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Ants Collected by Professor F. Silvestri
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Ants Collected by Professor F. Silvestri in Formosa, the Malay Peninsula and the Philippines.⁽¹⁾

The collection of Formicidæ made by Professor Silvestri in Formosa, the Malay Peninsula and the Philippines, though comprising fewer specimens than the previously described collections which he made in Indochina, China, Japan and Korea, contains nevertheless an unusual number of forms new to science. Most interesting are the additions to the known ant-fauna of Formosa. That this island is very rich in indigenous species has been shown by the material previously collected by Hans Sauter and described by Forel, Emery and myself. As an aid to future students I have appended to this paper a list of the known Formosan ants, with the precise localities in which they were taken. And in connection with the species of Pheidologeton taken by Professor Silvestri in the Philippines I have included descriptions of several new forms contributed by other collectors in those islands.

FAMILY **Formicidæ**.

SUBFAMILY **Dorylinae**.

Paraenictus subgen. nov.

Worker. Differing from *Aenictus* sens. str. in having very thick, 9-jointed, instead of 10-jointed antennæ, with the terminal funicular joints conspicuously constricted at the base. Second funicular joint very short. Mandibles large and broad, with long, denticulate apical borders. Distal halves of femora and tibiæ strongly incrassated. In other respects like *Aenictus*.

(1) Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University, N. 312.

1. *Aenictus (Paraenictus) silvestrii* sp. nov. (Fig. 1).

Worker. Length 3-4.5 mm.

Head subrectangular, scarcely longer than broad and scarcely broader in front than behind, with feebly rounded sides and slightly concave posterior border. Posterior corners compressed or keeled, rounded in profile. Clypeus vertical, transversely concave in the middle. Mandibles large, convex, with rounded external borders; the apical borders terminating in a large, curved tooth, basally with numerous denticles which are blunt and of two sizes, the larger alternating with

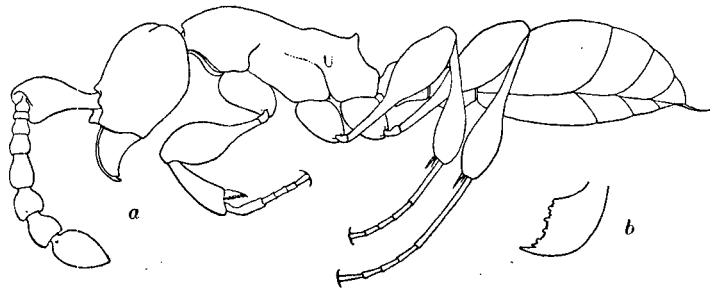


Fig. 1.

Aenictus (Paraenictus) silvestrii sp. nov. a, Worker in profile; b, mandible of same.

pairs of the smaller. Antennæ long and thick; scapes somewhat flattened, subtriangular, broadened apically; first funicular joint small, nearly as long as broad, the second very short and transverse, the third nearly as long as broad, joints 4 and 5 distinctly longer than broad, 6 and 7 as broad as long, the last joint glandiform, bluntly pointed, somewhat longer than the two preceding joints together; the three terminal joints strongly constricted at the base. Thorax rather robust; pronotum submarginate laterally, its dorsal surface depressed and sloping gradually in profile to the mesoëpinotal impression, which is short and very shallow. Epinotum with the base very feebly convex, bounded posteriorly by a strong transverse carina, which is continued down each side of the abrupt and distinctly concave declivity. Petiole nearly $1 \frac{1}{3}$ times as long as broad, nearly as high as broad, its low node bounded by a transverse carina which descends behind on each side like the epinotal carina. Postpetiole about as long as the petiole, but somewhat broader behind, rounded above, its ventral surface anteriorly with a long, thick, blunt tooth directed downward and forward. Gaster elongate-elliptical, narrowed anteriorly and posteriorly. Legs with the apical halves of the tibiæ and especially of the femora much thickened.

Mandibles, head, scapes, thorax, petiole, postpetiole, extreme base of gaster, coxæ and basal halves of femora slightly shining, densely, evenly and rather coarsely punctate. Front and sides of head also with even, rounded longitudinal rugæ which become transverse on the occiput; dorsum and sides of pro- and mesonotum with similar longitudinal rugæ which also extend along the sides of the epinotum but are lacking on the dorsal surface. Nodes of petiole and postpetiole with a few short, elongate, impressed lines. Antennal funiculi more shining than the scapes and more superficially punctate. Gaster and legs, except the punctate coxæ and basal portions of the femora, smooth and shining, with coarse, scattered, piligerous punctures.

Hairs yellow, coarse, bristly, erect or suberect, of uneven length, sparse, rather long on the dorsal surface, somewhat shorter and more oblique on the appendages. Pubescence undeveloped.

Brownish red; mandibles, cheeks, posterior surfaces of petiolar and postpetiolar nodes blackish; funiculi dark brown; gaster and legs, including the coxæ and basal halves of the femora somewhat darker.

Described from two specimens taken on Penang Island, Malay Peninsula.

This singular ant, which is very easily recognized, may eventually prove to be the worker of some one of the East Indian forms now known only from males that possess peculiar foliaceous scapes and femora and clavate tibiæ, e. g. *Aenictus clavibia* Forel and *Ae. latiscapus* Forel.

SUBFAMILY **Ponerinae**.

2. *Myopopone castanea* F. Smith subsp. *maculata* Roger.
Two workers from Los Baños, Luzon Island, Philippines.

3. *Platythyrea tricuspidata* Emery subsp. *penangensis* ✓✓
subsp. nov. = *tricuspidata*

Female (deälated) Length nearly 7.5 mm.

Differing from the typical form of the species from Sumatra in its smaller size, in having the epinotal declivity delicately transversely striated instead of coarsely transversely rugose and in having the petiole fully 1 1/2 instead of only 1 1/3 times as long as broad.

A single specimen from Penang Island.

This may represent an independent species. Emery described *P. tricuspidata*, which I have not seen, from a worker and gave its length as 9 mm. Its female should therefore be at least 9 or 10 mm. long and decidedly larger than the specimen before me.

This agrees, however, very closely with Emery's description, except in the above-mentioned proportions of the petiole and the sculpture of the epinotal declivity.

√√ 4. *Rhopalopone luzonensis* sp. nov.

Worker. Length 1.7 - 1.8 mm.

Head rubrectangular, about $1 \frac{1}{5}$ times as long as broad, as broad in front as behind, with nearly straight sides, feebly concave posterior border and rather blunt posterior angles. Eyes very minute, imperfectly pigmented, of only two or three facets, situated near the middle of the sides of the head. Mandibles convex, with slightly concave external and straight apical borders, furnished with a large apical tooth and 7 or 8 minute basal denticles. Clypeus convex, its anterior border straight and transverse in the middle, sinuate on each side. Frontal area and groove obsolete. Antennal scapes reaching nearly to the posterior corners of the head; second funicular joint as long as broad; joints 3-8 broader than long, the two basal joints of the club as long as broad, together only $\frac{2}{3}$ as long as the terminal joint. Thorax but little longer than the head including the mandibles, slightly broader through the pronotum than through the meso- and epinotum; all three divisions being broader than long and somewhat flattened above, so that their dorsal outline in profile is continuous and nearly straight. Epinotal declivity flattened, somewhat longer than the base, with a minute blunt denticle on each side above. Petiole somewhat broader than long, the node in profile narrowed above but rather thick, its anterior surface convex below, its posterior surface flat, the border thick and rounded, the ventral surface with a large, laterally compressed, sharply truncated, dependent projection, or lamina, provided with a clear circular area, or fenestra in the center. Postpetiole as long as broad, narrower in front than behind where it is nearly twice as broad as the petiole, convex ventrally with a blunt tooth anteriorly. First gastric segment narrower than the postpetiole, slightly longer than broad, also with straight sides, but a little narrower posteriorly than anteriorly. Remaining gastric segments small, deflected downward and forward. Sting large. Legs moderately stout.

Shining, the head and thorax less so than the abdomen. Mandibles with large, scattered, umbilicate punctures; head, thorax, petiolar border and postpetiole with similar but more crowded punctures, except on the petiole and postpetiole. The head is also longitudinally rugose and a similar though more indistinct sculpture is visible on both the dorsal and lateral surfaces of the thorax. Clypeus longitudinally rugulose. Epinotal declivity, scapes, legs and gaster smooth and shining; the gaster, scapes and legs with small, sparse piligerous punctures; fore coxae conspicuously, transversely striate.

Hairs yellow, rather coarse, short and uniformly distributed, arising from the umbilicate and ordinary punctures, erect on the body, more oblique but nearly as long on the appendages. Pubescence undeveloped.

Rather rich ferruginous red; mandibles, antennæ and legs reddish yellow.

Female (ergatoid). Length 2 mm.

Like the worker but somewhat larger and with very similar but distinctly stouter thorax, broader petiole and decidedly more voluminous postpetiole and gaster. The promesonotal and mesoëpinotal sutures are dorsally distinct though not impressed. The eyes are much larger and pigmented and consist of about 10 facets, though these are of unequal size. There are three small but well-developed ocelli. The color of the body is paler and more yellowish ferruginous than in the worker and the integument, especially of the abdomen, is more hairy.

Described from four workers and a female taken from the same colony at Los Baños, Luzon Island, Philippines.

This is the first species of *Rhopalopone* to be recorded from the Philippines. It is closely related to the two small species *malaënsis* Mann of the Solomon Islands and *dammermani* Wheeler of Java, but differs from both in color and sculpture and in several structural details. It would be interesting to know whether the female described above is the normal and only female of *Rh. luzonensis*. Emery described the female of *Rh. epinotalis* of New Guinea as winged. Perhaps both forms of female may occur in the same colonies as in certain species of *Ponera*.

5. *Stictoponera costata* Emery var. *pinealis* var. nov. ✓✓

Female (deälated). Length 7 mm.

Much like the worker of the typical *costata*, except in the structure of the thorax and in color, which is deep red, with the ocellar triangle and the dorsum of the postpetiole and first gastric segment black.

A single specimen from Penang Island.

I have not seen the female of the typical *costata*. This sex has been cited by Forel from Sumatra, but not described. My series of workers from Borneo are ferruginous throughout like the types described by Emery. I record the above variety and the following species with some misgiving, because the species of *Stictoponera* seem to be in some confusion and the genus in great need of revision.

√√ 6. *Stictoponera taiwanensis* sp. nov.

Worker. Length about 4 mm.

Closely related to *S. binghami* Forel from Burma. Eyes very small and placed near the middle of the sides of the head, which is not provided with conspicuously projecting posterior corners and has only a shallow posterior excision. Clypeus with a distinct but narrow median groove, shining posteriorly. Antennal funiculi rather stout; joints 3-5 clearly broader than long. Petiole broader than long, transversely sub-elliptical. Pronotal angles merely rectangular, not dentate. Epinotum with a minute tooth on each side. Posterior coxæ armed with a well-developed but rather blunt spine.

Mandibles opaque and finely, longitudinally striate; remainder of body shining. Clypeus and front longitudinally rugulose. Remainder of head, thorax and petiole regularly, reticulately rugose but somewhat less coarsely than in *S. menadensis* Mayr; epinotal declivity transversely rugose. There is no smooth area on the middle of the pronotum as in *binghami*, but the posteromedian portion and the mesonotum have a few regular, longitudinal rugæ. Mesopleuræ and sides of epinotum irregularly and longitudinally rugose. Postpetiole coarsely foveolate with somewhat striated interspaces, the foveolæ being somewhat sparser in the posteromedian region which is therefore more shining. First gastric segment with smaller, shallower and sparser foveolæ, which are more crowded on the sides; remaining gastric segments smooth. Legs and scapes somewhat less shining, sparsely and finely punctate.

Hairs yellow, rather fine, flexuous, moderately abundant, mostly on the dorsal surface, shorter on the head than on the thorax and abdomen; dense, short and oblique on the appendages.

Brownish black; mandibles, appendages and incisures of gaster deep brownish red.

A single specimen from Funkikó, Formosa.

Perhaps only a subspecies of *S. binghami*, which I have not seen, but the specimen certainly does not agree with Forel's or Bingham's description of this species in color and sculpture. Moreover, the eyes of *binghami* must be as large as those of *menadensis* or these authors would have mentioned the difference in their descriptions.

7. *Odontoponera transversa* F. Smith—Three workers from Los Baños, Luzon Island, Philippines.

√√ 8. *Ectomomyrmex denticeps* sp. nov. (Fig. 2).

Worker. Length nearly 8 mm.

Head as broad as long, subrectangular, slightly narrower in front than behind, with somewhat convex sides, feebly excised posterior border

and concave, truncated occipital surface, flattened towards the lateral borders which are distinctly though not sharply ridged. Each of the postero-inferior angles is produced as a distinct but rather blunt tooth.

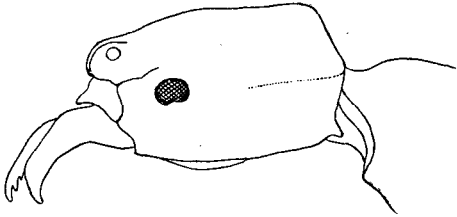


Fig. 2.

Ectomomyrmex denticeps sp. nov. Head of worker in profile.

Eyes well-developed, nearly as long as their distance from the clypeus, with about 15 facets in their greatest diameter and situated at the anterior fourth of the head. Mandibles rather long and narrow, with distinctly concave external borders, the apical borders broad, with seven

subequal basal and three larger apical teeth. Clypeus short but not carinate in the middle behind, somewhat depressed laterally, its anterior border sinuately emarginate in the middle. Antennal scapes curved, reaching to the posterior corners of the head; funiculus distinctly thickened apically, all its joints longer than broad, the three basal subequal, nearly $1 \frac{1}{2}$ times as long as broad, the penultimate joints shorter. Pronotum rather convex, neither flattened nor marginate on the sides, slightly broader than long, its inferior corners rectangular but not dentate; promesonotal suture very distinct, strongly impressed; mesoepinotal suture indistinct dorsally; mesonotum and base of epinotum in profile straight and horizontal above, their sides scarcely compressed, the epinotal declivity sloping and somewhat longer than the base, crenulately marginate on the sides, the median surface distinctly concave. Petiole twice as high as long, the scale seen from behind narrowed below, broadly rounded above and with the middle of the superior border feebly angulate in the middle; the anterior surface flattened but convex in profile, with rather sharp lateral borders. Postpetiole broader than long, its anterior portion perpendicularly truncated and clearly marginate above. First gastric segment scarcely broader than the postpetiole, $1 \frac{1}{2}$ times as broad as the petiole. Legs rather slender.

Subopaque; postpetiole and gaster more shining. Mandibles finely and regularly longitudinally striate. Clypeus obscurely punctate-rugulose. Upper surface and sides of head longitudinally rugulose, the rugules on the front regularly diverging to the posterior ends of the lateral keels. Truncated occipital surface shining, with diverging and laterally descending rugæ. Thorax longitudinally rugulose, except the upper surface of the pronotum which is transversely and arcuately rugulose. The rugules are fine on the mesonotum, coarser and sinuate on the sides of the epinotum; declivous surface of latter with sharp,

regular and transversely arcuate rugæ, which are concave dorsally. Anterior and posterior surfaces of petiolar scale transversely rugulose, the latter more finely than the former, with the rugules arcuate and curved upward rather strongly on the sides. Petiole and gaster very finely and superficially punctulate. Antennal scapes and legs, including the coxæ, coarsely and densely reticulate-punctate, the scapes more scabrous and more opaque.

Hairs yellow, short, erect and rather coarse, very uneven, longest on the mandibles, gula and tip of abdomen, very short on the head, more numerous and conspicuous on the thoracic dorsum and petiolar border; scattered on the legs. Pubescence long, and subappressed but not very dense, finer on the appendages, poorly developed on the thorax.

Black; mandibles, borders of frontal carinæ, antennae, legs and posterior borders of postpetiolar and gastric segments, dark red; median portions of scapes and femora and bases of coxæ black.

A single specimen from Funkikó, Formosa.

This species may be readily distinguished by the dentate inferoposterior corners of the head.

✓✓ 9. *Ectomomyrmex malayanus* sp. nov.

Worker. Length about 4.5 mm.

Head slightly longer than broad, subrectangular, as broad in front as behind, with nearly straight sides and feebly concave posterior border; occipital surface truncated; sides slightly compressed and with a blunt longitudinal ridge, less distinct than in many other species of the genus. Eyes small, somewhat impressed, consisting of about a dozen facets, situated near the anterior fifth of the head. Clypeus short, flattened, except in the middle between the frontal carinæ where it forms a blunt, laterally compressed tubercle, sides depressed, anterior border broadly rounded and entire in the middle, sinuate on each side. Mandibles convex, with nine subequal teeth, the external borders rather straight in the middle. Frontal groove distinct as far as the middle of the head. Antennal scapes uniformly curved, reaching to the posterior corners; second funicular joint as long as broad, remaining joints, except the last, distinctly broader than long, last joint nearly as long as the three preceding joints together. Thorax narrower than the head, not much broader through the pronotum than through the mesoëpinotum, the dorsal outline nearly straight; pronotum from above as long as broad, distinctly marginate on the sides; prosternum angulate but not dentate; mesonotum transversely elliptical, twice as broad as long; epinotum rather strongly compressed laterally and narrowed upward so that its base is nearly three times as long as broad, rounding be-

hind into the nearly perpendicular declivity, which is sharply margined on each side and flattened in the middle. Petiole fully twice as high as long, its ventral portion thick, convex and projecting, the node broadly elliptical from behind, narrowed above, with feebly convex anterior and flat posterior surface and rounded border. Postpetiole very flat and truncated anteriorly, broader than long and a little narrower than the first gastric segment, which is also broader than long. Legs rather short and stout.

Mandibles smooth and shining, with coarse, scattered punctures; head, pro- and mesonotum somewhat less shining, densely, regularly and umbilicately punctate; epinotum more shining and more finely punctate, the declivity smooth and impunctate as are also the anterior and posterior surfaces of the petiolar node and the anterior surface of the postpetiole; remaining portions of the abdomen rather finely and superficially, antennæ and legs including coxæ, subopaque and densely punctate.

Hairs yellowish, short, sparse and erect on the body, even sparser on the appendages; pubescence rather long and abundant, especially on the head; dense, appressed and almost concealing the integument on the legs and antennæ.

Black; mandibles red, with black teeth; posterior gastric segments and posterior borders of postpetiole and first gastric segment reddish; antennæ and legs, including the coxæ, dull yellowish brown.

Described from two specimens taken on Penang Island.

This species is even smaller than *E. annamita* Ern. André and certainly quite different in sculpture. The structure of the sides of the head obviously places it in *Ectomomyrmex* though the longitudinal ridge is not very well developed.

10. *Euponera* (*Brachyponera*) *nigrita* Emery subsp. *chinensis* Emery. — Two workers and a dealated female from Los Baños, Luzon Island, Philippines.

11. *Ponera malayana* sp. nov. ✓

Worker. Length 2.5 mm.

Head about one fifth longer than broad, slightly narrower in front than behind, with broadly and feebly concave posterior border; sides of front flattened, with a distinct though shallow, longitudinal impression on the upper surface. Eyes minute, consisting of only two or three facets situated very near the anterior corners of the head. Clypeus short and broad, with evenly rounded, entire anterior border, sinuate on the sides, convex but scarcely carinate posteriorly between the frontal carinæ. Mandibles rather large, triangular, with nearly straight

external borders and strongly developed internal angles, the apical borders with three distinct terminal and four or five more irregular and less distinct basal teeth. Frontal carinæ rather small; frontal groove very distinct, extending back to the middle of the head. Antennal scapes almost reaching the posterior border of the head; funiculi slender at the base, thickened apically; joints 2-5 very short and transverse, remaining joints broader than long, except the last, which is as long as the three preceding joints together. Pronotum as long as broad, rounded above and on the sides. Promesonotal suture distinct and strongly impressed; mesoëpinotal suture obsolete. Mesonotum as broad as long, broad and rounded anteriorly, narrowed behind. Epinotum broader than long, with straight, subequal base and declivity meeting at a rounded but distinct angle. Petiole as broad as the epinotum, somewhat broader behind than long; the node in profile nearly as thick above as below, with flattened, perpendicular anterior and posterior surfaces and rounded dorsal border; the ventral surface with a thick, blunt anterior projection. Postpetiole nearly as long as broad and nearly as broad in front as behind. First gastric segment of a similar shape but somewhat longer; the constriction between the two segments pronounced. Legs moderately slender.

Mandibles smooth and shining, sparsely punctate. Clypeus, head and thorax subopaque, densely and sharply punctate, the punctures with shining centers. Abdomen shining, the petiole, postpetiole and gaster less densely and somewhat more finely punctate than the thorax; remainder of the gaster even smoother and more shining. Scapes subopaque, very densely and finely punctate, legs with similar but more superficial sculpture and therefore somewhat more shining.

Hairs and pubescence yellow, the former rather short and sparse, confined to the clypeus and gaster, the pubescence distinct, rather abundant and appressed, most conspicuous on the abdomen, very fine and appressed on the appendages.

Ferruginous red; legs, including coxæ, and gaster behind the first segment, brownish yellow.

Male. Length 2 mm.

Head rounded-rectangular, as broad as long, eyes and ocelli rather small, the former less than half as long as the sides of the head and not very convex. Mandibles small, with long acuminate tips and a few indistinct basal denticles. Clypeus much as in the worker. Frontal groove deeply impressed in front of the anterior ocellus. Antennal scapes only 1 1/2 times as long as broad; first funicular joint as long as broad, remaining joints cylindrical and, except the last, less than twice as long as broad, terminal joint as long as the two preceding together. Thorax through wing-insertions broader than the head; both the pro- and me-

sonotum broader than long; epinotum sloping and evenly rounded, without base and declivity. Petiole much like that of the worker.

Shining; body finely and superficially punctate; head slightly more opaque.

Hairs almost lacking; pubescence much as in the worker but more uniformly distributed.

Sordid brown; anterior portion of head, mandibles, antennæ and tarsi paler and more yellowish.

Described from a single worker and two males taken on Penang Island.

I am unable to refer this rather distinct species to any of the East Indian members of the genus of which I have seen specimens or descriptions. It is related to *P. punctatissima* Roger, but is clearly distinct in color, sculpture, the structure of the epinotum, petiole, antennæ of the worker, etc.

12. *Odontomachus haematoda* L. — A worker and two males from Los Baños, Luzon Island, Philippines.

SUBFAMILY **Myrmicinae**

13. *Myrmica margaritae* Emery var. *formosae* var. nov.

Worker. Length 4.5-6 mm.

Differing from the typical form of the species from Burma and the var. *serica* Wheeler from China in coloration. Head, thorax, pedicel and posterior 3/5 of the first gastric segment reddish piceous; pedicel somewhat darker; mandibles and antennæ pale brown; cheeks, anterior portion of gula, legs and anterior 2/5 of gaster ivory yellow.

Numerous specimens from Funkikó, Formosa.

14. *Aphaenogaster (Attomyrma) silvestrii* sp. nov. (Fig. 3).

Worker. Length 4-6 mm.

Head subelliptical, nearly 1 1/3 times as long as broad, regularly rounded and narrowed, but not constricted behind the eyes, without posterior corners, the posterior border formed by the marginate occipital articulation. Eyes rather small, moderately convex, situated at the middle of the sides of the head. Mandibles large, flattened, with straight external borders, the long apical borders with three well-developed apical and several short, indistinct basal teeth. Clypeus convex posteriorly, its anterior border rather broadly emarginate in the middle and sinuate on each side. Frontal area very distinct, rounded-trian

gular. Antennæ long and slender; scapes extending about $\frac{2}{5}$ their length beyond the posterior border of the head; funicular joints 1-7 subequal, twice as long as broad, the four terminal joints longer and larger, forming a distinct club. Thorax slender; pronotum bluntly bi-

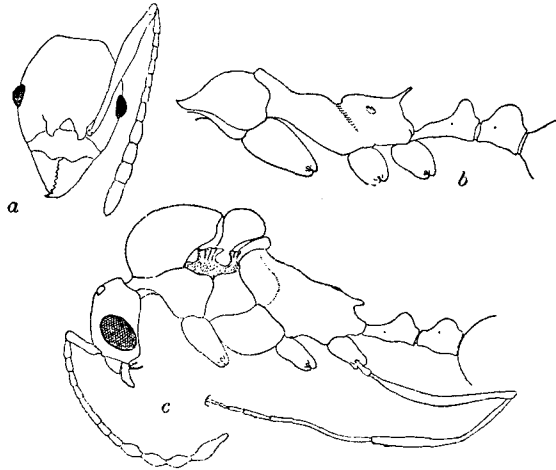


Fig. 3.

Aphænogaster (Aitomyrma) silvestrii sp. nov. a, head of worker; b, thorax and pedicel of same in profile; c, head, thorax and pedicel of male in profile.

tuberculate on each side, somewhat flattened above; convex in profile; promesonotal suture strongly impressed. Mesonotum rather straight, sloping downward and backward from a projecting, transverse, medially emarginate ridge at its anterior end; mesoëpinotal constriction short and acute; the base of the epinotum long, straight and horizontal in profile, except at the extreme anterior end where

it rises abruptly from the mesoëpinotal suture, nearly twice as long as the rather steep declivity, the spines slender, blunt, shorter than their distance apart at the base and directed backward, outward and slightly upward. Petiole longer than high through the node, which is about as long as the peduncle and rising rather abruptly from it, somewhat conical, narrowed above. Postpetiole half again as broad as the petiole, longer than broad, broadened behind, with a well-developed, somewhat transverse node, as high as that of the petiole. Gaster elongate-elliptical. Legs long and slender, the femora somewhat thickened in the middle.

Shining; mandibles subopaque, sharply longitudinally striate; clypeus and upper surface of head irregularly longitudinally rugulose. On the latter the rugules are most numerous near the eyes, the front smoother and more shining; cheeks and sides of gula with a few scattered elongate foveolæ. Pronotum smooth and shining in the middle, vaguely and delicately rugulose on the sides; mesoëpinotum less shining and somewhat longitudinally punctate-rugulose, the epinotal declivity smooth and shining. Gaster with scattered piligerous punctures. Scapes subopaque, finely striate and sparsely punctate.

Hairs glistening white, obtuse, coarse, sparse and erect on the body, on the appendages fine, short and appressed, except on the femora which bear several suberect hairs on their flexor surfaces. Pubescence absent.

Deep reddish brown or blackish; mandibles, thorax, legs, clubs of antennæ and peduncle of petiole red.

Male. Length 3.5 - 4 mm.

Head decidedly longer than broad through the eyes, flattened above and below; subtrapezoidal behind the eyes, which are moderately convex and half as long as the sides. Ocelli small. Cheeks very short. Mandibles with six well-developed teeth. Clypeus very convex, its anterior border thick and slightly impressed in the middle. Frontal area large and very distinct; frontal groove deeply impressed in front of the anterior ocellus. Antennal scapes cylindrical, slightly curved, four times as long as broad; funiculi long, resembling those of the worker in the proportions of the basal joints, but the four terminal joints forming the club are each strongly constricted at the base. Thorax long, very broad and high through the wing-insertions. Pronotum very short and broad, its posterior lateral borders extending out on each side beyond the mesonotum. Mesonotum convex, especially in the middle anteriorly where it overhangs the pronotum though not as much as in some other species of the genus. Seen from above the mesonotum is subpentagonal and distinctly broader than long. Scutellum convex and projecting. Epi-notum fully 1 1/2 times as long as broad, as broad behind as in front, feebly and transversely constricted in the middle; in profile much lower than the mesonotum, its dorsal surface slightly convex, gradually sloping backward and downward; with a slight median impression and terminating behind in two stout, blunt, backwardly directed teeth, which are as long as broad at their bases; the declivity short and sloping, less than a third as long as the base. Petiole and postpetiole similar to those of the worker, but with lower nodes. Hind femora and tibiæ constricted at the base, bent, bow-shaped, the bending opposite in the two segments, the femora being concave on the extensor, the tibiæ on the flexor side. The metatarsi also exhibit a distinct sigmoidal flexure. Wings with two complete cubital, a closed submarginal and a rather large discoidal cell.

Smooth and shining, except the mandibles, head, scutellum and posterior portion of the mesonotum, which are finely and rather superficially punctate or reticulate and somewhat more opaque.

Pilosity similar to that of the worker but shorter and finer.

Piceous black; clubs of antennæ, pronotum and legs paler. Wings faintly tinged with brown, with brown veins and dark brown stigma.

Described from fourteen workers and four males taken at Funkiko, Formosa.

The worker of this species seems to resemble that of *A. rothneyi* var. *tipuna* from Formosa, to judge from Forel's description, but the male is very different in the structure of its epinotum and mesonotum, which does not overhang the head anteriorly. The worker is smaller than that of *tipuna*, with longer funicular joints and different sculpture.

15. *Pheidole funkikoënsis* sp. nov. (Fig. 4).

Soldier. Length nearly 3 mm.

Head large, as broad as long, somewhat broader behind than in front, with deeply, angularly excised posterior border and rather rounded sides. Eyes small, moderately convex, situated at the anterior fourth of the sides of the head. Occipital groove broad, rather shallow, reaching the middle of the head and there becoming continuous with

the frontal groove. Gular teeth coarse and prominent. Mandibles large and convex. Clypeus short, flat, with a minute central tubercle, the anterior border merely sinuate in the middle and on each side. Frontal area rounded-triangular, deeply impressed. Frontal carinae continued as diverging rugae to the posterior third of the head and forming the inner borders of broad and shallow but distinct, scrobe-like impressions for the antennae. Antennae slender; scapes scarcely reaching the posterior third of the head, cylindrical, curved at the base; funicular joints 2-8 as broad as

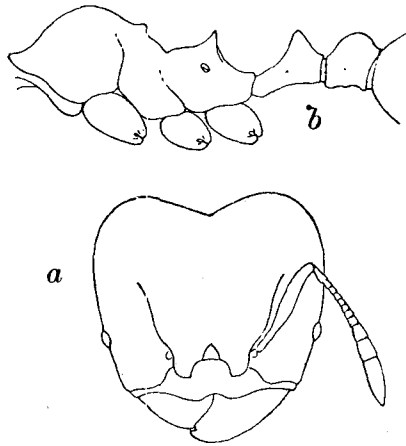


Fig. 4.

Pheidole funkikoënsis sp. nov. a, head of soldier;
b, thorax and pedicel of same in profile.

long; club as long as the remainder of the funiculus, the apical joint as long as the two subequal basal joints together. Thorax small and thickset, less than half as broad as the head through the very convex and rounded promesonotum; humeral tubercles large and distinct but very bluntly rounded; promesonotal suture indistinct. Mesonotum abruptly sloping, with broad, thick torus; mesoëpinotal impression pronounced; epinotum small, elongate, with subequal base and declivity, the former straight and horizontal, the latter feebly sloping,

the dorsal surface concave, the spines erect and acute, nearly one-third as long as the base of the epinotum, longer than broad at their bases, shorter than their distance apart. Petiole small and simple, unarmed beneath, the node rounded above, but slightly compressed anteroposteriorly, its upper border indistinctly emarginate in the middle. Postpetiole twice as broad as the petiolar node, slightly broader than long, rounded above, with the sides sharply angulate or conical stonn the middle. Gaster much smaller than the head, lenticular, subcircular. Legs rather stout, femora and tibiæ somewhat thickened.

Shining; mandibles sparsely and evenly punctate, their external borders rather coarsely, longitudinally rugose. Clypeus very smooth in the middle, longitudinally rugulose on the sides. Head with smooth and sparsely punctate posterior corners; the remainder with sharp, rather widely separated, posteriorly diverging longitudinal rugæ, with smooth, irregularly, sparsely and indistinctly punctate interstices. Scrobes feebly and obscurely reticulate. Only the anterior half of the gula rugose and only on its sides. Pronotum loosely and very irregularly, transversely rugose; meso- and epinotum and sides of petiole indistinctly punctate-rugulose. Gaster with small, scattered, piligerous punctures.

Hairs yellowish, rather short, very uneven, moderately abundant, erect or suberect on the body, finer and more oblique on the legs and antennæ.

Yellowish ferruginous; gaster yellowish brown; mandibles reddish, with broad black borders; anterior border of clypeus deep red. Legs yellow. One specimen has the head darker and more fuscous on the vertex.

Worker. Length 1.8 – 2 mm.

Head rounded-rectangular, as broad as long and slightly broader in front than behind, with rounded sides and posterior corners, the posterior border entire. Eyes small, their posterior orbits at the median transverse diameter of the head. Mandibles with slightly concave external borders, the apical borders rather oblique, finely dentate. Clypeus evenly convex, its anterior border straight and entire in the middle. Frontal area large, subtriangular, shallow, with a faint median carinula; frontal groove obsolete. Antennal scapes reaching nearly one-third their length beyond the posterior corners of the head. Thorax similar to that of the soldier, but the pronotum much less convex, the mesonotal torus feeble, the epinotal spines reduced to minute, acute teeth. Petiolar node small and rounded; postpetiole somewhat broader, subspherical, scarcely broader than long.

Shining, head and thorax somewhat less so than the mandibles and gaster; mandibles sparsely punctate. Head very feebly and loosely longitudinally rugulose; the mesonotum with a few indistinct transverse

rugules; petiole and postpetiole smooth throughout. Gaster with very fine, sparse and indistinct piligerous punctures.

Pilosity similar to that of the soldier but sparser and finer.

Brownish yellow, legs scarcely paler; borders of mandibles and clypeus reddish.

Described from two soldiers and seven workers taken at Funkiko, Formosa.

I describe this species as new because I am unable to assign it to any of the Indomalayan *Pheidoles* of which I have seen specimens or descriptions. In some respects it resembles *Ph. nietneri* Emery of Ceylon but is obviously quite distinct. *Ph. pieli*, recently described by Santschi from China, is more closely related to *funkikoënsis*, but the latter exhibits numerous small differences in structure and sculpture.

16. *Pheidole maculifrons* sp. nov. (Fig. 5).

Soldier. Length nearly 2 mm.

Head subrectangular, about 1 1/4 times as long as broad, as broad in front as behind, with feebly and evenly convex sides and medially

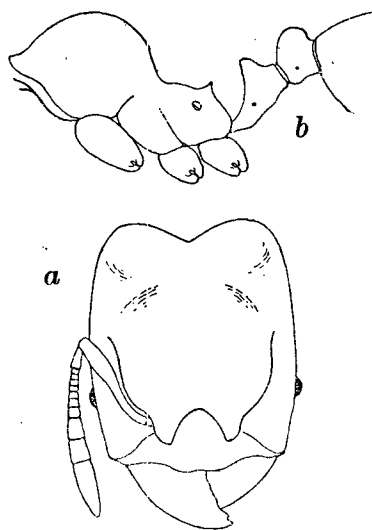


Fig. 5.

Pheidole maculifrons sp. nov. a, head of soldier; b, thorax and pedicel of same in profile.

rather deeply excised posterior border; front and occipital corners convex, the latter somewhat turned upward, leaving a distinct concavity between them and the swollen front. Occipital groove deep and very short, continued forward only to this cavity. Eyes well-developed, convex, about as long as their distance from the anterior corners of the head. Mandibles convex, with two coarse apical teeth. Clypeus short and rather flat, the anterior border sinuate in the middle and on each side. Frontal area deeply impressed; frontal groove obsolete; frontal carinae more than half as long as the antennal scapes, widely diverging posteriorly. Antennae slender; scapes curved, reaching nearly to the middle of the sides of the head; funicular joints 2-7 subequal, distinctly

broader than long, together shorter than the club, the two basal joints of which are as long as the terminal joint, the latter with a

long and distinct point. Thorax small, decidedly shorter than the head, the pro- and mesonotum voluminous and convex, together forming a projecting, hemispherical mass in profile; seen from above the pronotum is twice as broad as long, transverse, with large, bluntly angular humeri; promesonotal suture distinct. Mesonotum feebly convex, descending rather abruptly to the epinotum, without transverse groove or torus. Epinotum very small and low, scarcely more than half as high as the pronotum, higher than long, with the base horizontal and somewhat shorter than the steep declivity and two acute teeth as long as broad at their bases, directed upward and somewhat backward. Petiolar node anteroposteriorly compressed, its upper border entire and distinctly pointed or acuminate in the middle. Postpetiole small, transverse, more than twice as broad as long, produced and bluntly angulate on each side; in profile its dorsal surface is very convex but not quite as high as the petiolar node. Gaster elliptical, about as large as the head. Femora and tibiae somewhat incrassated.

Shining; mandibles and clypeus smooth, the former with a few scattered punctures; anterior two-thirds of head longitudinally rugose, the rugae slender, widely separated on the front, more numerous on the sides, the interrugal spaces smooth and flat; posterior third of head loosely and somewhat transversely reticulate - rugose. Remainder of body smooth and shining, except the mesopleurae, which are finely and densely punctate.

Hairs yellow, coarse, moderately long and abundant on the body, much shorter and oblique or subappressed on the appendages.

Pale castaneous brown; mandibles, clypeus, front, cheeks, mesonotum, mesopleurae, sides and anterior portion of pronotum, antennae and legs ivory yellow; clypeus and front spotted with brown; borders of mandibles black.

A single specimen from Los Baños, Luzon Island, Philippines.

This species seems to be most closely related to *Ph. hortensis* Forel of Java, but is evidently quite distinct and unlike any of the species hitherto described from the Philippines or any of several undescribed species from those islands in my collection.

17. *Cardiocondyla wroughtoni* Forel var. *bimaculata* var. nov.

Worker. Like the var. *hawaiiensis* Forel in having the transverse brown band on the first gastric segment interrupted in the middle, but the two spots which thus remain on the sides of the segment are much deeper brown. In a few specimens these spots remain connected by a pale brown streak or cloud. The general color of the body and appen-

dages is somewhat more brownish and less clearly yellow than in *hawaiiensis* or the typical form of the species.

Female. A single immature specimen of this sex has the dorsal surface of the first gastric segment largely occupied by a broad transverse, dark brown spot which is notched in the middle behind. The clubs of the antennal funiculi are infuscated, the wings whitish.

Seven workers and one female from Karashishó, Formosa.

18. *Cardiocondyla wroughtoni* var. *obscurior* var. nov.

Worker. Characterized by its dark color, the body and appendages being dull brown, the legs scarcely paler, the antennal clubs distinctly infuscated, the whole gaster dark brown, except the posterior borders of the segments, which are paler.

Female. The single specimen of this sex is dealated and headless and is perhaps immature, the body is paler and more yellowish than in the worker, except the tegulæ, which are black and the gaster, which is dark brown throughout, with paler posterior borders to the segments.

One worker and one female from Eisei, Formosa.

19. *Crematogaster (Acrocoelia) dohrni* Mayr subsp. *fabricans* Forel. — Two workers from Abato, Formosa and one from Karashisho, Formosa.

20. *Crematogaster (Acrocoelia) simoni* Emery. — Several workers from Los Baños, Luzon Island, Philippines.

21. *Crematogaster (Orthocrema) biroi* Emery. — A single worker from Penang Island.

22. *Monomorium minutum* Mayr. — A single worker from Taihoku, Formosa.

23. *Solenopsis indagatrix* Wheeler. — Numerous workers from Eisei, Formosa. They agree very closely with the types taken by Professor Silvestri at Yolushan, China.

24. *Pheidologeton diversus* Jerdon subsp. *draco* Santschi — A maxima and three minima workers from Singapore, Johore, are referable to this subspecies, which was originally described from Tonkin and Indochina.

25. *Pheidologeton diversus* subsp. *tenuirugosus* subsp. nov

Large worker. Length 8-9 mm.

Head distinctly broader than long; anterior clypeal border sinuate in the middle. Scutellum very prominent; epinotal spines deflected at

their tips. Petiolar node with transverse, superior border, entire in the smaller specimen, feebly emarginate in the middle in the larger specimen. Sides of postpetiole produced as blunt conules.

Shining; anterior rugæ on head not very pronounced and not continued back beyond the eyes; vertex and sides of front smooth and shining over a broad area, sparsely punctate behind. Rugæ on the vertex fine, not transverse, slightly diverging in front, longitudinal behind, interspersed with coarse elongate punctures or foveolæ. The occipital rugæ are much finer than those on the sides of the front; sides of head with fine, straight, longitudinal rugæ. Pronotum, base and declivity of epinotum sharply transversely rugose; mesonotum, posterior and lateral portions of pronotum sparsely and coarsely punctate; scutellum smooth and impunctate; sides of thorax very finely punctate or granular; with longitudinal rugæ ventrally and posteriorly. Petiole and postpetiole rather smooth in front; longitudinally rugose behind on the sides. Gaster shining and finely punctate; base of first segment also with scattered larger punctures.

Hairs yellow, sparse on the tibiae.

Dark reddish brown; antennæ and legs paler; gastric segments with yellowish borders; mandibles and clypeus bordered with black.

Worker minima. Length about 1.8 mm.

Smaller than the worker of the typical *diversus*, which measures 2.5 mm., with the mesoëpinotal constriction distinctly longer and more rounded at the bottom and the epinotal spines shorter and more slender. The color is paler, the thorax and appendages being brownish yellow; the head dark brown above, the scapes and gaster paler brown. The few hairs on the body are shorter than in typical *diversus*, the subappressed hairs on the legs much the same.

Two large and two minima workers taken by Professor Silvestri at Los Baños, Luzon Island, Philippines. The largest specimen is almost a maxima, or soldier, but possesses no ocellus. The posterior sculpture of the head is very peculiar and quite different from that of the other subspecies of *diversus*. On examining the considerable amount of *Pheidologeton* material from the Philippines in my collection, I find four other forms of *diversus* which are here described.

26. *Pheidologeton diversus* subsp. *fictus* Forel var. *pilosior* var. nov.

Soldier (ocellate). Length 10 mm.

Differing from the typical *fictus*, which should be regarded as a subspecies and not as a variety, in having a much more abundant golden yellow pilosity, especially on the head, gaster and appendages.

Head as long as broad (4 mm. \times 4 mm.). Epinotal spines acute, rather short, not much longer than broad at their bases. Petiolar node with bluntly rounded entire superior border. Postpetiole about twice as broad as long, broadest anteriorly, where its angles are rounded and not produced as conules. Gaster rather large.

Shining throughout, the whole head rugose, the longitudinal rugæ on the anterior two-thirds of its upper surface sharp and rather coarse, those on the front diverging posteriorly and becoming transverse like those on the vertex; the latter somewhat coarser, sharp with reticulate interrugal spaces. Occiput and gula finely, longitudinally rugose, the rugæ interspersed with elongate punctures. Thorax transversely rugose, except the mesonotum and scutellum, which are coarsely punctate, and the epinotal declivity which is somewhat transversely reticulate. Posterior surface of petiolar node transversely rugose, remaining surface indistinctly and irregularly punctate-rugulose. Gaster finely and rather abundantly punctate; base of first segment also with numerous interspersed large punctures.

Ferruginous red, the gaster slightly darker, except at the base; antennæ and legs yellowish red; mandibles and clypeus very dark red, with black borders; posterior borders of gastric segments golden yellow.

Described from a single specimen taken by Prof. C. F. Baker at Ripong, in northern Luzon, Philippines.

This may represent an independent subspecies or species. I have not seen specimens of the typical *fictus*, which is very briefly described by Forel.

27. *Pheidologeton diversus* subsp. *philippinus* subsp. nov.

Soldier (ocellate). Length 9-11 mm.

Head distinctly broader than long, in the largest specimens 4.3×4 mm., with straight, parallel sides and deeply excised posterior border. Anterior clypeal border broadly sinuate in the middle. Scutellum very protuberant. Epinotal spines stout, somewhat curved downward at their tips. Superior border of petiolar node feebly emarginate in the middle. Postpetiole with its sides produced as short but distinct conules.

Shining; posterior portion of head subopaque; dorsal surface rugose, except three very smooth areas, one on the vertex, covering the frontal groove and one on each side of the front. These spots have a few coarse punctures posteriorly. The rugæ on the anterior two-thirds of the head both above and on the sides and gula, are rather fine and sharp; those passing backward between the lateral and central smooth areas on each side curve outward and join the transverse rugæ of the vertex, which are sharp and somewhat diverging, and become finer, more numerous and more concentric on each of the occipital lobes and in part curve

laterally into the longitudinal rugæ of the sides of the head. There are several coarse punctures or foveolæ interspersed among these finer rugæ on the occipital lobes. Thorax transversely rugose, except the mesonotum and scutellum which are smooth and shining. Pedicel sub opaque, rugulose-punctate, except the postpetiolar node, which is smooth and shining. Gaster very smooth and shining, its punctures extremely fine and superficial.

Hairs yellow, erect and not very abundant, sparse and appressed on the gaster; sparse and oblique on the legs and scapes, the latter also with rather long pubescence.

Deep brownish ferruginous; head and pedicel paler and more reddish in some specimens; gaster often blackish. Borders of clypeus and mandibles black, centers of the latter deep red. Legs and antennæ a little paler and more reddish than the body.

Large and small media workers. Length 3.5 - 8 mm.

The largest specimens closely resemble the soldier but lack the ocellus; in smaller specimens the smooth areas on the front become larger and confluent, till in the smallest the median third or more of the upper surface is very smooth and shining, while the rugæ on the vertex become feebler and less numerous and the color becomes paler and more reddish. Meso-, metathorax, pedicel and legs take on a yellowish red tint, with the epinotal spines and upper surfaces of the nodes brown.

Worker minima. Length 2 - 2.3 mm.

Smaller and distinctly paler than the corresponding caste of the typical *diversus*. Head and scapes dark brown, remainder of body and the appendages paler, sordid brown, the middle portions of the femora, tibiæ and gaster somewhat darker in some specimens; funiculi and tarsi whitish yellow.

Female. Length 15-16 mm.; fore wings 15 mm.

Much more slender than the female of the typical *diversus*, the subsp. *flctus* Forel, *draco* Santschi and var. *laotima* Santschi. Head distinctly broader than long (3.3 mm. \times 3 mm.), narrower in front than behind, with broadly excised posterior border. Eyes and ocelli small compared with typical *diversus*. Scapes reaching nearly to the eyes. Mandibles more convex than in *diversus*, thorax decidedly narrower (only 3 mm. broad, in *diversus* 4 mm.), the mesonotum longer, the epinotum with acute, triangular teeth, as long as broad at the base. Superior border of petiole entire; the ventral border without a median dependent lamina; postpetiole with more rounded anterior angles than in *diversus*; gaster longer and narrower.

Head rather opaque; strongly rugose throughout, the interrugal spaces reticulate; the rugæ longitudinal anteriorly, diverging on the

front, transverse, somewhat coarser and more reticulate on the vertex. Mandibles, thorax and gaster shining. Pronotum and epinotum transversely rugose, the lateral corners of the former, the mesonotum, mesopleuræ and scutellum sharply punctate, with intermingled large and small punctures; mesosterna and sides of epinotum coarsely longitudinally rugose. Petiole and postpetiole subopaque, punctate - rugulose, posterior surface of petiolar node transversely rugose; dorsal surface of postpetiole shining and coarsely punctate. Gaster with very fine and numerous punctures, interspersed with coarser piligerous punctures. Legs and scapes rather coarsely and sparsely punctate.

Pilosity golden yellow, erect, moderately abundant, uneven and rather short; longer on the gaster; bristly and somewhat sparser on the legs and scapes.

Black; antennæ and legs red; gastric segments with rufous borders. Wings deeply infuscated, darker than in the typical *diversus*.

Male. Length 9-10 mm.; fore wings 9 mm.

Smaller than the male of the typical *diversus*, which measures 11-13 mm.; and of a different color, being reddish or yellowish brown instead of dark brown. Head and three large elongate spots on the mesonotum, one anterior and median, the others covering the parapsidal furrows, dark brown or blackish. In some specimens these spots are sharply defined, in others they tend to fuse so that much of the mesonotum becomes dark brown. Legs, antennæ and genitalia brownish yellow. Wings as dark as those of the female, their membranes uniformly and not unevenly tinted as in *diversus*.

Occipital portion of head shorter and less developed than in *diversus*, with the ocelli on an eminence; cheeks much shorter; mandibles with four well-developed teeth. Epinotum sloping and rounded, not clearly angular on the sides; base short and not distinctly marked off from the declivity. Pilosity much as in the typical *diversus*.

Judging from the many specimens I have received, this seems to be the most abundant and widely distributed Pheidologeton in the Philippines. I base the subspecies on a long series of all the phases taken by Dr. F. X. Williams at Los Baños. There are also series of soldiers, large and small workers taken by Dr. R. C. McGregor at San Juan del Monte, near Manila, Luzon I, from Paete, Laguna and Banqui, on the same island, from Cebu, on Cebu Island (F. X. Williams) and Dumaguete, Negros Oriental (J. W. Chapman), and a couple of small and very yellow males taken by Prof. C. F. Baker on Mt. Banahao, Luzon.

The subsp. *philippinus* is most closely related to Santschi's subsp. *draco*, but the soldier of the latter has a larger and much

smoother head, a strongly emarginate petiolar node and the male is larger, darker and much like the male of the typical *diversus*. My male specimen of *draco* from Hainan (S. F. Light) measures 12 mm. and is black, with broad yellowish posterior borders to the gastric segments, dark brown scapes and yellow funiculi and legs. The wings are paler than in *philippinus* and the head intermediate in form between this subspecies and the typical *diversus*.

28. *Pheidologeton diversus* subsp. *williamsi* subsp. nov.

Soldier. (ocellate). Length about 14 mm.

Larger than the preceding subspecies but with the head of the same shape, 5 mm. long, 5.5 mm. broad. Petiolar border entire. Scutellum very protuberant and globose. Sculpture of the head and body similar, but the rugæ, even on the head, much feebler and the surface more shining. Pilosity shorter and less conspicuous. Color distinctly paler, deep red, the gaster dark red, the borders of its segments indistinctly reddish; legs yellowish red. Mandibles red, broadly bordered with black; anterior clypeal margin black.

Worker media. Length 4–10 mm.

Larger specimens very similar to the soldier but lacking the ocellus. Head increasingly smooth, the smaller the specimen as in the other subspecies. Those measuring 5–6 mm. have the mandibles, except their borders, and the anterior third of the head reddish yellow and the posterior portion of the thorax paler than the pronotum.

Worker minima. Length 2–2.3 mm.

Very similar to the worker of *philippinus* but slightly paler, being pale yellowish brown, with the upper surface of the head and the scapes slightly infuscated.

Male. Length 11–13 mm.

Differing from the male of *philippinus* in its greater size and in color. Head in shape intermediate between that of *philippinus* and the typical *diversus*, the occipital portion being short and broadly rounded. Wings proportionally longer than in *philippinus*, measuring nearly 14 mm.

Black; borders of gastric segments, articulations of thorax and ventral surfaces of petiole and postpetiole red or brown; antennæ and legs paler, reddish brown, middle of scapes and femora dark brown; tarsi yellowish. Wings even darker than in *philippinus*.

Described from a number of workers and five males taken by Dr. F. X. Williams at Los Baños, Luzon Island (type-locality) and a single male captured by Prof. C. F. Baker at Dapitan, on Mindanao Island.

This subspecies is quite distinct from *philippinus* in the large size of the soldier, paler color of the workers and especially in the male. Smaller workers of the two forms are much more difficult to distinguish.

29. *Pheidologeton diversus* subsp. *macgregori* subsp. nov. (Fig. 6).

Large worker. Length 10 mm.

Resembling *philippinus* but distinct in the following characters: Posterior third of the head more flattened and the anterior corners more thickened and turned outward so that the cheeks are distinctly

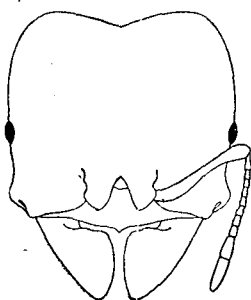


Fig. 6.

Pheidologeton diversus Jerdon
subsp. *macgregori* subsp. nov.
Head of large worker.

concave. Thorax and pedicel opaque, the mandibles, clypeus, a small area on the mesonotum and scutellum, the upper surface of the postpetiole, which is grooved in the middle above and appears somewhat bituberculate, the gaster and legs shining. The rugæ on the head are arranged much as in *philippinus* but are finer and denser, so that the surface they cover is rather opaque. The transverse rugæ on the vertex are sharp but less numerous and those on the occiput are very fine and diverge to the corners of the head. The three smooth areas on the front are much more restricted and rather finely punctate. Pronotum coarsely,

transversely rugose; mesonotum finely striate and sparsely punctate; scutellum more coarsely punctate-rugulose. Epinotum transversely rugose at the base, the declivity regularly and finely reticulate-rugulose. Petiole and postpetiole, except the smooth upper surface of the postpetiolar node, densely and finely punctate and loosely rugulose. Gaster sharply, densely and uniformly punctate.

Pilosity almost lacking. There are only a few erect hairs on the front of the head and on the venter. Scapes with only one or two hairs; those on the appendages short and appressed.

Dark brown; mandibles, clypeus, gaster and median portion of head almost black; antennæ and legs slightly paler and more reddish; borders of gastric segments golden yellow.

Worker minima. Length 2.3 - 2.5 mm.

Resembling the minima of the other forms of *diversus* but with the meso- and epinotum decidedly opaque and more sharply reticulate. Mandibles opaque, longitudinally striate. The sparse long hairs almost lacking on the body, appressed on the appendages. Castaneous brown; head, scapes, gaster and middle portions of femora and tibiæ darker;

remainder of legs, funiculi and tips of scapes paler, brownish yellow; mandibles and clypeus pale brown.

Described from a single large worker which is practically a soldier, though it lacks the ocellus, and nine minimæ taken by Dr. R. C. Mc Gregor on Samar Island, Philippines, « marching in a field and carrying seeds and beetles ».

This subspecies is quite unlike any of the other forms of *diversus* in the opacity of the body, dark color and greatly reduced pilosity. It probably represents a local, insular race.

30. *Pheidologeton affinis* Jerdon — A number of media and minima workers taken by Dr. R. C. Mc Gregor at Sarai, Laguna, Luzon and at Culasi, on Panay Island, Philippines.

31. *Pheidologeton silvestrii* sp. nov.

Soldier. Length 9-11 mm.

Closely related to *affinis* Jerdon, and with the same head-proportions (3.5 mm. long, 3 mm. broad). Ocellus lacking. Eyes somewhat more convex. Mandibles more coarsely longitudinally grooved along the dental border. Frontal groove not interrupted on the front. Thorax stouter, with much more convex and protuberant scutellum; base of epinotum shorter, with stouter and more erect teeth. Petiole in profile of a different shape, the node being more erect, in profile triangular, with straight anterior and posterior surfaces and more acute border; seen from behind the node is rectangular, with straight, transverse superior border, and straight subparallel sides, not narrowed and rounded above as in *affinis*; ventral surface with a distinct, dependent, median, translucent lamina. Postpetiole also different, being much broader, distinctly angulate on the sides anterior to the middle, with the node abruptly concave posteriorly. Gaster much more voluminous.

Whole body somewhat less shining than in *affinis*; sculpture much coarser; the whole upper surface of the head rugose, the rugæ arranged as in *affinis* but stronger and more numerous on the sides and front, the median shining area of *affinis* being merely indicated; transverse rugæ on the sides of the head passing into a coarsely reticulate-rugose region on the posterior corners. Pronotum sharply and regularly transversely rugose; mesonotum and scutellum coarsely punctate; base of epinotum and declivity finely transversely rugose. Petiole and postpetiole subopaque, finely punctate-rugulose on the sides and smooth and shining only on the upper surfaces of the nodes; posterior surface of petiolar node transversely rugose. Gaster less shining than in *affinis*, with more numerous, fine, sharp punctures over its whole dorsal surface. On the first segment these are intermingled with coarser, umbilicate punctures.

Pilosity fulvous, decidedly more abundant than in *affinis*.

Dark ferruginous brown; cheeks, front, epinotal declivity and gaster paler and more reddish; appendages brownish orange; antennæ a little darker than the legs; mandibles, clypeus and anterior corners of the head black.

Described from four specimens taken by Professor Silvestri at Los Baños, Luzon Island, Philippines.

This ant seems to be more than a mere subspecies of *affinis*, but its exact status cannot be determined till material of the other castes has been examined. The very large gaster in all the specimens is translucent and distended with a yellowish liquid, so that the soldier evidently functions as a « honey-pot », or replete like the same caste in certain species of *Pheidole*. This is also the case in *affinis*, since several soldiers from Rangoon, Burma, in my collection show the same condition, though the gaster is smaller than in *silvestrii*. I insert here the description of another species which is allied to these forms and occurs in the same locality as the latter.

32. *Pheidologeton maccus* sp. nov.

Soldier. Length 5.5 - 6 mm.

Much smaller than the preceding species. Head subrectangular, slightly longer than broad, its sides straight and parallel, its posterior border broadly but not deeply concave. Eyes at the anterior two-fifths of the head, small, not very convex, with about 8 facets in their greatest diameter. Ocellus lacking. Mandibles thick and convex, with two large apical and three broad, short basal teeth. Clypeus flat, its anterior border feebly and broadly sinuate in the middle. Antennal scapes curved, slender at the base, distinctly swollen at their tips, which reach nearly to the eyes; funicular joints 2-8 subequal, scarcely longer than broad. Frontal area and groove distinct, the latter continued into the occipital groove without median interruption. Thorax short; scutellum not very prominent; metanotum distinct; base of epinotum shorter than the declivity, the teeth stout, acute, more than half as long as the base, directed upward and slightly outward. Petiole 1 1/2 times as long as broad, nearly as high as long, the node in profile cuneate, with long, straight anterior and short, nearly perpendicular, posterior slope, its tip somewhat narrowed upward, bluntly rounded in profile, entire and rounded when seen from behind. There is a trace of a dependent median lamella at the antero-ventral end of the petiole. Post-petiole transversely elliptical, 1 1/2 times as broad as long, with rounded, nonangulate sides, in profile evenly convex above. Gaster subcircular,

much smaller than the head, very convex on the ventral side. Legs rather long, femora distinctly incrassated in the middle.

Shining; gaster, mandibles, legs and scapes more than the head, thorax and pedicel. Mandibles sparsely punctate, coarsely striate at the base, with several elongate impressions, or grooves along the dental border. Clypeus smooth. Head coarsely rugose throughout, except a small shining and coarsely punctate area in the middle. The longitudinal rugæ which occupy the anterior two-thirds and diverge on the front, are scarcely finer than the transverse rugæ on the vertex. The anterior interrugal spaces are finely striate, those on the posterior portion of the head reticulate. The transverse rugæ on the occiput turn downward on the posterior corners and continue into the longitudinal rugæ of the sides of the head. Pronotum transversely rugulose; meso- and epinotum finely and densely punctate, their sides also irregularly longitudinally rugulose. Nodes of petiole and postpetiole smooth above, their segments below finely and densely punctate; upper surface of postpetiole with several longitudinal impressions. Gaster and legs smooth, with scattered, piligerous punctures.

Hairs yellow, rather abundant, of uneven length, erect even on the legs, conspicuously long on the front.

Ferruginous red; mandibles red with broad black borders; anterior border of clypeus black; antennæ, legs, including coxæ, epinotal declivity and gaster yellow.

Worker media. Length 2.5 - 4 mm.

Larger forms very similar to the soldier but with even less developed scutellum and smaller eyes. In smaller individuals the head becomes smooth and shining, but the anterior rugæ are retained though they are feebler and sparser; on the vertex, however, they become reticulate and lose their transverse arrangement. Finally, in the smallest mediæ, the head and pronotum become very smooth and shining, with traces of the rugæ only on the cheeks; the epinotal teeth are directed backward and the postpetiole is as long as broad. The whole body becomes yellow, except the borders of the clypeus and mandibles, but the head and thorax are more reddish yellow than the abdomen and appendages.

Worker minima. Length 1.8 mm.

Head slightly longer than broad and slightly narrower in front than behind, with feebly concave posterior border. Eyes very small, consisting of only one or two facets. Mandibles narrow, with oblique, 4-toothed blades. Antennal scapes reaching to the posterior border of the head. Promesonotum convex and rounded in profile; mesoëpinotal constriction pronounced but rather short; base of epinotum convex, longer than the declivity; spines slender, directed backward, less than

half as long as the base. Petiole small and narrow; postpetiole globular, somewhat broader than the petiole.

Smooth and shining; mandibles more opaque, finely striate; meso- and epinotum finely and densely punctate.

Hairs long and sparse, erect on the dorsal surface of the body and partly so on the legs and scapes.

Yellow; head and thorax somewhat darker; borders of mandibles and clypeus brown.

Described from numerous specimens taken by Dr. F. X. Williams at Los Baños (type-locality) and by Dr. R. C. Mc Gregor at Paete, Laguna, Luzon Island and on the Island of Samar, Philippines.

33. *Leptothorax taivanensis* sp. nov.

Worker. Length 2.4 - 2.8 mm.

Head longer than broad, as broad in front as behind, with rounded sides and posterior corners and nearly straight posterior border. Eyes convex, at the middle of the sides. Mandibles distinctly 5-toothed, with rounded external borders. Clypeus somewhat convex behind; its anterior border depressed in front, produced and truncated in the middle, sinuate on each side. Frontal area impressed but indistinct; frontal carinae very small. Antennae 12-jointed; scapes curved at the base, extending somewhat beyond the posterior border of the head; funicular joints 2-8 small, subequal, broader than long; the three terminal joints long, forming a distinct club, the last joint of which is as long as the two subequal basal joints together and distinctly enlarged. Thorax convex in profile, highest in the mesothoracic region, with distinct promesonotal suture, falling, rather rapidly to the epinotum but interrupted by a distinct transverse swelling representing the metanotum. Base of epinotum shorter than the declivity and slightly sloping, the spines long and tapering, longer than the base and than the distance between their insertions, curved basally and then directed straight backward and slightly outward. Petiole long and narrow, with a peduncle as long as the node, which is rounded, as long as broad, in profile a little higher in front than behind; peduncle with an acute, downwardly directed anteroventral tooth. Postpetiole about 1 1/4 times as broad as long, its node transversely elliptical, convex, half again as broad as the petiole. Legs rather long, femora distinctly thickened in the middle.

Shining; gaster, legs and scapes more so than the head, thorax and pedicel. Mandibles opaque, finely longitudinally striated and obscurely punctate. Clypeus with about seven longitudinal rugules. Head longitudinally and somewhat irregularly rugose, with reticulate inter-rugal spaces. Thorax more coarsely and irregularly rugose, especially

on the pronotum, where the rugæ are vermiculate; on the sides they are more clearly longitudinal; epinotal declivity transversely rugulose above, smooth and opaque below. Pedicel finely and indistinctly punctate or shagreened, the nodes shining and with a few longitudinal impressions. Gaster very smooth and shining, with sparse piligerous punctures; legs and scapes distinctly shagreened or punctulate.

Hairs rather sparse, glistening white, blunt but not very stout, erect or suberect on the dorsal surface of the body; fine, pointed and appressed on the legs and antennæ.

Dark brown; gaster and dorsal surface of head more blackish; mandibles, scapes, epinotal spines, except their bases, trochanters, tarsi, bases and tips of femora and tibiæ brownish yellow or pale reddish brown.

Described from six specimens taken at Funkiko, Formosa.

This species, which at first sight looks like a diminutive *Myrmica*, is quite distinct from the other Oriental species of *Leptothorax*, *congruus* F. Smith, *galeatus* Wheeler and *argentipex* Wheeler, in sculpture, the shape of the thorax and petiole, etc. (1).

34. *Triglyphothrix striatidens* Emery, var. *flavescens* var. nov.

Worker. Differing from the typical form of the species in pilosity and color. The erect hairs on the body are decidedly less numerous and more uneven in length and the color of the head, thorax and pedicel is yellow or brownish yellow, instead of deep ferruginous, as in the type. The gaster also is paler, especially at the base and tip.

Numerous workers from Singapore, Johore.

35. *Tetramorium guineëse* Fabricius — Three workers from Eisei and one from Funkiko, Formosa.

36. *Strumigenys (Cephaloxys) leptothrix* sp. nov. (Fig. 7).

Worker. Length nearly 3 mm.

Head $1 \frac{2}{3}$ times as long as broad, at the clypeus only $\frac{3}{5}$ as broad as its greatest posterior width, rounded behind, without posterior lobes, with only slightly concave but distinctly marginate occipital border. Eyes small, behind the middle and far down on the sides. Clypeus convex, nearly as long as broad, semicircular in front, its posterior border angular in the middle and concave on each side. Frontal carinae very short but continued back on each side of the head

(1) Owing to a typographical error, the name « *argentipex* » appeared as « *argentipes* » in my paper on Professor Silvestri's Chinese ants.

as a sharp margination bounding the antennal scrobe and joining the transverse occipital margination. Mandibles small, triangular, convex, nearly three times as long as broad, their apical borders with a series

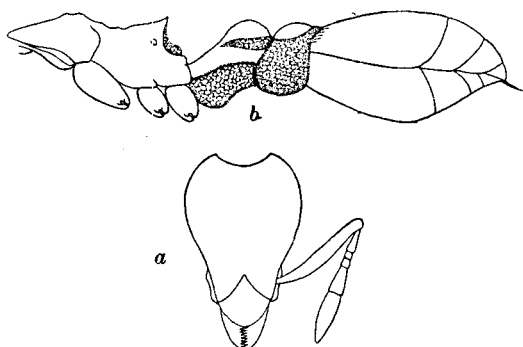


Fig. 7.

Strumigenys (*Cephaloacys*) *leptotrix* sp. nov. a, head of worker; b, thorax and abdomen of same in profile.

of nearly a dozen, slender crowded teeth, which grow gradually longer towards the base. Antennal scapes reaching to the posterior fifth of the head; funicular joints 2 and 3 subequal, longer than broad, together equal to the fourth, which is half as long as the terminal joint. Thorax long, with long, shallow mesoëpinotal constriction

tion, somewhat flattened above, high through the epinotum, very low through the pronotum. Seen from above the pronotum is regularly elongate-elliptical, longer and broader than the remainder of the thorax, with a distinct median carina. Promesonotal and mesoëpinotal sutures represented by transverse impressions. Mesonotum and base of epinotum rectangular, parallel-sided, the former longer, the latter shorter than broad and both with a strong lateral margination which is continued back to the epinotal teeth. These are rather small, triangular, longer than broad at their bases and directed backward. Declivity of epinotum perpendicular, about as long as the base, marginate and furnished with a low spongiform lamella on each side. Petiole, with a low convex node, somewhat longer than broad and as long as the peduncle. Postpetiole broader than long, transversely elliptical. Both nodes are surrounded laterally and posteriorly with abundant spongiform material and the ventral surfaces of their segments have dependent spongiform masses fully as deep as the segments that bear them. Gaster elongate-elliptical, with straight; transverse anterior border. Legs rather long.

Shining; mandibles opaque, very finely and indistinctly striate; clypeus very finely longitudinally rugulose; head densely punctate, its surface uneven, with loose, interrupted and rather feeble longitudinal rugæ. Sides of thorax very smooth and shining, dorsum of pronotum obscurely longitudinally striate; epinotum and petiole opaque and densely punctate; postpetiolar node shining, with several small longitudinal impressions. Gaster very smooth and shining; first segment with several short, coarse striæ at the extreme base.

Hairs pale yellow, fine and conspicuously long, but not very abundant, erect both on the body and the extensor surfaces of the femora and tibiæ. Hairs on the mandibles and clypeus very small and appressed, those on the latter squamiform.

Yellowish ferruginous; antennæ, legs and gaster somewhat paler and more yellow; mandibles and border of clypeus brown.

A single specimen from Funkikô, Formosa.

This is a striking species, owing to the very peculiar pilosity and sculpture.

SUBFAMILY **Dolichoderinae**

37. *Dolichoderus (Hypoclinea) bituberculatus* Mayr. Five workers from Los Baños, Luzon Island, Philippines.

38. *Tapinoma melanocephalum* Fabr. — Five workers and a deälated female from Taihoku, Formosa.

SUBFAMILY **Formicinae**

39. *Anoplolepis longipes* Jerdon — Numerous workers from Eisei, Formosa and three from Los Baños, Luzon Island, Philippines.

40. *Acropyga acutiventris* Mayr. — Eleven workers from Penang Island.

41. *Camponotus (Dinomyrmex) gigas* Latr. — A large and a small worker from Singapore.

42. *Camponotus (Tanaemyrmex) dorycus* F Smith var. *tipuna* Forel. — Seven workers from Funkikô, Formosa.

43. *Camponotus (Tanaemyrmex) irritans* F. Smith var. *subnudus* F. Smith — Six workers from Los Baños, Luzon Island, Philippines.

44. *Camponotus (Tanaemyrmex) siemsseni* Forel — I find in my collection several major workers and a winged female of this species taken many years ago by Hans Sauter at Takao, Formosa.

45. *Camponotus (Myrmotarsus) nigricans* Roger — Single media and minima workers from Los Baños, Luzon Island, Philippines.

46. *Camponotus (Myrmamblys) itoi* Forel subsp. *tokioënsis* Ito. — Eleven workers from Taihoku, Formosa.

47. *Camponotus (Colobopsis) leonardi* Emery — Five minor workers from Los Baños, Luzon Island, Philippines.

48. *Polyrhachis (Myrmhopla) dives* F. Smith var. *euclides* Forel — Four workers from Abato, Formosa.

49. *Pseudolasius binghami* Forel subsp. *taivanae* Forel — A number of workers from Funkikó, Formosa.

50. *Paratrechina (Nylanderia) bourbonica* Forel var. *amia* Forel — Several workers and males from Funkikó, Formosa.

51. *Lasius niger* L. — Four workers from Funkikó, Formosa are indistinguishable from the common northern Eurasian form. This ant, like *Formica picea*, of which Forel has described a var. *formosae* from Formosa, is an intrusion from the boreal into the tropical fauna.

A LIST OF THE ANTS OF FORMOSA

FAMILY **Formicidae**

SUBFAMILY **Dorylinae**

Aenictus ceylonicus Mayr. var. *formosensis* ♀ — Taihorin (Sauter).

Aenictus latiscapus Forel subsp. *sauteri* Forel ♂ — Taihorin; Kankau; Anping (Sauter).

Aenictus longi Forel subsp. *taivanae* Forel ♂ — Suisharyo (Sauter).

Aenictus punctiventris Emery ♀ — Taihorin (Sauter).

SUBFAMILY **Cerapachyinae**

Cerapachys reticulatus Emery ♀ — Suisharyo (Sauter).

Cerapachys sauteri Forel ♀ — Taihorin (Sauter).

Lioponera longitarsus Mayr ♂ — Kankau; Anping (Sauter).

SUBFAMILY **Ponerinae**

Stigmatomma bruni Forel ♀ ♂ (?) — Pilam; Kankau (Sauter).

Stigmatomma bruni subsp. *juergi* Forel ♀ — Pilam (Sauter).

Discothyrea globus Forel var. *sauteri* Forel ♀ — Pilam (Sauter).

Centromyrmex feae Emery ♀ — Kankau; Taihorin (Sauter).

Diacamma rugosum Le Guillou subsp. *vagans* F. Smith var. *anceps* Emery ♀ — Takao; Pilam (Sauter).

Stictoponera taivanensis Wheeler ♀ — Funkikó (Silvestri).

Ectomomyrmex denticeps Wheeler ♀ — Funkikó (Silvestri).

Ectomomyrmex horni Forel ♀ — Akau; Taihorinsho; Suisharyo; Hoozan (Sauter).

Ectomomyrmex sauteri Forel ♀ ♀ — Pilam; Akau; Kankau (Sauter).
Euponera (*Brachyponera*) *luteipes* Mayr. ♀ ♀ ♂ — Takao; Taihorin (Sauter).

Euponera (*Brachyponera*) *luteipes* Mayr var. *luteipedo-jerdoni* Forel ♀ ♀ — Akau; Taihorin (Sauter).

Euponera (*Trachymesopus*) *darwinii* Forel var. *indica* Emery ♀ — Anping (Sauter).

Euponera (*Trachymesopus*) *laivanae* Forel ♀ — Taihorin (Sauter).

Ponera biroii Emery ♀ — Taihorin (Sauter).

Ponera gleadowi Forel var. *sauteri* Forel ♀ ♀ — Pilam (Sauter).

Ponera japonica Wheeler subsp. *formosae* Forel ♀ — Anping (Sauter).

Ponera truncata F. Smith ♀ — Pilam (Sauter).

Leptogenys (*Lobopelta*) *confucii* Forel ♀ — Pilam (Sauter).

Leptogenys (*Lobopelta*) *diminuta* F. Smith subsp. *palliseri* Forel ♀ — Taihoku, (Takahashi).

Leptogenys (*Lobopelta*) *kitteli* Mayr. ♀ — Pilam; Alikang; Taihorin (Sauter).

Anochetus subcoecus Forel ♀ — Kosempo (Sauter).

Odontomachus monticola Emery var. *formosae* Forel ♀ — Pilam; Kankau; Kosempo; Taihorin (Sauter).

Odontomachus monticola var. *major* Forel ♀ — Formosa (Sauter).

SUBFAMILY **Pseudomyrminae**

Tetraponera allaborans Walker ♀ — Kankau; Taihorin (Sauter).

Tetraponera thagatensis Forel ♀ — Taihorin, Kankau (Sauter).

SUBFAMILY **Myrmicinae**

Metapone sauteri Forel ♀ — Sokutsu (Sauter).

Myrmica margaritae Emery var. *formosae* Wheeler ♀ — Funkikó (Silvestri).

Aphaenogaster (*Attomyrma*) *rothneyi* Forel subsp. *tipuna* Forel ♀ ♂ — Taihorin (Sauter).

Aphaenogaster (*Attomyrma*) *silvestrii* Wheeler ♀ ♂ — Funkikó (Silvestri).

Pheidole amia Forel ♀ ♀ — Takao (Sauter).

Pheidole ernesti Forel ♀ ♀ — Pilam; Akau (Sauter).

Pheidole funkikoënsis Wheeler ♀ ♀ — Funkikó (Silvestri).

Pheidole javana Mayr. ♀ ♀ — Takao; Taihorin (Sauter).

- Pheidole javana* var. *dolenda* Forel ♀ — Akau (Sauter).
Pheidole javana subsp. *jubilans* Forel var. *formosae* Forel ♀ — Takao; Taihorin (Sauter).
Pheidole megacephala Fabr. ♀ ♀ — Takao; Kankau; Anping (Sauter).
Pheidole rhombinoda Mayr. var. *formosensis* Forel ♀ ♀ ♂ — Taihorin; Kankau (Sauter).
Pheidole rinae Emery subsp. *tipuna* Forel ♀ — Takao; Anping (Sauter).
Pheidole sauteri Wheeler ♀ — Takao (Sauter).
Pheidole taivensis Forel ♀ — Pilam (Sauter).
Crematogaster (Acrocoelia) brunnea F. Smith subsp. *subnuda* Mayr. var. *formosae* Wheeler ♀ — Takao (Sauter).
Crematogaster (Acrocoelia) dohrni Mayr. subsp. *fabricans* Forel ♀ — Anping; Kosempo; Taihorin (Sauter); Abato; Karashisho (Silvestri).
Crematogaster (Acrocoelia) pia Forel var. *taivanae* Forel ♀ ♀ — Taihorin (Sauter).
Crematogaster (Acrocoelia) popohana Forel ♀ ♀ ♂ — Akau; Kosempo, Taihorin (Sauter).
Crematogaster (Acrocoelia) popohana subsp. *amia* Forel ♀ ♂ — Taihorin; Kosempo (Sauter).
Crematogaster (Acrocoelia) rogenhoferi Mayr. ♀ ♀ ♂ — Kosempo; Kankau; Anping; Takao (Sauter).
Crematogaster (Orthocrema) biroi Mayr. ♀ — Pilam (Sauter).
Crematogaster (Orthocrema) schimmeri Forel ♀ ♀ — Pilam (Sauter).
Crematogaster (Orthocrema) treubi Emery subsp. *apilis* Forel ♀ — Pilam (Sauter).
Cardiocondyla wroughtoni Forel var. *bimaculata* Wheeler ♀ ♀ — Karashisho (Silvestri).
Cardiocondyla wroughtoni var. *obscurior* Wheeler ♀ ♀ — Eisei (Silvestri).
Vollenhovia emeryi Wheeler ♀ ♀ (ergat.) — Pilam (Sauter).
Monomorium floricola Jerdon ♀ — Anping (Sauter).
Monomorium fossulatum Emery ♀ Kosempo (Sauter).
Monomorium latinode Mayr. ♀ ♀ ♂ — Takao (Sauter).
Monomorium minutum Mayr. ♀ — Takao; Anping (Sauter); Taihoku (Silvestri).
Monomorium pharaonis L. ♀ ♀ — Taihorin (Sauter).

- Monomorium (Parholcomyrmx) destructor* Jerdon ♀ — Anping; Takao (Sauter).
Solenopsis indagatrix Wheeler ♀ — Eisei (Silvestri).
Solenopsis tipuna Forel ♀ — Pilam (Sauter).
Oligomyrmex sauteri Forel ♀ — Pilam (Sauter).
Leptomyrmex 4-spinosus Jerdon subsp. *taivanae* Forel ♀ — Taihorin, Kosempo (Sauter).
Aneleus amia Forel ♀ — Kankau (Sauter).
Pheidologeton affinis Jerdon ♂ — Taihorin (Sauter).
Pheidologeton dentiviris Forel ♂ — Formosa (Sauter).
Pheidologeton diversus Jerdon ♀ ♀ ♂ — Takao, Anping; Akau; Taihorin (Sauter).
Pheidologeton diversus subsp. *fictus* Forel ♀ ♀ — Akau; Takao; Kagi (Sauter).
Pheidologeton yanoi Forel ♀ ♀ ♂ — Taihorin; Kosempo (Sauter).
Atoputa ceylonica Emery ♀ ♀ — Kankau; Alikang (Sauter).
Leptothorax taivanensis Wheeler ♀ — Funkikó (Silvestri).
Tetramorium confucii Forel ♀ ♀ — Pilam (Sauter).
Tetramorium guineënsis Fabr. ♀ ♀ ♂ — Pilam; Anping; Kankau, (Sauter); Eisei; Funkiko (Silvestri).
Tetramorium guineënsis var. *indicum* Forel ♀ — Anping; Taihorin (Sauter).
Tetramorium mixtum Forel subsp. *amia* Forel ♀ — Pilam (Sauter).
Tetramorium pacificum Mayr. subsp. *subscabrum* Emery ♀ — Pilam; Kankau (Sauter).
Tetramorium simillimum F. Smith ♀ ♀ — Anping (Sauter).
Triglyphothrix parvispina Emery var. *formosae* Forel ♀ — Pilam (Sauter).
Triglyphothrix striatidens Emery ♀ — Tahao (Sauter).
Myrmecina sauteri Forel ♀ ♀ — Pilam (Sauter).
Pristomyrmex pungens Mayr. ♀ — Kosempo; Taihorin (Sauter).
Pristomyrmex brevispinosus Emery subsp. *sulcatus* Emery var. *formosae* Forel ♀ — Pilam (Sauter).
Strumigenys feae Emery var. *formosensis* Forel ♀ — Pilam (Sauter).
Strumigenys (Cephaloxys) leptothrix Wheeler ♀ — Funkikó, Formosa (Silvestri).
Pentasturma sauteri Forel ♀ — Pilam (Sauter).

SUBFAMILY **Dolichodermae**

- Dolichoderus (Hypoclinea) bituberculatus* Mayr. ♀ — Pilam; Taihorin (Sauter).
Bothriomyrmex wroughtoni Forel subsp. *formosensis* Forel ♀ — Taihorin (Sauter).
Iridomyrmex anceps Roger ♀ ♀ ♂ — Taihorinsho (Sauter).
Iridomyrmex bicknelli Emery subsp. *formosae* Forel ♀ ♀ — Pilam (Sauter).
Iridomyrmex glaber Mayr ♀ ♀ ♂ — Takao; Taihorin; Anpin; Tainan (Sauter).
Technomyrmex albipes F. Smith ♀ — Ankau; Tainan (Sauter).
Technomyrmex horni Forel ♀ ♀ — Pilam (Sauter).
Technomyrmex modiglianii Emery var. *angustior* Forel ♀ — Akau (Sauter).
Tapinoma indicum Forel ♀ ♀ — Takao; Pilam (Sauter).
Tapinoma melanocephalum Fabr. ♀ ♀ — Takao; Taihoku; Anping; Kankau (Sauter).

SUBFAMILY **Formicinae**

- Anoplolepis longipes* Jerdon ♀ ♀ — Takao; Akau (Sauter); Eisei (Silvestri).
Plagiolepis exigua Forel — ♀ ♀ — Takao (Sauter).
Plagiolepis mactavishi Wheeler ♀ ♀ — Takao (Sauter).
Plagiolepis rothneyi Forel subsp. *taivanae* Forel ♀ — Taihorin; Kankau (Sauter).
Plagiolepis wroughtoni Forel ♀ — Kosempo (Sauter).
Acropyga (Rhizomyrma) sauteri Forel ♀ — Pilam (Sauter).
Camponotus punctatissimus Emery ♀ — Taihorin (Sauter).
Camponotus punctatissimus subsp. *formosensis* Wheeler ♀ — Taihoku (Takahashi).
Camponotus (Tanaemyrmex) barbatus Roger subsp. *albosparsus* Forel ♀ ♀ — Takao; Taihorin (Sauter).
Camponotus (Tanaemyrmex) dorycus F. Smith var. *tipuna* Forel ♀ ♀ ♂ — Kosempo; Taihorin; Suisharyo; Takao (Sauter); Funkikó (Silvestri).
Camponotus (Tanaemyrmex) friedae Forel ♀ ♀ ♂ — Anping; Taihorin; Kosempo (Sauter).
Camponotus (Tanaemyrmex) friedae var. *amia* Forel ♀ ♀ — Shustin; Anping (Sauter).

- Camponotus (Tanaemyrmex) habereri* Forel ♀ ♀ — Pilam; Hoozan; Anping; Taihorin (Sauter).
- Camponotus (Tanaemyrmex) irritans* F. Smith ♀ ♀ — Takao; Pilam; Shustin (Sauter).
- Camponotus (Tanaemyrmex) siemsseni* Forel ♀ ♀ — Takao; Taihorin; Kankau; Alikang (Sauter).
- Camponotus (Tanaemyrmex) variegatus* F. Smith var. *dulcis* Emery ♀ ♀ ♂ — Takao; Kankau (Sauter).
- Camponotus (Myrmentoma) truebi* Forel ♀ — Kosempo (Sauter).
- Camponotus (Myrmentoma) truebi* (?) var. *arnoldi* Forel ♀ — Akau (Sauter).
- Camponotus (Myrmamblys) itoi* Forel subsp. *tokioënsis* Ito ♀ ♀ — Kankau; Taihorin (Sauter); Taihoku (Silvestri).
- Camponotus (Colobopsis) rothneyi* Forel var. *taivanae* Forel ♀ — Kankau (Sauter).
- Polyrhachis lamellidens* F. Smith ♀ — Formosa (Yano).
- Polyrhachis (Myrmhopla) dives* F. Smith ♀ — Takao (Sauter).
- Polyrhachis (Myrmhopla) dives* var. *euclides* Forel ♀ ♀ ♂ — Taihorin, Akau; Anping (Sauter); Abato (Silvestri).
- Polyrhachis (Myrmhopla) hippomanes* F. Smith var. *moesta* Emery ♀ — Kankau (Sauter).
- Polyrhachis (Myrma) latona* Wheeler ♀ ♂ — Takao (Sauter)
- Polyrhachis (Myrma) latona* var. *dorsiruga* Forel ♀ ♂ — Kankau; Chip-chip (Sauter).
- Polyrhachis (Myrma) mayri* Roger ♀ ♀ — Taihorin; Kosempo (Sauter).
- Polyrhachis (Myrma) wolffi* Forel ♀ — Kankau; Polisha (Sauter); Taihoku (Takahashi).
- Polyrhachis (Myrma) murina* Emery ♀ — Maruyama (Sauter).
- Pseudolasius binghami* Emery subsp. *taivanae* Forel ♀ ♀ — Kosempo (Sauter); Funkiko (Silvestri).
- Pseudolasius sauteri* Forel ♀ — Taihorin (Sauter).
- Paratrechina longicornis* Latr ♀ ♀ ♂ — Takao; Pilam; Anping; Kankau (Sauter).
- Paratrechina (Nylanderia) bourbonica* Forel var. *amia* Forel ♀ ♀ ♂ — Akau; Kosempo; Tainan; Anping; Taihorin (Sauter); Funkiko (Silvestri).
- Paratrechina (Nylanderia) formosae* Forel ♀ ♀ — Pilam; Kosempo; Takao; Anping (Sauter).
- Paratrechina (Nylanderia) kraepelini* Forel ♀ — Pilam (Sauter).

Paratrechina (Nylanderia) minutula Forel subsp. *sauteri* Forel ♂ — Taihorin (Sauter).

Lasius niger L. ♂ — Funkikó (Silvestri).

Formica picea Nylander var. *formosae* Forel ♂ — Taihorin (Sauter).

Formica obsidiana Emery ♀ — Formosa (Sauter).

Formica fusca L. subsp. *japonica* Motsch. ♂ — Suisharyo (Sauter).



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