than their length from its anterior corners. Clypeus strongly carinate, the median lobe triangular, with a rather blunt point, the carina straight in profile, the lateral borders very feebly bisinuate. Mandibles more than half as long as the head, rather convex and narrow, deflected at their tips, the blades gradually enlarging towards the apex and edentate, except for the small, acute terminal tooth, the external borders faintly sinuate in the middle. Antennæ rather stout, scapes slightly enlarged towards their tips, which do not extend more than a fourth of their length beyond the posterior corners of the head. First and second funicular joints about twice as long as broad, the second but slightly longer than the first, the third and fourth joints subequal, a little shorter than the second, the four penultimate joints as broad as long. Thorax rather long, broadest through the pronotum, which is as long as broad, rounded on the sides and slightly depressed above; promeso- and meso-epinotal sutures very distinct, the mesonotum small, fully twice as broad as long,

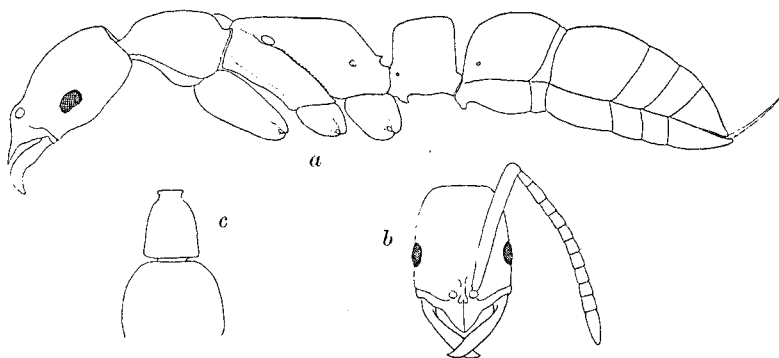


Fig. 4. *Leptogenys (Lobopelta) quiriguana*, new species.
a, worker in profile; b, head; c, petiole, seen from above.

convex and sloping to a short but distinct impression at the mesoepinotal suture. Epinotum long, laterally compressed, the base very feebly convex in profile, nearly twice as long as the very sloping declivity, which is flat, submarginate on the sides and with a pair of small, acute, roughened tubercles below. Petiole laterally compressed and narrowed in front, in profile distinctly higher than long, sharply truncated anteriorly and posteriorly and nearly straight above, only slightly higher behind than in front, its ventral border with a strong tooth near its anterior end; seen from above the node is nearly half again as long as broad, evenly narrowed anteriorly, with rather straight sides. Gaster small, constriction between the first and second segments pronounced. Legs rather short.

Very smooth and shining; mandibles sparsely punctate; head, thorax and abdomen with very sparse, minute and indistinct piligerous punctures; antennal scapes and tibiae densely punctulate but shining; neck and declivity of epinotum transversely rugose.

Hairs pale yellowish, sparse, delicate and of uneven length. Pubescence sparse, distinct only on the front of the head. Antennal scapes and legs, especially the tibiae, with rather dense, oblique pubescence, the scapes with an erect bristle near the base on the anterior surface.

Piceous black; ventral portion of thorax slightly reddish; legs and scapes dark brown; mandibles, funiculi, tibiae, tarsi and tips of femora pale brown; terminal segments of gaster yellow.

Described from six specimens which I took from a small colony nesting under a log at Quirigua, Guatemala, January 13, 1912.

This species is closely related to *L. consanguinea* Wheeler of Mexico but differs in its smaller size, narrower mandibles, much shorter scapes and funicular joints and in the shape of the petiole, which in *consanguinea* is not sharply truncated in front and has a much more convex dorsal surface.

Leptogenys (Lobopelta) guianensis, new species

Figure 5

WORKER.—Length, about 4 mm.

Slender; head subrectangular, about one-third longer than broad, scarcely broader in front than behind, with feebly convex sides and posterior border and rounded posterior corners, the posterior border marginate. Eyes small, flat, in front of the middle of the head, separated by a distance greater than their length from its anterior corners. Mandibles somewhat more than half as long as the head, convex, deflected at their tips, broadest at their median third, edentate except for the short terminal tooth, their external borders very feebly sinuate near the middle. Clypeus strongly carinate, the carina straight in profile, the median lobe triangular, the tip rather blunt, the lateral borders feebly bisinuate. Antennae stout, scapes narrowed basally and apically, extending one-third their length beyond the posterior corners of the head; all the funicular joints longer than broad; the second about one-fourth longer than the first, the third and fourth subequal, about one and one-half times as long as broad and distinctly shorter than the second, the four penultimate joints slightly longer than broad. Thorax long and slender, the dorsal outline straight and interrupted only at the mesoepinotal suture where there is a short but distinct impression. Pronotum as long as broad, rounded on the sides, slightly depressed above; promesonotal suture distinct; mesonotum convex, transverse, fully three times as broad as long; epinotum laterally compressed, its base long and perfectly straight in profile, fully twice as long as the very sloping declivity, which is somewhat concave, marginate on the sides and with two rather large, roughened tubercles below. Petiole laterally compressed and narrowed in front, in profile decidedly higher than long, truncated anteriorly and posteriorly and convex and rounded above and on the sides. The anterior truncation passes rather gradually into the dorsal surface; from above the node is about one and one-half times as long as broad, with rather convex sides; the ventral surface bears a small tooth at its anterior end. Gaster long, constriction between the first and second segments pronounced; sting long. Legs slender.

Very smooth and shining; mandibles sparsely punctate; head very minutely and superficially punctate; piligerous punctures on the thorax and gaster sparse

and inconspicuous; metapleuræ rugulose; neck and declivity of epinotum transversely rugose. Antennal scapes and tibiæ densely punctulate and somewhat dull.

Hairs pale, short and not very abundant, erect or suberect on the body, shorter and more appressed on the tibiæ. Pubescence long and sparse, distinct only on the head. Antennal scapes merely finely pubescent.

Red; terminal segments of gaster yellow; mandibles, antennæ and legs paler than the body and more yellowish.

Two workers taken by Dr. F. M. Gaige at Dunoon, British Guiana, August 2, 1914.

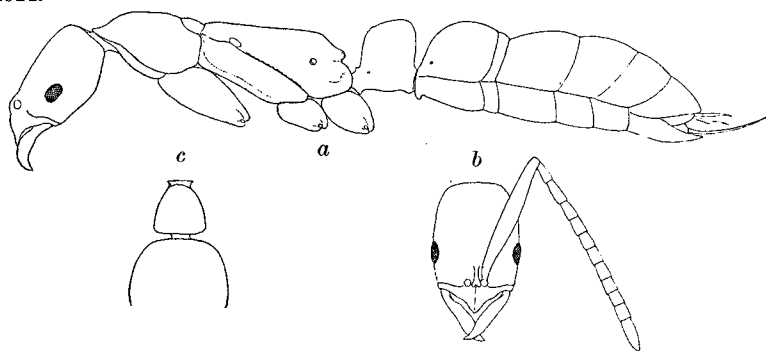


Fig. 5. *Leptogenys (Lobopelta) guianensis*, new species.
a, worker in profile; b, head; c, petiole, seen from above.

This species closely resembles *quiriguana* but is of a different color, with more rounded sides and posterior border to the head and an even shorter, higher and anteriorly less distinctly truncated petiolar node. It is also closely related to *L. antillana* Wheeler and Mann, but that species is somewhat larger, has much shorter antennæ, a more convex clypeus, a more rectangular head and is differently colored.

***Leptogenys (Lobopelta) pusilla* Emery**

Two specimens taken by Dr. Gaige at Fundacion, Colombia, August 8, 1913, agree perfectly with Emery's description which was based on specimens from Costa Rica. With the exception of *L. rufa* Mann, this is the smallest known American *Lobopelta*, measuring only 2.5–3 mm. The body is dark brown or fuscous, very smooth and shining, with short, moderately abundant pilosity. The head, which is subrectangular, about one and one-third times as long as broad, with straight, subparallel sided and prominent anterior corners, is minutely and superficially punctate. The thorax and petiole are shaped much as in *quiriguana*; the scapes extend only a very short distance beyond the posterior corners of the head and the penultimate joints of the funic-

uli are distinctly broader than long. The eyes are small and placed very far forward, the clypeal carina is feebly convex in profile.

Leptogenys (Lobopelta) pusilla var. **panamana**, new variety

WORKER.—Length, 3–3.2 mm.

Averaging perhaps a little larger than the typical form, with the body deep red and the pilosity and pubescence somewhat coarser and more abundant.

Four workers and a male which I took from a small colony under a stone at Ancon, C. Z., Panama, November 10, 1911. The male, which is defective in lacking the wings and in having the head crushed, measures somewhat less than 3 mm. It is honey-yellow, with scarcely paler legs and the antennæ infuscated beyond the first joint of the funiculi. The petiole is shorter than in the worker, subconical, convex in front and truncated behind. The declivity of the epinotum is transversely rugulose as in the worker.

Leptogenys (Lobopelta) elongata Buckley subsp. **manni**,
new subspecies

WORKER.—Length, 6.5–7 mm.

Differing from the typical form from Texas in being somewhat more slender and in having the head somewhat narrower and more nearly elliptical, not so broad in front and more rounded behind. The anterior truncation of the petiole in profile is also distinctly less pronounced, that is, less sharply marked off from the convex dorsal surface of the node. The surface of the head, thorax and petiole is more shining, with a peculiar oily luster, and the red color of the body is deeper.

Described from four specimens, three from Dunedin, Florida, taken by McGregor and one from Miami, Florida, taken by Dr. W. M. Mann, who generously gave me the specimens.

The following key may be of some assistance in identifying the workers of the known American species of *Lobopelta*. I omit *Ponera crudelis* F. Smith from Brazil, because it is too imperfectly described and, although the type in the British Museum was seen by Mayr many years ago and pronounced to be a *Lobopelta* (this is obvious also from Smith's figures in his 'Hymenopterous Insects in the British Museum,' 1858, Pl. 6, Figs. 23 and 24), it has not since been re-examined and redescribed. According to Smith, the insect measures 3.5 lines (about 7.5 mm.), is slender, black, with rufotestaceous appendages, smooth and shining, with oblong-ovate head, emarginate behind and the lateral angles of the epinotum are acute or subspinose. This last character is not shown in the figures.

1. Large species, at least 9 mm. long. 2.
 Small or very small species, not more than 7 mm. long. 5.
2. Very smooth and shining. Length, 9.5 mm. (Santa Catharina, Brazil).
huederwaldti Forel.
 Head and thorax punctate or sculptured, subopaque or with only the pronotum shining. 3.
3. Robust species; head subrectangular, but little longer than broad, head and thorax densely and coarsely punctate and with striolæ which are longitudinal on the head and transverse on the epinotum; mandibles finely striate and coarsely punctate. Length, 10 mm. (Honduras).
hondurana Mann.
 More slender; head subelliptical; sculpture different. 4.
4. Body with purple reflections, especially on sides of petiole, the latter much narrowed in front, 2½ times as long as broad; head and body cribrately punctate. Length, 10 mm. (Honduras). *imperatrix* Mann.
 Body without purple reflections; petiole only about twice as long as broad, with rather convex sides, but little narrowed in front; pronotum smooth and shining. Length, 10.3 mm. (Costa Rica). *famelica* Emery.
5. Body with blue iridescence; petiole very concave on the sides, not truncated in front, the anterior surface in profile forming a continuous ascending curve with the dorsal surface. 6.
 Body not iridescent; petiole not very strongly concave on the sides, more or less distinctly truncated in front, so that it presents the outlines of three surfaces in profile. 7.
6. Hairs and pubescence on body moderately abundant. Length, 6.5-7 mm. (British Guiana). *gaigei*, new species.
 Hairs and pubescence less abundant. Length, 6.5 mm. (British Guiana).
 var. *defuga*, new variety.
7. Head and thorax subopaque, or lustrous, densely punctate. 8.
 Head and thorax very smooth and shining. 11.
8. Dorsal outline of thorax straight in profile, scarcely notched at the mesoëpinotal suture; mandibles narrow. Length, 4.8-5.5 mm. (British Guiana). *dasygyna*, new species.
 Larger species; thorax deeply impressed at the mesoëpinotal suture; mandibles broad. 9.
9. Black; head, thorax and petiole opaque, very densely punctate; mandibles finely striate and coarsely punctate. Length, 7 mm. (Mexico).
mexicana Mayr.
 Red; head, thorax and petiole somewhat shining, less densely punctate; mandibles smooth and shining, sparsely punctate. 10.
10. Petiole very distinctly truncated anteriorly; color paler; surface of head and thorax less shining. Length, 5-7 mm. (Texas). *elongata* Buckley.
 Petiole less distinctly truncated anteriorly; color darker, surface of head and thorax more shining. Length, 6.5-7 mm. (Florida).
 subsp. *manni*, new subspecies.
11. Median lobe of clypeus narrow, produced as an acute spine, its carina concave in profile. Length, 3.5-4 mm. (British Guiana). *langi*, new species.

- Median lobe of clypeus broader, its tip blunter, its carina convex or straight in profile..... 12.
12. Petiolar node distinctly higher than long..... 13.
 Petiolar node not higher than long..... 14.
13. Body red; scapes extending one-third their length beyond posterior corners of head, tubercles at sides of epinotal declivity large and blunt. Length, 4 mm. (British Guiana)..... *guianensis*, new species.
 Body black; scapes extending not more than one-fourth their length beyond the posterior corners of the head; tubercles of epinotal declivity minute and acute. Length, 4-4.3 mm. (Guatemala).... *quiriguana*, new species.
14. Petiole distinctly broader than long. Length, 2.9 mm. (Honduras).
rufa Mann.
 Petiole distinctly longer than broad..... 15.
15. Very small species, scarcely more than 3 mm. long; scapes scarcely extending beyond the posterior corners of head..... 16.
 Larger species not less than 4 mm. long, scapes longer..... 17.
16. Body fuscous or dark brown. Length, 2.5-3 mm. (Costa Rica, Colombia).
pusilla Emery.
 Body deep red, more pilose. Length, 3-3.2 mm. (Panama).
 var. *panamana*, new variety.
17. Penultimate funicular joints longer than broad..... 18.
 Penultimate funicular joints as broad as long..... 19.
18. Body with coarse, scattered punctures; external borders of mandibles strongly concave, penultimate funicular joints much longer than broad. Length, 5.3-5.5 mm. (São Paulo, Brazil)..... *iheringi* Forel.
 Body not coarsely punctate; external borders of mandibles not concave; penultimate funicular joints only slightly longer than broad. Length, 5.-5.3 mm. (Mexico)..... *consanguinea* Wheeler.
19. Eyes very small; mandibles narrow; epinotum not longer than the pro- and mesonotum, its declivity marginate on the sides, with distinct inferior tubercles. Length, 4 mm. (Argentina)..... *australis* Emery.
 Eyes larger; mandibles broader; epinotum decidedly longer than the pro- and mesonotum, its declivity not marginate on the sides, the inferior tubercles small and indistinct. Length, 4.5-5.5 mm. (Haiti).
antillana Wheeler and Mann.