A MONOGRAPHIC REVISION OF THE ANT GENUS *PRISTOMYRMEX* (HYMENOPTERA: FORMICIDAE)

MINSHENG WANG[1]

CONTENTS

ABSTRACT. The ant genus *Pristomyrmex* is revised as a whole for the first time. The genus is redefined, and seven species groups are erected and discussed. Illustrations are present for all 52 species. A key to the worker caste is provided. Twenty-one new species are described: 20 from the Oriental region and one from Mauritius. Thirteen names are newly synonymized, and two former infraspecific taxa are elevated to species rank.

INTRODUCTION

Pristomyrmex, an ant genus of moderate size, contains 52 living species, but fossils

[1] Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts 02138.

have not been discovered. *Pristomyrmex* occurs primarily in the Oriental region, but six endemic species are present in the eastern rainforest of Australia and five endemic species in Africa. In addition, in Mauritius there are three native species, one of which also occurs on Reunion Island. Lastly, one species, *Pristomyrmex punctatus,* has invaded temperate China, Korea, and Japan. This species has also been detected at two entry ports in the United States and thus shows potential for spread via human commercial actions.

Pristomyrmex belongs to the subfamily Myrmicinae. It possesses a raised transverse ridge or a few toothlike prominences on the dorsal labrum in all female castes, including workers, ergatoid queens, and queens. This character is also shared by the myrmicine genera *Acanthomyrmex, Myrmecina,* and *Perissomyrmex.* As a result, these four living genera are grouped together in the tribe Myrmecinini (Bolton, 1994, 1995, personal communication; Brown, 1971). *Pristomyrmex* is unique in the tribe because it is the only genus possessing 11 antennal segments in all three female castes and 12 segments in the male.

Most *Pristomyrmex* species dwell in the rainforest, foraging as predators or scavengers. An Asian species, *P. punctatus,* however, occurs in open and disturbed habitats (e.g., bare hills, agricultural areas, and beaches). These ants prefer to nest in soil, litter, or rotten wood; in rotten parts of living trees; in dead standing trees; or around plant roots.

Pristomyrmex is of great interest because it exhibits several unusual biological and evolutionary phenomena. The absence of morphologically normal queens and reproduction primarily by unmated workers in *P. punctatus* (=*P. pungens*) is a highly unusual life history in the Formicidae. It has attracted much attention from those who hope to obtain insight into the nature of reproductive conflict within colonies since, in this species, reproductive division of labor occurs among morphologically identical workers (Itow et al., 1984; Muzutani, 1980, 1982; Peeters, 1993; Tsuji, 1988a,b,c, 1990a,b, 1994, 1995; Tsuji and Itô, 1986). Ergatoid queens, a special wingless female caste morphologically intermediate between the queen and the worker, are present in at least four species: *P. punctatus, P. africanus, P. wheeleri,* and *P. mandibularis*; two of them (*P. africanus* and *P. wheeleri*) possess both queen and ergatoid queen castes. Character displacement, showing that two species possess a greater difference in sympatric than allopatric populations, has also been reported in this genus by Taylor (1965). In addition, simulating death, slowness of movement, and nocturnal foragers are also recorded in *Pristomyrmex* (Donisthorpe, 1946; Taylor, 1965; Weber, 1941). Colony size varies greatly among species, ranging from about a dozen to several thousand workers (Donisthorpe, 1946; Itow et al., 1984; Mann, 1919; Taylor, 1965, 1968).

Although *Pristomyrmex* is biologically promising, the taxonomic foundation of the genus is poor. Much of the literature on *Pristomyrmex* is more than 50 years old and consists of isolated descriptions of species or infraspecific forms. Only a handful of papers present more comprehensive studies of the Australian and African subfaunas, respectively (Bolton, 1981; Taylor, 1965, 1968). The tropical Asian region, however, containing the bulk of the described taxa, has been in taxonomic chaos, for many years obscuring a better understanding of the evolution and radiation of this interesting group.

This survey takes the whole *Pristomyrmex* into consideration. I believe that only after that the entire genus covering all zoogeographical regions is comprehensively investigated can a full set of characters to define the genus be summarized, the species groups correctly erected, and the relationships between species properly analyzed and then the possible origin and the evolution of the genus hypothesized.

I present a detailed description of the taxonomic characters for the worker caste of each species. These characters not only

are useful for the species identity but also provide important information for a further study on the phylogeny within the genus. I also include illustrations and descriptions of males for many species as possible. This was done for three reasons. First, two species (*P. pollux* and *P. reticulatus*) were described, each from a single male specimen, many years ago. Without examining other available males, I would not be able to assign these two species to their appropriate species group, and the discovery of other new species would then be impeded. Second, the males of most ant genera are very poorly characterized and thus cannot be curated properly in museum collections. Finally, I feel that these males contain some clues for the study of the phylogenetic relationships of the genus.

COLLECTIONS

AMNH American Museum of Natural History, New York, N.Y., U.S.A.
ANIC Australian National Insect Collection, Canberra City, Australia
BMHH Bishop Museum, The State Museum of Natural and Cultural History, Honolulu, Hawaii, U.S.A.
BMNH Natural History Museum, London, U.K.
CASC California Academy of Sciences, San Francisco, California, U.S.A.
IZAS Institute of Zoology, Academy of Sinica, Beijing, China
IZUA Institute of Zoology, Ukrainian National Academy of Sciences, Kiev, Ukraine
LACM Natural History Museum of Los Angeles County, Los Angeles, California, U.S.A.
MCSN Museo Civico di Storia Naturale "Giacomo Doria", Genoa, Italy
MCZC Museum of Comparative Zoology, Harvard University, Cambridge, Mass., U.S.A.
MHNG Muséum d'Histoire Naturelle, Geneva, Switzerland
MNHA Museum of Nature and Human Activities, Sanda, Hyogo, Japan
MNHN Muséum National d'Histoire Naturelle, Paris, France
MNHU Museum für Naturkunde der Humboldt-Universität zu Berlin, Berlin, Germany
NACA National Arthropod Collection, Mount Albert Research Center, Auckland, New Zealand
NHMB Naturhistorisches Museum, Basel, Switzerland
NHMV Naturhistorisches Museum, Vienna, Austria
NHPS Naturhistoriska Piksmuseet, Stockholm, Sweden
OXUM Oxford University Museum, Oxford, U.K.
SAMC South African Museum, Cape Town, South Africa
USNM National Museum of Natural History, Washington, D.C., U.S.A.

MEASUREMENTS AND INDICES

Head Width (HW). Maximum width of head, in full-face view, excluding the eyes (Fig. 1).

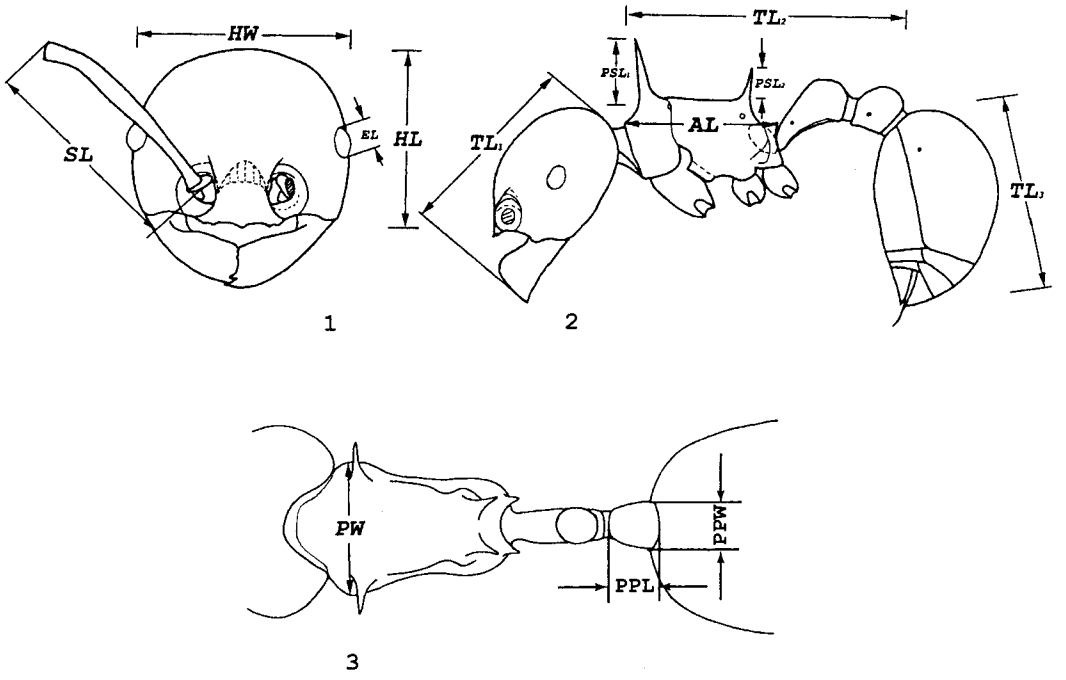
Head Width Including the Eyes (HWE). Maximum width of head across the eyes, in full-face view. This measurement is used only in the male.

Head Length (HL). Length of the head in full-face view, excluding the mandibles (Fig. 1), measured from the midpoint of a straight line across the occipital margin to either the apex of the median tooth (if it is present) of the anterior clypeal margin or the midpoint of a line connecting the apexes of the two lateral teeth (if the median tooth is absent) of the anterior clypeal margin or the midpoint of the anterior clypeal margin (if the anterior margin lacks any teeth).

Cephalic Index (CI). HW/HL × 100.

Scape Length (SL). Length of the antennal scape, including the lamella encircling the base of the scape but excluding the basal condyle (Fig. 1).

Scape Index (SI). SL/HW × 100.



Figures 1–3. Measurements illustrated for this study (worker of *Pristomyrmex longispinus* sp. n.). 1: Head, full-face view; 2: Entire body, lateral view; 3: Dorsal view of alitrunk, petiole, and postpetiole.

Pronotal Width (PW). Maximum width of the pronotum in dorsal view (Fig. 3).

Alitrunk Length (AL). Diagonal length of the alitrunk in lateral view, from the anteriormost point of the pronotum to the apex of the metapleural lobe (Fig. 2).

Eye Length (EL). Maximum length of the eye.

Total Length (TL). TL1 + TL2 + TL3 (see Fig. 2). (Note: The measurements of TL do not deal with those individuals whose gasters are abnormally contracted or prolonged or whose petioles are raised too high or too low.) TL1: A line measured from the apex of the closed mandibles to the midpoint of a straight line across the occipital margin, in full-face view. TL2: A straight line from the anteriormost point of the pronotum to the point at which the posterior margin of postpetiole meets the uppermost point of an articulation. TL3: A line from the anterior-uppermost point of the articulation to the apex of gaster.

Pronotal Spine Length (PSL1). A straight distance from the base to the apex of pronotal spine (see Fig. 2).

Propodeal Spine Length (PSL2). A straight distance from the base to the apex of propodeal spine (see Fig. 2).

Postpetiole Index (PPI). PPW/PPL × 100 (PPW: maximum width of the postpetiole in dorsal vies; PPL: length of the postpetiole in dorsal view).

All measurements are taken in millimeters.

Note: For the Australian species, my measurements differ slightly from Taylor's (1965, 1968). For the maximum measurable width of head, I have excluded the eyes, which were included by Taylor.

A BRIEF HISTORY OF THE GENUS *PRISTOMYRMEX*

The genus *Pristomyrmex,* when erected by Mayr (1866), contained one species, *P. pungens* Mayr (=a junior synonym of *P.*

punctatus (F. Smith)), a member of the present *punctatus* group. At that time, Mayr did not realize that five species described by F. Smith (1858, 1860, 1861, 1863, 1865), that is, *Myrmica fuscipennis, Myrmica punctata, Myrmica trachylissa, Myrmica umbripennis,* and *Solenopsis laevis,* also belonged in the new genus. Mayr (1866) provided a description of the genus, which actually was simply derived from some characters of the species *P. punctatus* (F. Smith). A second member of the *punctatus* group was introduced by Santschi (1916) when he transferred *Tetramorium (Xiphomyrmex) fossulatum* Forel to *Pristomyrmex.*

The content of the genus *Pristomyrmex* expanded for the first time when Mayr (1886) transferred *Myrmica trachylissa* F. Smith to *Pristomyrmex. Pristomyrmex trachylissus* is now a member of the *quadridens* group. After that, many species of the *quadridens* group were discovered (Bolton, 1981; Donisthorpe, 1949c; Emery, 1887, 1895, 1897, 1900; Forel, 1914; Karavaiev, 1931, 1933; Taylor, 1965, 1968), and several more names were added to the group when *Odontomyrmex* André and *Hylidris* Weber were designated by Forel (1915) and Brown (1953) as a subgenus and a synonym of *Pristomyrmex,* respectively. But, Mann (1919) found no evidence supporting the subgenus *Odontomyrmex.*

The members of the third species group (i.e., *umbripennis* group) of *Pristomyrmex* were recognized first by Emery. He described a new species (*Pristomyrmex picteti*) in 1893 and transferred a species (*Myrmica fuscipennis* F. Smith) to *Pristomyrmex* in 1901. Donisthorpe expanded the *umbripennis* group: He transferred *Myrmica umbripennis* F. Smith and *Solenopsis laevis* F. Smith to *Pristomyrmex* and described *Pristomyrmex pollux* and *Pristomyrmex reticulatus* (1932, 1946, 1949a).

When Emery (1897) described *Pristomyrmex coggii, Pristomyrmex levigatus,* and *Pristomyrmex lucidus,* representatives of the present *levigatus* group were added to the genus for the first time. *Pristomyrmex cribrarius,* the sole member of the *cribrarius* group, was described by Arnold (1926). Lastly, Brown (1971) synonymized the genus *Dodous* Donisthorpe, adding species belonging to the present *trispinosus* group to the genus. Thus, the genus *Pristomyrmex* became clearly delimited and assumed its modern form.

GENUS ***PRISTOMYRMEX*** MAYR

Pristomyrmex Mayr, 1866: 903. Type species: *Pristomyrmex pungens* Mayr, op. cit.: 904 [=*Myrmica punctata* F. Smith, 1860: 108; =*Pristomyrmex punctatus* (F. Smith)]; by monotypy.

Odontomyrmex André, 1905: 207. Type species: *Odontomyrmex quadridentatus* André, op. cit.: 208; by monotypy. [As a subgenus, thus synonym, of *Pristomyrmex* by Forel, 1915: 53.]

Hylidris Weber, 1941: 190. Type species: *Hylidris myersi* Weber, loc. cit. (=*Pristomyrmex africanus* Karavaiev); by original designation. [Synonymy by Brown, 1953: 9.]

Dodous Donisthorpe, 1946: 145. Type species: *Dodous trispinosus* Donisthorpe, loc. cit.; by original designation. [Synonymy by Brown, 1971: 3.]

Diagnosis of worker, queen, and ergatoid queen. Combination of the following asterisked four characters (i.e., characters 2, 7, 11, and 29 in the worker caste) separating *Pristomyrmex* from other myrmicine genera.

Definition: Worker. Possessing the following combination of characters:

1. Small (TL 1.74, HL 0.46, HW 0.46) to large-sized (TL 7.06, HL 1.68, HW 1.74) monomorphic myrmicine ants.

*2. Mandible somewhat subtriangular; masticatory margin of mandible with three to five teeth, which have one or the other of the following six basic arrangements:

(1) the strongest apical + the second strongest preapical + the smallest third + the acute basal tooth, diastema lacking, as in *levigatus* group and in *profundus* group, or

(2) the strongest apical + the second strongest preapical + two smaller teeth of similar size, diastema indistinct or lacking, as in *umbripennis* group, or

(3) the strongest apical + the second

strongest preapical + a shorter (first) diastema (sometimes the first diastema is not distinct) + a small denticle + a longer (second) diastema + a small basal denticle, as in both *P. bispinosus* and *P. trispinosus,* or

(4) the apical + the preapical + a longer diastema + a small denticle + a shorter diastema (sometimes the second diastema is indistinct) + a small basal denticle, as in *P. browni,* or

(5) the strongest apical + the second strongest preapical + a distinct diastema + a basal tooth (which is sometimes formed by the fusion of the two small teeth) or two (or three) small teeth of similar size, as in *punctatus* group, *cribrarius* group, and most members of the *quardridens* group, or

(6) the strongest apical + the second strongest preapical + an intercalary tooth + a very short diastema (or this diastema indistinct) + two small teeth of similar size, as shown in *P. trachylissus.*

3. Basal margin of mandible with a broad-based triangular or an acute and prominent tooth, or only curved, not forming tooth, or almost straight.

4. Median part of clypeus shieldlike, projecting posteriorly between the bases of the antennae; lateral parts of clypeus in front of antennal insertions usually reduced to ridges but rarely (in the two Oriental species *P. divisus* and *P. pulcher*) developed so that the antennal fossae do not reach the lateral anterior margins of clypeus.

5. Anterior clypeal margin usually with a median tooth and one to three pairs of lateral denticles (or crenulate shapes) but sometimes the median tooth rudimentary (as in some species of the *levigatus* group) and sometimes anterior clypeal margin lacking any distinct denticles (as in *P. profundus, P. divisus,* and *P. pulcher*).

6. Ventral surface of clypeus with a median tooth or two lateral teeth, or with a transverse ridge, or without any ridge or tooth.

*7. Dorsal labrum with a raised transverse ridge or a few toothlike prominences, present on the anterior portion of labrum in most species.

8. Palp formula 1,2, 1,3, 2,2, 2,3, 4,3, or 5,3.

9. Frontal lobes absent in *punctatus* and *trispinosus* groups or weak, as in *levigatus, profundus,* and *quadridens* groups, or somewhat expanded, as in *umbripennis* group; as a result, the articulations of the antennae are mostly or entirely exposed in full-face view.

10. Frontal carinae usually developed, extending to the level of the posterior margins of eyes, but sometimes frontal carinae absent or very short, as in the *trispinosus* group, in *P. trogor,* and in *P. longispinus.*

*11. Antennae with 11 segments; apical three segments forming a distinct club.

12. Base of each antennal scape encircled by a narrow lamella, except in *P. profundus*; this lamella usually with a broad and deep notch on the center of dorsal surface in the *umbripennis* group but entire in the other species groups.

13. Antennal scrobes usually absent or weakly developed, but in *P. profundus,* the scrobes are deep and well developed.

14. Eyes present in all known species, situated approximately at the midlength of the sides of the head; usually moderate-sized, but small in the several species (*P. boltoni, P. coggii, P. longus, P. eduardi, P. picteti,* and *P. pollux*).

15. Alitrunk usually lacking dorsal sutures, but in the three species of the *trispinosus* group, a promesonotal suture or impression present.

16. Pronotum unarmed, or armed with a pair of tubercles, teeth, or spines of varying sizes.

17. Mesonotum usually unarmed, but with a pair of thick, blunt, and digitlike short prominences in *P. trispinosus,* and sometimes weakly tuberculated in *P. bispinosus* and *P. browni.*

18. Propodeum armed with a pair of teeth or spines, except in *P. inermis*.

19. Metapleural lobes usually subtriangular, or each with a blunt-rounded to semicircular apex, but indistinct in *P. profundus*.

20. Fore tibial spurs pectinate. Middle and hind tibiae sometimes without any spur, sometimes with either simple or hairlike spurs.

21. Propodeal spiracles circular and high-positioned on the lateral surfaces of the propodeum.

22. Metapleural gland bullae large, separated from the propodeal spiracles, and positioned above the posterior lower corners of propodeum.

23. Petiole in profile nodiform or wedge-shaped, pedunculate, usually with a long anterior peduncle.

24. Subpetiole sometimes without a ventral process, sometimes bearing a narrow semitranslucent lamella. In *P. acerosus*, a pinlike process is present.

25. Postpetiole in profile nodiform, usually rounded dorsally.

26. Petiole spiracle, postpetiole spiracle, and first gastral spiracle visible.

27. Dorsal surfaces of head and alitrunk smooth, or possessing either scattered foveolate punctures, or foveolate-reticulate sculpture, or developed rugoreticulum, or regular striate sculpture. Gaster unsculptured.

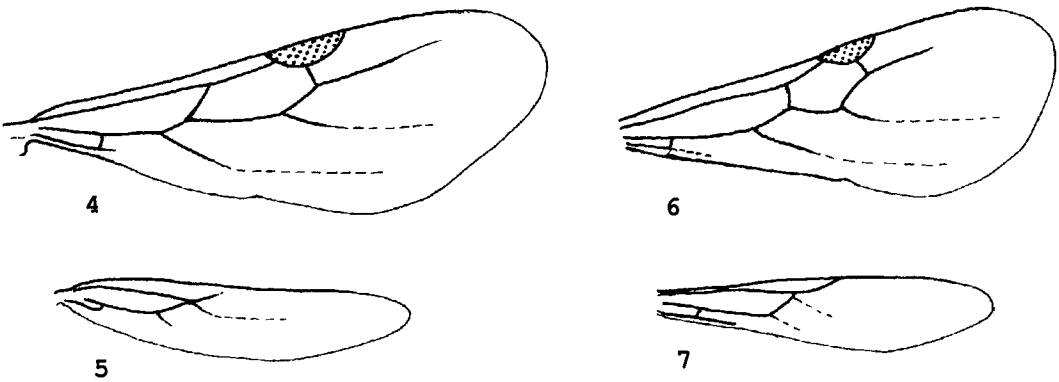
28. Dorsal surfaces of head and alitrunk usually with numerous hairs, but only a few hairs present on the dorsal alitrunk in *P. fossulatus, P. orbiceps,* and *P. trogor.* Petiole and postpetiole each usually with one to three pairs of hairs, but sometimes more pairs of hairs present; sometimes petiole and postpetiole lacking hairs. First gastral tergite usually without hairs or with a few sparse hairs, but sometimes first gastral tergite covered with numerous, evenly distributed, erect or suberect hairs.

*29. Anterior clypeal margin lacking a median seta at the midpoint of the margin, instead usually having two to three pairs of long, forward-projecting hairs flanking the midpoint of margin.

30. Sting slender and long.

Female. Usually alate, but in some species (*P. punctatus, P. mandibularis*), only ergatoid queens have been found. In some species (*P. wheeleri, P. africanus*), both alate and ergatoid queens exist.

Alate Queen. Characters similar to those of worker in the structure and shape of mandible, palp formula, clypeus, frontal lobes, frontal carinae, antennae, metapleural lobes, tibial spurs, petiole node, postpetiole, and sting as well as in the sculpture of body. But larger, with slightly or much larger eyes, than in the conspecific worker; three ocelli present. The alitrunk with wings and flight sclerites; well-marked dorsal sutures present. Pronotal spines usually absent, but in some species, the pronotum is armed with a pair of teeth that are much shorter than in conspecific worker; propodeal teeth or spines usually shorter than those of conspecific worker. Wing venation as shown in Figures 4–5. On the forewings, the marginal cell (see Hölldobler and Wilson, 1990: 9) is always open; *R* + *Sc* thick (for the explanation of symbols used, see Brown and Nutting, 1950); *A* short, far from the anal angle; *A*, *Cu-A*, *Mf*2+3 usually reduced to vestigial lines distally; cross-vein *m-cu* and *r-m* absent; cross-vein *cu-a* usually present but sometimes broken in larger species (such as *P. picteti, P. umbripennis*) and sometimes rudimentary or very weak in some samples of a few smaller species (e.g., *P. orbiceps, P. lucidus*); 1*r* absent; anal lobe usually indistinct in smaller species but present in larger species. Hind wings without anal lobe. (Note: The venation of the both fore and hind wings of alates, in *Pristomyrmex,* is rather stable, with only slight variations within the different species. For example, on the forewings, *Mf*2+3, sometimes becomes an almost entirely vestigial line, but sometimes it is distinct and rather long; *Rsf*4 + *Rsf*5 is rather thick and long in some larger species but thin and short in some smaller species).



Figures 4–7. General forewing and hindwing venation of alate queens and males of *Pristomyrmex*. 4: Forewing of alate queens; 5: Hindwing of alate queens; 6: Forewing of males; 7: Hindwing of males.

[The forewing and hindwing venation of the alate queens of the following 13 *Pristomyrmex* species was examined: *P. brevispinosus, P. collinus, P. orbiceps, P. quadridens, P. quindentatus, P. sulcatus, P. levigatus, P. lucidus, P. obesus, P. fuscipennis, P. picteti, P. pollux,* and *P. umbripennis.* The males of 16 *Pristomyrmex* species were examined: *P. brevispinosus, P. flatus, P. trogor, P. longispinus, P. orbiceps, P. quadridens, P. quadridentatus, P. sulcatus, P. browni, P. trispinosus, P. obesus, P. levigatus, P. picteti, P. pollux, P. umbripennis,* and *P. punctatus.*]

Ergatoid Queen. General characters, including the pronotal prominences and size of body, similar to those of the conspecific worker. Ocellus present (one ocellus in *P. mandibularis* but three ocelli in *P. punctatus, P. wheeleri,* and *P. africanus*); apterous, but mesonotum more convex than in conspecific worker; pro-mesonotal suture present in *P. mandibularis* but represented by an impression in *P. punctatus, P. wheeleri,* and *P. africanus.*

Male. Possessing the following combination of characters (summarized according to 54 specimens falling into at least 17 species):

1. Small to moderate size (TL 2.40–6.04, HL 0.48–0.94, HW 0.51–0.98, HWE 0.62–1.10), usually smaller than the conspecific queen.

2. Head, in full-face view, across and including the eyes, usually broader than long (Figs. 261–269).

3. Mandibles vestigial, very small, rounded or toothlike, far from meeting, as indicated by an arrow in Figure 262.

4. Anterior margin of labrum broadly concave at center; dorsum of labrum without any transverse ridge or toothlike prominences (see Figs. 262, 264, 269).

5. Eyes very large, well developed, and convex, situated at the sides of head.

6. Antennae filiform, 12 segments, lacking a lamella encircling the base. Scapes short, usually distinct shorter than the maximum length of eye; of the other 11 funicular segments, the first segment shortest, the apical segment longest, the remaining nine segments much longer than their broad.

7. Three ocelli conspicuous and well developed, situated on the vertex of the head.

8. Antennal sockets set back from the posterior margin of the clypeus.

9. Antennal scrobes absent.

10. Frontal carinae absent or very short and weak.

11. Frontal lobes absent so that the articulations of the antennae are completely exposed in full-face view.

12. Palp formula as in the conspecific worker in seven species examined (i.e., *P. punctatus, P. quadridens, P. curvulus, P. brevispinosus, P. sulcatus, P. picteti,* and *P. pollux*).

13. Clypeus convex in the middle, not projecting posteriorly upward between the bases of antennae; its shape transverse, or

somewhat semicircular; its anterior margin entire, without any denticles, usually rather straight but sometimes arched.

14. Cheeks very short.

15. Alitrunk robust, with wings, well-developed flight sclerites, and well-marked sutures.

16. Pronotum narrow in middle, overhung by mesoscutum in lateral view, lacking any armaments.

17. Mesonotum well developed, consisting of a large mesoscutum, a rather large mesoscutellum, and two small axillae. Notauli usually distinct, forming a Y shape, but sometimes they show a V shape, and sometimes they are absent or very weak. Parapsidal furrows usually absent, but sometimes they are superficially impressed.

18. Metanotum transverse, narrow, overhung by mesoscutellum.

19. Propodeum showing a sloping dorsal surface; propodeal armaments absent or present; if present, they are usually shorter than in the conspecific worker.

20. Metapleural lobes present, subtriangular, or toothlike, or blunt-rounded to semicircular.

21. Venation (Figs. 6–7) as in alate queen.

22. Legs slender; fore tibial spurs pectinate; middle and hind tibiae usually lacking any spurs but sometimes simple spurs are present.

23. Petiole with a long or a rather long anterior peduncle. In dorsal view, sides of petiole subparallel. Petiole node low, lower than in the conspecific worker and queen; subpetiole lacking any lamella or toothlike projection.

24. Postpetiole node rather low, lower than in the conspecific worker and queen. In profile, subpostpetiole usually lacking any projections, but sometimes bearing a small tooth.

25. Positions of spiracles on propodeum, petiole, postpetiole, and first gastral segment similar to those in the conspecific worker and queen.

26. Usually much less sculptured than conspecific worker and queen.

27. Numerous hairs present on the entire dorsal surfaces of body.

(Note: The genitalia of males is not dissected.)

The male of *Pristomyrmex* can be distinguished within the tribe Myrmecinini by the following characters:

Pristomyrmex
Antennae: 12 segments
Mandibles: Very small, toothlike, not meeting
Petiole: With a long anterior peduncle
Forewing: Without *m-cu* cross-vein; marginal cell open

Acanthomyrmex
Antennae: 13 segments
Mandibles: Subtriangular, with six to eight teeth, meeting when they are closed
Petiole: Similar to that of *Pristomyrmex*
Forewing: ?With *m-cu* cross-vein; marginal cell closed

Myrmecina
Antennae: 13 segments
Mandibles: Similar to those of *Pristomyrmex*
Petiole: Without an anterior peduncle
Forewing: Without *m-cu* cross-vein; marginal cell closed

Perissomyrmex
Antennae: ?10 segments
Mandibles: Unknown
Petiole: Unknown
Forewing: Unknown

Larva. According to Wheeler and Wheeler's (1954, 1960, 1973, 1976) studies, the larva of *Pristomyrmex* has the following combination of characters:

1. Stout and rather short.

2. Head extremely long and narrow.

3. Thorax more slender than abdomen and forming a neck, which is curved ventrally. Diameter greatest near middle of abdomen, decreasing gradually toward head; posterior end rounded.

4. Body without tubercles.

5. Mandibles subtriangular, without medial blade; apical tooth curved medially and usually acute; subapical medial tooth small.

6. Body hairs numerous, with five or six types, including anchor-tipped hairs. Head hair few, short to moderately long.

7. Gula spinulose.

8. Anterior surface of labium densely spinulose.

9. Palps lateral.

Pupa. Not enclosed in cocoons (Wheeler and Wheeler, 1976).

LIST OF *PRISTROMYRMEX* NAMES WITH SYNONYMIES

(Currently valid names are in boldface)

acerosus: **sp. n.**

africanus: ***Pristomyrmex africanus*** Karavaiev

=*beni*

=*mbomu*

=*myersi*

=*primus*

aruensis: *Pristomyrmex quadridens* var. *aruensis* Karavaiev

=***quadridens***

beni: *Hylidris myersi* subsp. *beni* Weber

=***africanus***

bicolor: **stat. n.**: *Pristomyrmex trachylissa* var. *bicolor* Emery

=*taurus* **syn. n.**

bispinosus: *Dodous bispinosus* Donisthorpe

boltoni: **sp. n.**

brevispinosus: ***Pristomyrmex brevispinosus*** Emery

=*yaeyamensis* **syn. n.**

browni: **sp. n.**

castaneicolor: *Pristomyrmex castaneicolor* Donisthorpe

=***umbripennis***

castor: *Pristomyrmex castor* Donisthorpe

=***umbripennis***

coggii: ***Pristomyrmex coggii*** Emery

collinus: **sp. n.**

costatus: **sp. n.**

cribrarius: ***Pristomyrmex cribrarius*** Arnold

curvulus: **sp. n.**

divisus: **sp. n.**

eduardi: ***Pristomyrmex eduardi*** Forel

erythropygus: ***Pristomyrmex erythropygus*** Taylor

flatus: **sp. n.**

formosae: *Pristomyrmex brevispinosus* r. *sulcatus* var. *formosae* Forel, 1912: 54.

unavailable name

fossulatus: *Tetramorium* (*Xiphomyrmex*) *fossulatum* Forel

foveolatus: ***Pristomyrmex foveolatus*** Taylor

fuscipennis: *Myrmica fuscipennis* F. Smith

hirsutus: **sp. n.**

inermis: **sp. n.**

japonicus: *Pristomyrmex japonicus* Forel

=***punctatus***

laevigatus: *Hylidris laevigatus* Weber

=***orbiceps***

laevis: *Solenopsis laevis* F. Smith

=***umbripennis***

largus: **sp. n.**

levigatus: ***Pristomyrmex levigatus*** Emery

=*mendanai* **syn. n.**

longispinus: **sp. n.**

longus: **sp. n.**

lucidus: ***Pristomyrmex lucidus*** Emery

mandibularis: ***Pristomyrmex mandibularis*** Mann

mbomu: *Hylidris myersi* subsp. *mbomu* Weber

=***africanus***

melanoticus: *Pristomyrmex obesus* subsp. *melanoticus* Mann

=***obesus***

mendanai: *Pristomyrmex mendanai* Mann

=***levigatus***

minusculus: **sp. n.**

modestus: **sp. n.**

myersi: *Hylidris myersi* Weber

=***africanus***

nitidissimus: ***Pristomyrmex nitidissimus*** Donisthorpe

obesus: ***Pristomyrmex obesus*** Mann

=*melanoticus* **syn. n.**

=*pegasus* **syn. n.**
occultus: **sp. n.**
orbiceps: *Xiphomyrmex orbiceps* Santschi
=*laevigatus*
orbiculatus: *Pristomyrmex orbiculatus* Donisthorpe
=***quadridens***
parumpunctatus: *Pristomyrmex parumpunctatus* Emery
=***umbripennis***
parvispina: *Pristomyrmex parvispina* Emery, 1900: 678. **Nomen nudum**
pegasus: *Pristomyrmex pegasus* Mann
=***obesus***
picteti: ***Pristomyrmex picteti*** Emery
=*tingiana* **syn. n.**
pollux: ***Pristomyrmex pollux*** Donisthorpe
primus: *Hylidris myersi* subsp. *primus* Weber
=***africanus***
profundus: **sp. n.**
pulcher: **sp. n.**
punctatus: *Myrmica punctata* F. Smith
=*japonicus*
=*pungens* **syn. n.**
pungens: *Pristomyrmex pungens* Mayr
=***punctatus***
quadridens: ***Pristomyrmex quadridens*** Emery
=*aruensis* **syn. n.**
=*orbiculatus* **syn. n.**
quadridentatus: *Odontomyrmex quadridentatus* André
=*queenslandensis*
queenslandensis: *Pristomyrmex* (*Odontomyrmex*) *quadridentatus* var. *queenslandensis* Forel
=***quadridentatus***
quindentatus: **sp. n.**
reticulatus: ***Pristomyrmex reticulatus*** Donisthorpe
rigidus: **sp. n.**
simplex: **sp. n.**
sulcatus: **stat. n.**: *Pristomyrmex brevispinosus* subsp. *sulcatus* Emery
taurus: *Pristomyrmex taurus* Stitz
=***bicolor***
thoracicus: ***Pristomyrmex thoracicus*** Taylor
tingiana: *Pristomyrmex picteti* var. *tingiana* Stitz
=***picteti***
trachylissus: *Myrmica trachylissa* F. Smith
trispinosus: *Dodous trispinosus* Donisthorpe
trogor: ***Pristomyrmex trogor*** Bolton
umbripennis: *Myrmica umbripennis* F. Smith
=*castaneicolor* **syn. n.**
=*castor* **syn. n.**
=*laevis* **syn. n.**
=*parumpunctatus* **syn. n.**
wheeleri: ***Pristomyrmex wheeleri*** Taylor
wilsoni: ***Pristomyrmex wilsoni*** Taylor
yaeyamensis: *Pristomyrmex yaeyamensis* Yamane and Terayama
=***brevispinosus***

KEY TO THE WORLD SPECIES OF *PRISTOMYRMEX* (WORKERS)

Note: ***P. fuscipennis*** and ***P. reticulatus***, whose worker castes are presently unknown, are not included in the key.

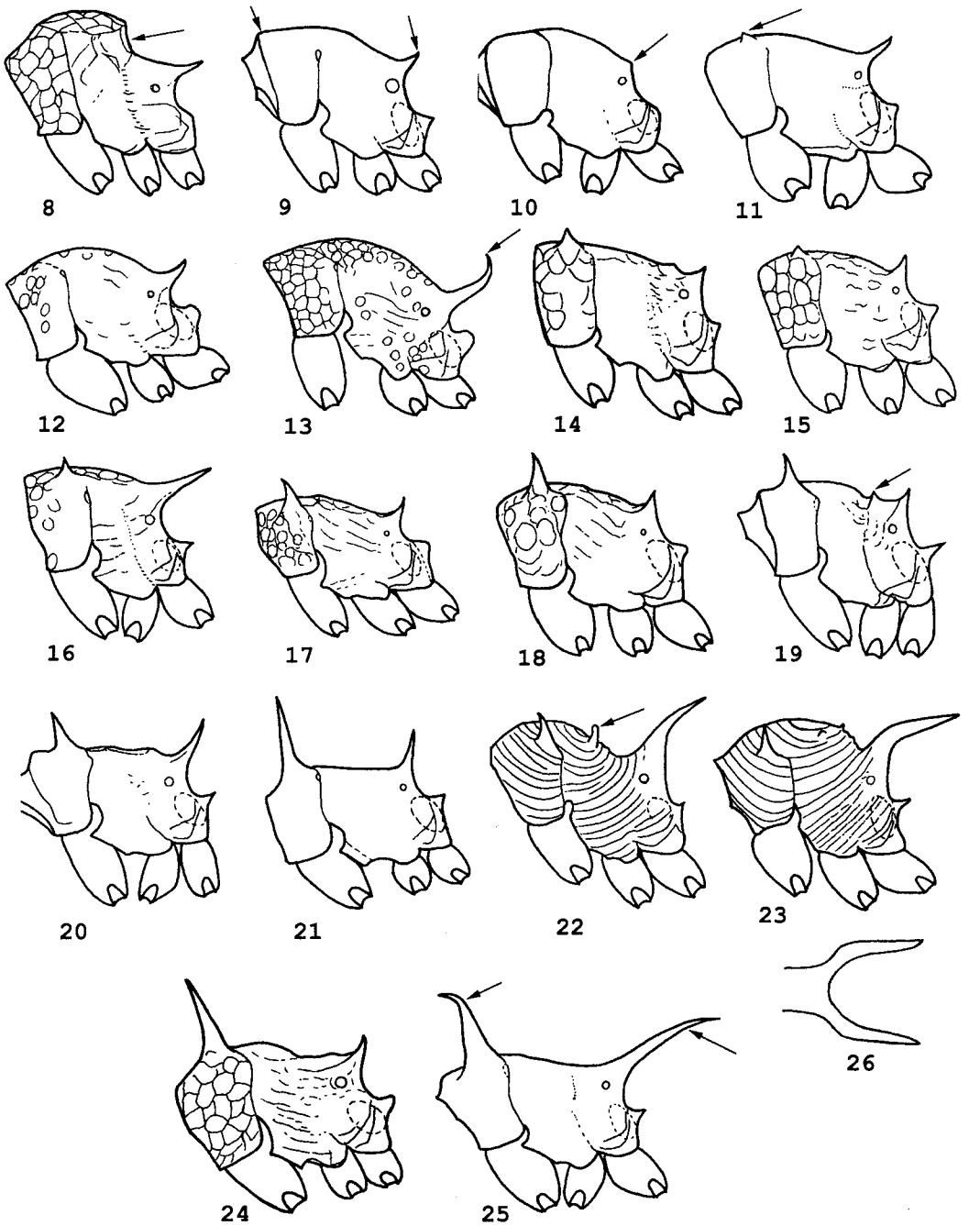
1. Dorsum of alitrunk in profile not arched, with mesonotum much higher than propodeal dorsum, that is, a vertical cliff present between mesonotum and propodeal dorsum (Fig. 8). Antennal scrobes well developed and deep. Basal margin of mandible with a strong tooth adjacent to the basal tooth of masticatory margin so that five teeth are set close together (Fig. 27). Base of antennal scape without a circling lamella (Fig. 80) (*profundus* group; Asia: Sabah) ..... ***profundus*** (p. 515)

Dorsum of alitrunk in profile, excluding armaments, more or less arched-shaped, never showing a vertical cliff between mesonotum and propodeal dorsum (Figs. 9–25). Antennal scrobes absent or shallow. Tooth on basal margin of mandible either absent or present; if present, it is on about midway, not adjacent to the basal tooth of masticatory margin (Figs. 28, 29, 35). Base of antennal scape with a circling lamella (Figs. 81, 82) 2

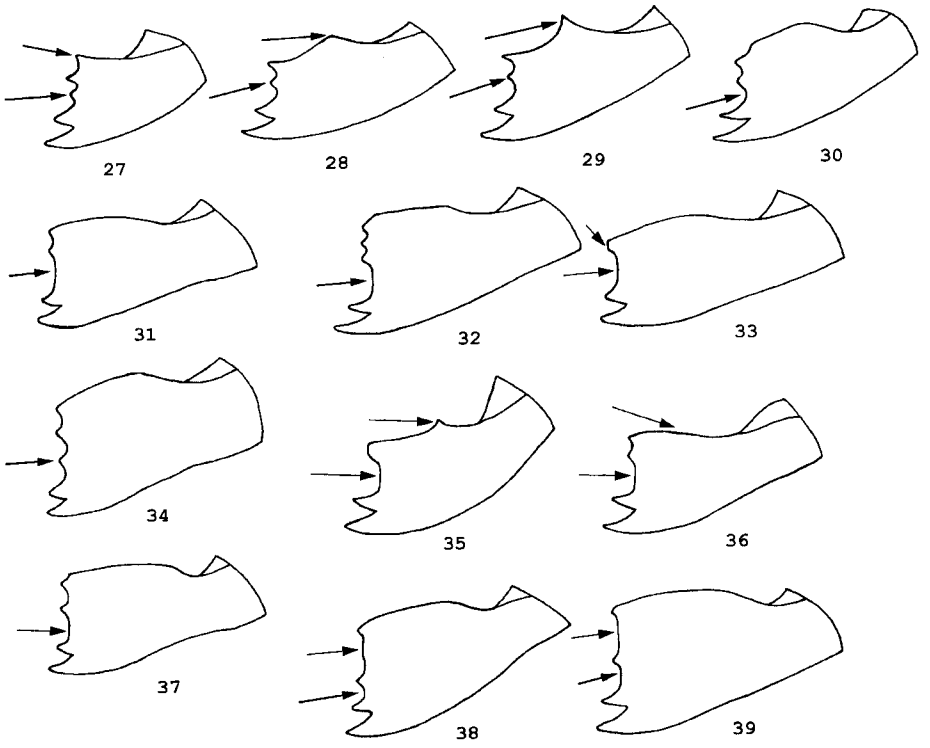
TABLE 1. A LIST OF *PRISTOMYRMEX* SPECIES AND THEIR BIOGEOGRAPHIC DISTRIBUTION.

Species Group	Species Name	ORI	PAL	AUS	AFR	IOI
punctatus group	*P. divisus* sp. n.	+				
	P. fossulatus (Forel)				+	
	P. pulcher sp. n.	+				
	**P. punctatus* (F. Smith)	+	+			
	P. rigidus sp. n.	+				
cribrarius group	*P. cribrarius* Arnold				+	
quadridens group	*P. africanus* Karavaiev				+	
	P. bicolor Emery	+				
	P. brevispinosus Emery	+				
	P. collinus sp. n.	+				
	P. costatus sp. n.	+				
	P. curvulus sp. n.	+				
	P. eduardi Forel	+				
	P. erythropygus Taylor			+		
	P. flatus sp. n.	+				
	P. foveolatus Taylor			+		
	P. hirsutus sp. n.	+				
	P. longispinus sp. n.	+				
	P. modestus sp. n.	+				
	P. nitidissimus Donisthorpe	+				
	P. occultus sp. n.	+				
	P. orbiceps (Santschi)				+	
	P. quadridens Emery	+				
	P. quadridentatus (André)			+		
	P. quindentatus sp. n.	+				
	P. sulcatus Emery	+				
	P. thoracicus Taylor			+		
	P. trachylissus (F. Smith)	+				
	P. trogor Bolton				+	
	P. wheeleri Taylor			+		
	P. wilsoni Taylor			+		
trispinosus group	*P. bispinosus* (Donisthorpe)					+
	P. browni sp. n.					+
	P. trispinosus (Donisthorpe)					+
levigatus group	*P. acerosus* sp. n.	+				
	P. boltoni sp. n.	+				
	P. coggii Emery	+				
	P. inermis sp. n.	+				
	P. largus sp. n.	+				
	P. levigatus Emery	+				
	P. longus sp. n.	+				
	P. lucidus Emery	+				
	P. mandibularis Mann	+				
	**P. minusculus* sp. n.	+		+		
	P. obesus Mann	+				
	P. simplex sp. n.	+				
profundus group	*P. profundus* sp. n.	+				
umbripennis group	*P. fuscipennis* (F. Smith)	+				
	P. picteti Emery	+				
	P. pollux Donisthorpe	+				
	P. reticulatus Donisthorpe	+				
	P. umbripennis (F. Smith)	+				
Total number of species		38	1	7	5	3
Total number of the endemic species		36		6	5	3

Notes: ORI, PAL, AUS, AFR, and IOI are abbreviated, respectively, from the Oriental region, the Palaearctic region, Australia, Africa, and Indian Ocean Islands. AFR refers to the African continent only. *Pristomyrmex* has not been recorded from Madagascar. "*" symbol indicates that *P. punctatus* and *P. minusculus* occur in the two regions, respectively.



Figures 8–25. Alitrunks of *Pristomyrmex* workers, lateral view. 8: *P. profundus* **sp. n.**; 9: *P. levigatus* Emery; 10: *P. inermis* **sp. n.**; 11: *P. minusculus* **sp. n.**; 12: *P. picteti* Emery; 13: *P. pollux* Donisthorpe; 14: *P. brevispinosus* Emery (non-type); 15: *P. brevispinosus* Emery (syntype); 16: *P. foveolatus* Taylor; 17: *P. sulcatus* Emery (syntype); 18: *P. sulcatus* Emery (non-type); 19: *P. quadridentatus* (André); 20: *P. wheeleri* Taylor; 21: *P. longispinus* **sp. n.**; 22: *P. trispinosus* (Donisthorpe); 23: *P. browni* **sp. n.**; 24: *P. bicolor* Emery; 25: *P. wilsoni* Taylor. Figure 26. Propodeal spines of the worker of *Pristomyrmex browni* **sp. n.**, dorsal view.



Figures 27–39. Mandibles of *Pristomyrmex* workers. 27: *P. profundus* **sp. n.**; 28: *P. levigatus* Emery; 29: *P. mandibularis* Mann; 30: *P. picteti* Emery; 31: *P. quadridens* Emery; 32: *P. quindentatus* **sp. n.**; 33: *P. quadridentatus* (André); 34: *P. trachylissus* (F. Smith); 35: *P. rigidus* **sp. n.**; 36: *P. punctatus* (F. Smith); 37: *P. browni* **sp. n.**; 38: *P. trispinosus* (Donisthorpe); 39: *P. bispinosus* (Donisthorpe).

2. Masticatory margin of mandible with four teeth; the third tooth, counting from the apex, smallest, distinctly smaller than the basal one; diastema absent between the preapical and the third tooth (Figs. 28–29) (*levigatus* group; Asia, Australia) 3

Masticatory margin of mandible with three to five teeth; if four teeth present, then the third tooth, counting from the apex, similar in size to the basal one; diastema either present or indistinct between the preapical and the third tooth (Figs. 30–39) ... 14

3. Propodeum unarmed (Fig. 10). Petiole node in profile wedge-shaped (Fig. 45) (Asia: Papua New Guinea) ..... ***inermis*** (p. 496)

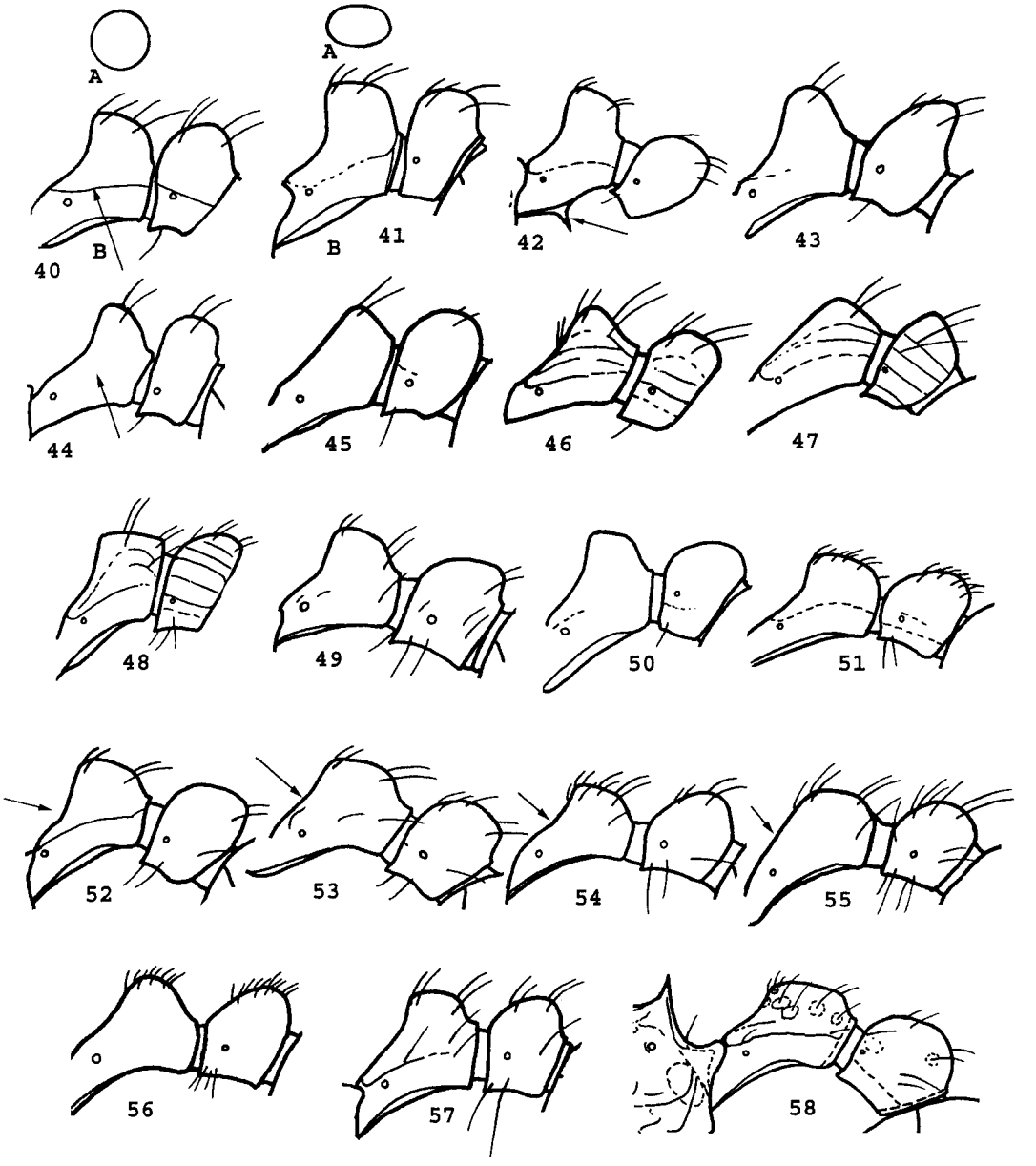
Propodeum armed with a pair of teeth or spines (Figs. 9, 11). Petiole node in profile nodiform, not wedge-shaped (Figs. 40–44) 4

4. Pronotum armed with a pair of teeth (Fig. 11) (Asia and Pacific Is.: Papua New Guinea; Indonesia; Pohnpei Is.; Palau Is.; Yap I.; Tonga Is.; Wallis Is.; found rarely in N. Queensland, Australia) ..... ***minusculus*** (p. 507)

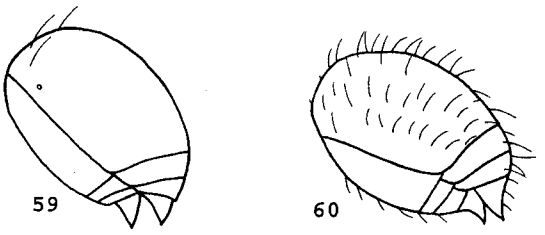
Pronotum unarmed (Fig. 9) 5

5. Postpetiole in profile with an arched anterior face and a steeply sloping posterior face and the apex of postpetiole pointing posterior-upwardly (Fig. 43); in dorsal view, postpetiole usually longer than broad, very rarely about as long as broad. Petiole node with a single evenly blunt-rounded apex (Fig. 43). Head broader; HW mostly >1.00 (Asia: Papua New Guinea) ..... ***lucidus*** (p. 503)

Postpetiole in profile with a somewhat evenly convex dorsum, lacking an abruptly steep posterior face (Figs. 40–42, 44) and in dorsal view broader than long. Petiole node in profile with a distinct anterodorsal angle (Figs. 40–42, 44). Head narrower; HW <1.00 6



Figures 40–58. Petiole nodes and postpetioles of *Pristomyrmex* workers. 40A: Dorsal surface of the petiole node of *P. obesus* Mann, dorsal view; 41A: Dorsal surface of the petiole node of *P. longus* **sp. n.**, dorsal view; 40B, 41B, 42–58: Petiole nodes and postpetioles, lateral view: 40B: *P. obesus* Mann; 41B: *P. longus* **sp. n.**; 42: *P. acerosus* **sp. n.**; 43: *P. lucidus* Emery; 44: *P. mandibularis* Mann; 45: *P. inermis* **sp. n.**; 46: *P. punctatus* (F. Smith); 47: *P. rigidus* **sp. n.**; 48: *P. cribrarius* Arnold; 49: *P. quadridens* Emery; 50: *P. africanus* Karavaiev; 51: *P. nitidissimus* Donisthorpe; 52: *P. collinus* **sp. n.**; 53: *P. flatus* **sp. n.**; 54: *P. curvulus* **sp. n.**; 55: *P. longispinus* **sp. n.**; 56: *P. hirsutus* **sp. n.**; 57: *P. sulcatus* Emery; 58: *P. modestus* **sp. n.**



Figures 59–60. Gasters of *Pristomyrmex* workers, lateral view. 59: Gaster of *P. simplex* **sp. n.**; 60: Gaster of *P. obesus* Mann.

6. Dorsum of petiole node laterally compressed and in dorsal view distinctly longer than broad (Fig. 41A) (Asia: New Guinea) ..... ***longus*** (p. 502)
Dorsum of petiole node not laterally compressed and in dorsal view about as broad as or broader than long, not longer than broad (Fig. 40A) 7

7. Dorsum of alitrunk unsculptured, smooth and shining. Dorsum of head between frontal carinae usually smooth and shining (Fig. 61), except for a few punctures bordering frontal carinae 8
Dorsum of alitrunk with some scattered foveolate punctures. Dorsum of head between frontal carinae with scattered foveolate punctures or foveolate-reticulate sculpture (Figs. 62–64) 12

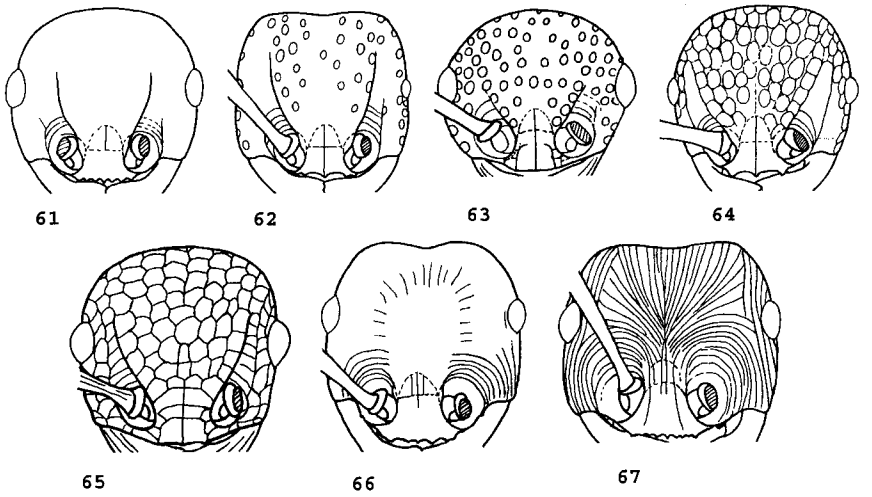
8. Eyes smaller, with two to three ommatidia in the longest row (Asia: New Guinea) ..... ***boltoni*** (p. 492)
Eyes larger, usually with five to seven ommatidia in the longest row 9

9. Larger species, with HW 0.90–0.96 and HL 0.90–0.90 (Pacific Is.: Pohnpei I.) ..... ***largus*** (p. 497)
Smaller species; HW < 0.80, HL < 0.80 10

10. Ventral surface of petiole with a long pinlike process (Fig. 42) (Pacific Is.: New Hebrides) ..... ***acerosus*** (p. 491)
Ventral surface of petiole without a long pinlike process (Figs. 40, 41, 44) 11

11. Each side of petiole with a longitudinal carina that separates the tergite from the sternite (Fig. 40). Basal margin of mandible with a short, broad tooth (Fig. 28) (Asia and Pacific Is.: Papua New Guinea, Solomon Is., Nama Is., New Britain Is.) ..... ***levigatus*** (p. 499)
Sides of petiole unsculptured and smooth, lacking a longitudinal carina (Fig. 44). Basal margin of mandible with a prominent tooth (Fig. 29) (Pacific Is.: Fiji) ..... ***mandibularis*** (p. 505)

12(7). Entire first gastral tergite evenly clothed with numerous erect or suberect hairs (Fig. 60) (Pacific Is.: Solomon Is.) ..... ***obesus*** (p. 509)
Only a few hairs present usually near the



Figures 61–67. Characters on the sculpture of the dorsal heads of *Pristomyrmex* workers, full-face view, excluding a portion of the mandibles. 61: Smooth head; 62–63: Scattered foveolate punctures; 64: Foveolate-reticulate sculpture; 65: Rugoreticulum; 66: Regular striations around the antennal fossae and on the genae; 67: Regular striations on the entire dorsum of the head.

base of the first gastral tergite (Fig. 59) 13

13. Dorsum of head, except for the scrobes, with foveolate-reticulate sculpture; punctures often aligned so that it seems that several longitudinal rugae appear between frontal carinae. Eyes smaller, EL = 0.06–0.08, with three to four ommatidia in the longest row (Asia: Papua New Guinea) ..... ***coggii*** (p. 493)

Dorsum of head between frontal carinae with some scattered foveolate punctures; space between foveolae smooth. Eyes larger, EL = 0.09–0.12, usually containing five (rarely four) ommatidia in the longest row (Asia: Papua New Guinea) ..... ***simplex*** (p. 512)

14(2). Masticatory margin of mandible with four teeth, lacking a distinct diastema (Fig. 30). Lamella, circling the base of antennal scape, with a broad and deep notch on the center of the dorsal surface (Fig. 82). Petiole node in profile longer than high (*umbripennis* group; Asia) 15

Masticatory margin of mandible with three to five teeth; usually with a distinct diastema (Figs. 31–33, 35–39); if (very rarely) diastema indistinct, masticatory margin with five teeth (Fig. 34). Lamella, circling the base of antennal scape, entire, without a notch on the center of the dorsal surface (Fig. 81). Petiole node in profile usually higher than long 17

15. Eyes larger, usually consisting of 20 or more ommatidia, containing six to seven ommatidia in the longest row. Propodeum with a pair of toothlike armaments that are shorter than the distance between their bases. About one-third of antennal scape usually laterally compressed near the base (Asia: Papua New Guinea, Indonesia) ..... ***umbripennis*** (p. 525)

Eyes smaller, generally consisting of less than 10 ommatidia, with three to four ommatidia in the longest row. Propodeum with a pair of spines that are longer than the distance between their bases. Antennal scape not laterally compressed near the base 16

16. Propodeal spines longer and strongly upcurved at their apices (Fig. 13). Larger species with HL 1.42–1.54, HW 1.42–1.58 (Asia: W. Malaysia, N. Borneo) ..... ***pollux*** (p. 521)

Propodeal spines shorter and not strongly upcurved at their apices (Fig. 12). Smaller species with HL 1.04–1.36, HW 1.02–1.40 (Asia: Papua New Guinea, Indonesia, Singapore, Malaya, Sabah, Brunei, Philippines) ..... ***picteti*** (p. 518)

17(14). Pronotum unarmed. Eyes larger, usually containing seven or more (very rarely six) ommatidia in the longest row. Dorsal surfaces of head and alitrunk with well developed rugoreticulum or many foveolate punctures (*punctatus* group; Asia, Africa) 18

Pronotum usually with a pair of teeth or spines; if (very rarely) pronotal teeth or spines absent, then either eyes smaller, with two to five ommatidia in the longest row, or dorsal surfaces of alitrunk and head between frontal carinae unsculptured and smooth ... 22

18. Dorsum of alitrunk with well developed coarse reticulum. Propodeum armed with a pair of long spines. Antennal scapes longer, usually >0.78; one-sixth to one-fifth of the length of the scapes projecting beyond the occipital margin. Palp formula 5,3 19

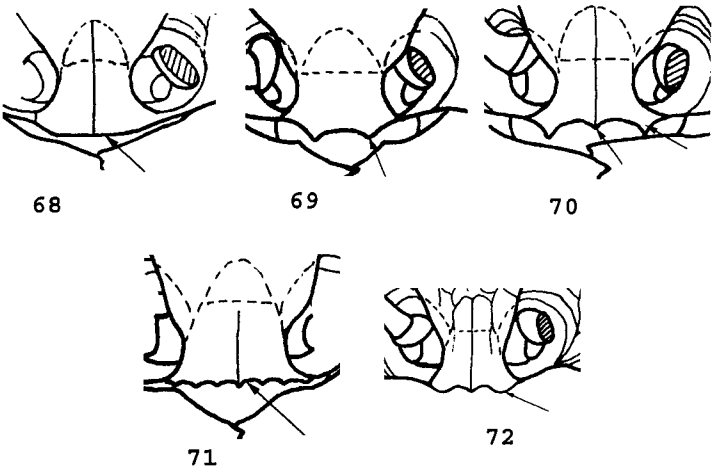
Dorsum of alitrunk with scattered foveolate punctures. Propodeum armed with a pair of short spines. Antennal scapes shorter, with the length 0.54–0.60, only close to the occipital margin. Palp formula 4,3 (South Africa) ..... ***fossulatus*** (p. 406)

19. Lateral portions of clypeus, in front of antennal fossae, developed and not reduced to narrow margins (Figs. 73, 74). Anterior clypeal margin lacking distinct denticles (Figs. 65, 68). Median portion of clypeus not flat 20

Lateral portions of clypeus reduced to a narrow margin in front of the antennal fossae (Fig. 75). Anterior clypeal margin with five to seven denticles. Median portion of clypeus more or less flat 21

20. Dorsum of head with scattered foveolate punctures; spaces between foveolae smooth (Fig. 63). Frontal carinae short, not extending to the level of the posterior margins of eyes in full-face view. Alitrunk in dorsal view with a deep longitudinal furrow at middle (Asia: Philippines) ..... ***divisus*** (p. 404)

Dorsum of head entirely sculptured with coarse reticulum (Fig. 65). Frontal carinae long, extending to the level of the posterior margins of eyes in



Figures 68–72. Characters on the anterior clypeal margins of *Pristomyrmex* workers. 68: Anterior clypeal margin entire; 69: Anterior clypeal margin with two teeth; 70: Anterior clypeal margin with three teeth; 71: Anterior clypeal margin with seven teeth; 72: Anterior clypeal margin with three prominences.

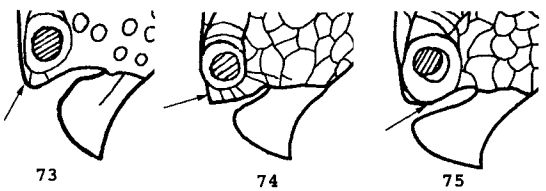
full-face view. Alitrunk in dorsal view lacking a deep longitudinal furrow at the midline (Asia: Malaya) ... ***pulcher*** (p. 408)

21(19). Two or more pairs of erect hairs present on the dorsum of petiole node (Fig. 46). Basal margin of mandible almost straight, without a distinct tooth (Fig. 31). Ventral surface of clypeus lacking toothlike prominences. Dorsal alitrunk more or less depressed, with marginate sides. Sculpture of the sides of pedicel segments lighter and finer (widespread in the east and south of Asia; occasionally intercepted at entry ports in North America) ... ***punctatus*** (p. 410)

A pair of hairs present on the dorsum of petiole node (Fig. 47). Basal margin of mandible with an acute or broad-based triangular tooth (Fig. 35). Ventral surface of clypeus usually with two minute toothlike prominences. Dorsal alitrunk convex, not depressed. Sculpture of the sides of pedicel segments more coarse (Asia: Thailand, Malaya, Sarawak, Sabah, Brunei, Sumatra) ... ***rigidus*** (p. 415)

22(17). Promesonotal suture present. Propodeal spines developed and long, in dorsal view joining together at base and forming a "fork" (Fig. 26). Alitrunk in profile with a convex promesonotum and a deeply concave propodeal dorsum (Figs. 22, 23). Dorsum of head, at least on the genae and around the antennal sockets, with regular striate sculpture, lacking foveolate punctures or rugoreticulum (Figs. 66, 67) (*trispinosus* group; Indian Ocean Islands) ... 23

Promesonotal suture absent. Propodeal armaments in dorsal view usually well separated at the base and not resembling a fork. In rare case, where the propodeal spines are set close together at the base, the dorsum of alitrunk, in profile, lacks a deeply concave propodeum (Fig. 25). Dorsum of head smooth or sculptured with foveolate punctures or with rugoreticulum, but never showing regular striate sculpture ... 25



Figures 73–75. Lateral portions of the clypei of *Pristomyrmex* workers in front of antennal fossae. 73: *P. divisus* **sp. n.**; 74: *P. pulcher* **sp. n.**; 75: *P. punctatus* (F. Smith).

23. Propodeal spines in dorsal view divergent, in profile almost straight. Larger species with HW > 1.00, HL > 1.10, SL > 1.30 ... 24

Propodeal spines in dorsal view subpar-

allel (Fig. 26), in profile view bent at about a right angle near the base (Fig. 23). Smaller species with HW 0.82–0.90, HL 0.88–1.01, SL 0.80–0.97 (Indian Ocean Is.: Mauritius, Reunion I.) ..... ***browni*** (p. 485)

24. Dorsum of head and alitrunk entirely covered with regular long coarse striations (Fig. 67). Mesonotum with a pair of strong, blunt digitlike prominences (Fig. 22) (Indian Ocean Is.: Mauritius) ..... ***trispinosus*** (p. 488)

Dorsum of head smooth and shining, with rugae only present around the antennal fossae, on the genae and sometimes around the centrical disc of dorsal head (Fig. 66). Dorsum of alitrunk smooth and shining. Mesonotum lacking well-developed digitlike prominences (Indian Ocean Is.: Mauritius) ..... ***bispinosus*** (p. 484)

25(22). Sides of postpetiole with several coarse longitudinal rugae (Fig. 48). In profile view, the posterodorsal and posteroventral corners of the petiole node right-angled. Palp formula 4,3 (*cribrarius* group; Africa: Mozambique, South Africa) ..... ***cribrarius*** (p. 418)

Sides of postpetiole unsculptured or at most with a single longitudinal ruga (Figs. 49–58). In profile view, the posterodorsal and posteroventral corners of the petiole node not right-angled. Palp formula 1,3 or 2,2 or 2,3 (*quadridens* group; Asia, Australia, Africa) 26

26. Mandibular dentition arranged as an apical tooth + a preapical + a diastema + three small denticles of similar size (Fig. 32). Sometimes, the three small denticles are fused together so that they are not clearly visible, but the length of the masticatory margin covered by the three small denticles is slightly longer than that of diastema. Pronotum either unarmed or armed with a pair of short triangular spines that are shorter than the propodeal spines 27

Mandibular dentition arranged as an apical + a preapical + a diastema + one or two denticles, and the length of the masticatory margin covered by the one or two denticles is distinctly shorter than that of diastema (Figs. 31, 33, 35). If (very rarely) mandibular dentition not as described previously but arranged as an apical + a preapical + a small denticle + a very short diastema (or diastema indistinct) + two small denticles (Fig. 34), then the pronotum is armed with a pair of long robust spines that are much longer than propodeal spines (Fig. 24) 29

27. Pronotum unarmed. Eyes smaller, with three ommatidia in the longest row (Asia: Sumatra) ..... ***eduardi*** (p. 440)

Pronotum armed with a pair of short triangular spines. Eyes larger, usually with five to six (rarely with four) ommatidia in the longest row 28

28. Dorsal surfaces of head and alitrunk only with scattered shallow foveolate punctures; dorsum of alitrunk with a smooth and unsculptured median longitudinal strip (Asia: Indonesia) ..... ***quindentatus*** (p. 467)

Dorsal surfaces of head, except for scrobal areas, and alitrunk entirely covered with well developed coarse rugoreticum (Asia: Sarawak, Sabah) ..... ***occultus*** (p. 455)

29(26). Dorsal surfaces of both alitrunk and head between frontal carinae either smooth or with some scattered foveolate punctures but lacking foveolate-reticulate sculpture or rugoreticulum 30

Dorsal surfaces of both alitrunk and head with foveolate-reticulate sculpture or rugoreticulum 42

30. Area of dorsal head between frontal carinae unsculptured and smooth. Dorsum of alitrunk without foveolate punctures 31

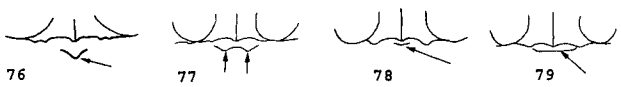
Dorsal surfaces of both alitrunk and head between frontal carinae with some scattered foveolate punctures 40

31. Alitrunk, in dorsal view, with a transverse ridge at the approximate position of metanotal groove (Fig. 19). Anterior clypeal margin with three strong teeth (Fig. 70) 32

Alitrunk, in dorsal view, unsculptured, lacking a transverse ridge at the approximate position of metanotal groove. Anterior clypeal margin usually with five to seven small denticles (Fig. 71) 34

32. First gastral tergite with numerous, evenly distributed, suberect hairs. Alitrunk in dorsal view with several short rugae present at the juncture between the pronotum and the mesonotum (Australia: New South Wales) ..... ***erythropygus*** (p. 441)

First gastral tergite lacking any suberect



Figures 76–79. Characters on the ventral surfaces of the clypei of *Pristomyrmex* workers. 76: A tooth; 77: Two toothlike prominences; 78: A short ruga; 79: A long transverse ridge.

hairs. Alitrunk in dorsal view without rugae at the juncture between the pronotum and the mesonotum 33

33. Propodeal spines longer, subequal to or longer than pronotal spines (Fig. 20). Ventral center of clypeus with a weak and short ruga (Fig. 78). Head broader, with HW 0.97–1.34 and CI 103–116 (Australia: New South Wales, SE Queensland) ..... ***wheeleri*** (p. 478)

Propodeum with a pair of teeth or short spines, much shorter than pronotal spines (Fig. 19). Ventral surface of clypeus with a long, well-developed transverse ridge (Fig. 79). Head narrower, with HW 0.80–1.08 and CI 93–101 (Australia: New South Wales, Queensland) ..... ***quadridentatus*** (p. 463)

34(31). Pronotum tuberculate, lacking teeth or spines (Africa: Ivory Coast, Ghana, Nigeria, Cameroon, Gabon, Congo and Angola) ..... ***orbiceps*** (p. 456)

Pronotum armed with a pair of teeth or spines 35

35. Petiole and postpetiole without erect hairs (Fig. 50). Frontal carinae absent. Pronotum with a pair of triangular short spines. Ventral surface of clypeus with two toothlike prominences (Fig. 77) (Africa: Zaire) ..... ***trogor*** (p. 476)

Petiole and postpetiole with at least one to two pairs of hairs (Figs. 49, 52). Frontal carinae present and usually extending to the level of the posterior margins of eyes. In rare cases where the frontal carinae are very short or absent, the pronotum is armed with a pair of well-developed, long spines that are longer than the distance between their bases (Fig. 21). Ventral surface of clypeus either with a transverse ruga, or with a tooth at center, or without any ruga or tooth, but never showing two toothlike prominences 36

36. Pronotum with a pair of triangular short spines, much shorter than the distance between their bases 37

Pronotum with a pair of long spines, longer than distance between their bases (Figs. 21, 25) 38

37. Petiole node in profile lacking distinct anterior face distinguishable from the upper surface of peduncle (Fig. 53). Larger species, with HW 0.98–1.04, HL 0.94–1.02, EL 0.22–0.24 (Asia: Philippines) ..... ***flatus*** (p. 443)

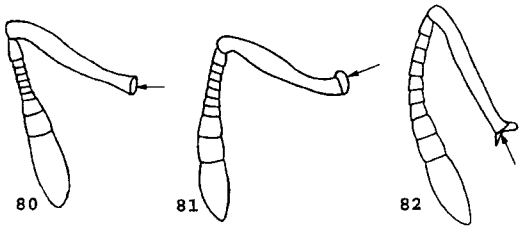
In profile, anterior face of petiole node distinct from the dorsal surface of peduncle (Fig. 52). Smaller species, with HW 0.77–0.94, HL 0.82–0.94, EL 0.14–0.18 (Asia: Philippines) ..... ***collinus*** (p. 432)

38(36). Propodeal spines short or moderately long, much shorter and slender than pronotal spines (Fig. 21) 39

Propodeal spines exceptionally long, subequal in length to or slightly longer than pronotal spines (Fig. 25) (Australia: Queensland) ..... ***wilsoni*** (p. 481)

39. Petiole node in profile lacking distinct anterior face distinguishable from the upper surface of peduncle (Fig. 55). Clypeus unsculptured, lacking a median longitudinal carina. Frontal carinae short, not extending to the level of the posterior margins of eyes (Asia: Philippines) ..... ***longispinus*** (p. 450)

In profile, anterior face of petiole node distinct from the dorsal surface of peduncle (Fig. 54). Clypeus with a median longitudinal carina. Frontal carinae long, extending to the level of the posterior margins of eyes (Asia: Philippines) .. ***curvulus*** (p. 437)



Figures 80–82. Lamella, circling the base of the antennal scape of the *Pristomyrmex* worker, absent (80), entire (81), or with a broad and deep notch (82).

40(30). Petiole and postpetiole lacking erect hairs (Fig. 50). Ventral surface of clypeus with two toothlike prominences (Figs. 77) (Africa: Ghana, Cameroon, Gabon, Angola, Kenya, Zaire, Sudan) ..... ***africanus*** (p. 423)

Petiole and postpetiole, respectively, with one to five pairs of erect hairs. Ventral surface of clypeus either with a transverse ruga (Figs. 78, 79) or with a toothlike prominence (Fig. 76) 41

41. Smaller species (HW 0.82–1.02, HL 0.82–1.02, EL 0.14–0.20). Ventral center of clypeus with a toothlike prominence. Usually one to two pairs of hairs present, respectively, on the dorsal surfaces of petiole node and postpetiole (Asia and Pacific Is.: Papua New Guinea; Indonesia; Pohnpei Is.) ..... ***quadridens*** (p. 459)

Larger species (HW 1.22–1.24, HL 1.10–1.16, EL 0.24–0.25). Ventral surface of clypeus with a transverse ruga, lacking a toothlike prominence at center. Four to five pairs of short hairs present, respectively, on the dorsal surfaces of petiole node and postpetiole (Fig. 51) (Asia: New Guinea) ..... ***nitidissimus*** (p. 453)

42(29). First gastral tergite with numerous, evenly distributed, erect or suberect hairs. Petiole node with a single evenly blunt-rounded apex (Fig. 56) (Asia: Philippines) ... ***hirsutus*** (p. 449)

First gastral tergite lacking erect hairs. Petiole node not showing a single evenly blunt-rounded apex but with a higher anterodorsal angle than the posterodorsal (Fig. 57) 43

43. Masticatory margin of mandibles with five teeth; diastema very short or indistinct between the preapical and the third tooth (Fig. 34). Basal margin of mandible with a central, broadly curved lobe. Anterior clypeal margin with three prominences, that is, a median tooth and a broad, low convex lobe on each side (Fig. 72) (Asia: Sarawak, Sabah, Borneo) ..... ***trachylissus*** (p. 474)

Masticatory margin of mandibles with three to four teeth; diastema distinct and long, present between the preapical and the third tooth (Figs. 31, 33). Basal margin of mandible almost straight, without a distinctly curved lobe. Anterior clypeal margin usually with five to seven denticles (Fig. 71) 44

44. Pronotal spines exceptionally long, usually exceeding 0.40 (very rarely 0.37), usually longer than the distance between the bases of two pronotal spines (Fig. 24) (Asia: Sumatra, Java, Malaya, Sarawak, Sabah, Borneo, Philippines) ***bicolor*** (p. 425)

Pronotum armed with a pair of teeth or spines (≤0.32; Figs. 14, 15, 17, 18) that are always shorter than the distances that separate their bases 45

45. Propodeal spines long (0.19–0.30), much longer than the pronotal armaments (Fig. 16), palp formula 2,3 46

Propodeal spines short (0.04–0.13), usually shorter than but sometimes slightly longer than the pronotal armaments (Figs. 14, 15), palp formula 1,3 47

46. Postpetiole in dorsal view much broader than long, with PPI 133–150. Antennal scapes shorter (SL 0.70–0.82, SI 81–93) (Australia: Queensland) ..... ***foveolatus*** (p. 446)

Postpetiole in dorsal view slightly broader than long, with PPI 109–121. Antennal scapes longer (SL 0.86–0.98, SI 97–103) (Australia: Queensland) ..... ***thoracicus*** (p. 473)

47(45). Petiole node in profile slightly longer than high, with the anterodorsal angle on approximately the same level as or weakly higher than the posterodorsal; dorsum and sides of petiole node with seven to eight foveolate punctures (Fig. 58) (Asia: Sarawak) ..... ***modestus*** (p. 452)

Petiole node in profile higher than long, with the anterodorsal angle distinctly elevated above the posterodorsal; dorsum and sides of petiole node without foveolate punctures (Fig. 57) 48

48. Ventral surface of clypeus lacking a central prominent tooth but usually bearing a transverse ruga (Asia: Malaya, Singapore, Sarawak, Borneo, Sabah, Philippines) ... ***costatus*** (p. 434)

Ventral surface of clypeus with a central prominent tooth (Fig. 76) 49

49. Pronotum with a pair of moderately long spines (0.14–0.20), usually much longer (sometimes slightly longer) than the propodeal armaments (0.07–0.13) (Figs. 18) (Asia: Malaya, Thailand, Nepal, Burma, China) ..... ***sulcatus*** (p. 469)

Pronotum with a pair of teeth or short spines (0.06–0.10), usually similar in length to or slightly shorter than the propodeal armaments (0.04–0.12)

(Figs. 14, 15) (Asia: Sumatra, Sulawesi, Malaya, Sarawak, Sabah, Thailand, Philippines, Taiwan, Japan) ---- ***brevispinosus*** (p. 428)

THE *PUNCTATUS* GROUP

Worker. Small to medium sized (HL 0.62–0.98, HW 0.64–0.94, TL 2.62–3.44), with the following combination of characters:

(1) Masticatory margin of mandibles with three to four teeth arranged as the strongest apical + the second strongest preapical + a long diastema + two small basal denticles of similar size (or a broad basal tooth).

(2) Palp formula 5,3 in four Oriental species and 4,3 in the single South African species.

(3) Frontal carinae present.

(4) Lateral portions of clypeus reduced to a narrow margin in front of the antennal fossae in three species (*P. punctatus, P. rigidus,* and *P. fossulatus*) but developed in the other two species (*P. divisus* and *P. pulcher*).

(5) Frontal lobes indistinct or absent.

(6) Lamella that encircles the base of antennal scape, entire.

(7) Alitrunk in profile showing a continuous convex dorsum and in dorsal view lacking sutures.

(8) Pronotum unarmed.

(9) Propodeum with a pair of spines.

(10) Petiole node in profile more or less wedge-shaped, lacking distinct anterior face distinguishable from the upper surface of peduncle.

This group has five species. Four occur in the Oriental region, one of which (*P. punctatus*) has spread to warm-temperate areas in the eastern Palaearctic. The remaining species (*P. fossulatus*) is confined to South Africa. *Pristomyrmex punctatus* is a unique species within the genus. It is the only *Pristomyrmex* extending its range to the temperate zone, and it is further characterized by the possession of a unique life history that may preadapt it for dispersal by natural and human transport.

The *punctatus* group is closely related to the *cribrarius* and *quadridens* groups because all female castes of these species groups possess a distinct diastema after the preapical tooth on the masticatory margin of mandibles (except in *P. trachylissus,* which has five teeth on the masticatory margin). Though sharing the previously described mandibular character, the *trispinosus* group is relatively distant from the *punctatus* group because it possesses so many autapomorphic characters, for example, frontal carinae absent, dorsal alitrunk with a promesonotal suture or impression, propodeal spines in dorsal view showing a "fork", some regular striation present on the dorsal surfaces of head and alitrunk.

The *punctatus* group differs from the *cribrarius* group by lacking a pair of pronotal spines in the workers and by showing the anterior face of the petiole node not distinct from the upper surface of peduncle in the female castes. The *punctatus* group differs from the *quadridens* group by possessing palp formulae of 5,3 and 4,3 (the *quadridens* group possesses palp formulae of 2,2, 1,3 and 2,3).

Pristomyrmex divisus sp. n.

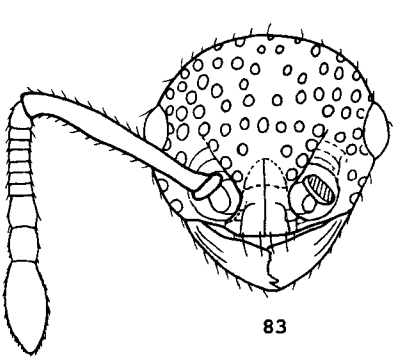
Figures 83–84

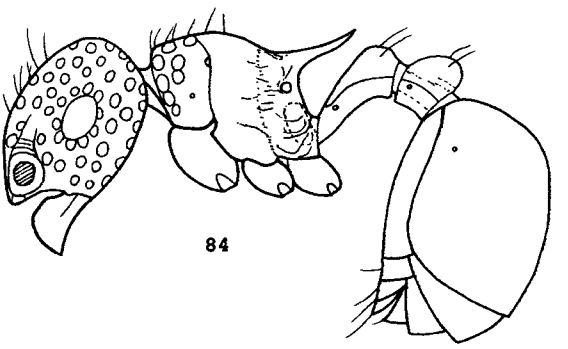
Diagnosis (Worker). Lateral portions of clypeus in front of antennal fossae, developed, not reduced to margins, so that the antennal fossae are placed well behind the anterior clypeal margin; dorsal head only with scattered foveolate punctures.

Holotype Worker (MCZC). TL 3.06, HL 0.76, HW 0.80, CI 105, SL 0.82, SI 103, EL 0.22, PW 0.56, AL 0.74. Paratypes, 35 workers (MCZC, BMNH, ANIC, MHNG).

Worker. TL 3.06–3.40, HL 0.72–0.82, HW 0.74–0.86, CI 98–111, SL 0.78–0.90, SI 98–110, EL 0.21–0.24, PW 0.53–0.64, AL 0.72–0.80, PPW 0.26–0.30, PPL 0.18–0.22, PPI 123–156 (n = 20).

Mandibles with a few longitudinal rugae but smooth near the masticatory margin. Dentition of the masticatory margin of



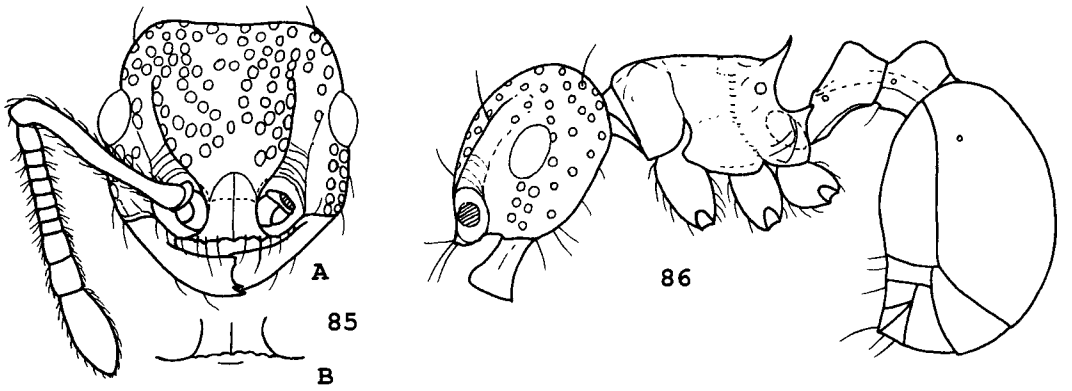


Figures 83–84. *Pristomyrmex divisus* **sp. n.** 83: Worker head, full-face view; 84: Worker, lateral view.

mandible: the strongest apical tooth + the second strongest preapical + a long diastema + a broad, truncated basal tooth (or two minute denticles). A weak minute prominence present about midway on the basal margin of mandible. Clypeus with a strong median longitudinal carina extending through the frontal area; on each side of the median clypeal carina, a few additional rugae are usually present. Anterior clypeal margin lacking denticles. Median portion of clypeus higher than frontal area; lateral portions of clypeus developed, not reduced to margins. Ventral surface of clypeus lacking any toothlike prominences but usually with a few rugae. Palp formula 5,3. Frontal carinae short, not extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes absent; thus, the antennal articulations are completely exposed. Antennal scapes, when lying on the dorsal head, surpassing the occipital margin of head by one-sixth to one-fifth of their length. Eyes large and prominent, containing 8 to 10 ommatidia in the longest row. Dorsum of alitrunk in dorsal view marginated, more or less depressed, and usually with a deep longitudinal furrow at middle. Pronotum unarmed. Propodeal spines well developed, acute and long, much longer than the distance between their bases. Metapleural lobes small, dentiform, and acute. Petiole in profile with a long peduncle; dorsum of peduncle, together with the anterior face of petiole node, forming a long declivity that reaches the top of petiole node. Ventral surface of petiole lacking any process. Postpetiole in profile with a convex dorsum, in dorsal view somewhat transverse-rectangular and much broader than long. Dorsum of head with numerous large and shallow foveolate punctures; space between foveolae smooth; ventral head with denser foveolate punctures. Dorsal surface of alitrunk with reticulate rugae. Petiole always, and postpetiole usually, with a coarse longitudinal ridge on each side. In dorsal view, petiole node and postpetiole each usually bounded by a rim; dorsums of both petiole and postpetiole, except for rims, very smooth and polished. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect to suberect short hairs. A pair of hairs present, respectively, near the top of both petiole node and postpetiole. First gastral tergite without hairs. Two or three pairs of long, forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color uniform reddish-brown; appendages sometimes slightly lighter.

Queen and Male. Unknown.

Comments. This species is so far known only from the Philippines, and its closest relative without doubt is *P. pulcher*, from Malaysia. The workers of two species share the following three characters that are not seen in the other three members of the



Figures 85–86. *Pristomyrmex fossulatus* (Forel). 85A: Worker head, full-face view; 85B: Showing a short transverse ruga on the ventral clypeus; 86: Worker, lateral view, hairs omitted from the petiole node and postpetiole.

punctatus group (*P. punctatus, P. rigidus,* and *P. fossulatus*): (1) lateral portions of clypeus, in front of the antennal fossae, developed, making the antennal fossae well behind the anterior clypear margins; (2) anterior clypeal margin lacking distinct denticles; and (3) the median portion of clypeus not flat but somewhat concave. In the workers of *P. punctatus, P. rigidus,* and *P. fossulatus,* the anterior clypeal margin is equipped with five to seven denticles, and the lateral portions of clypeus in front of the antennal fossae are reduced to margins (in other words, the antennal fossae reach the lateral anterior margins of clypeus), and the median portion of clypeus is more or less flat.

The workers of *P. divisus* are easily separated from those of *P. pulcher.* The cephalic dorsum shows rugoreticulum in *P. pulcher* but scattered foveolate punctures in *P. divisus*; the frontal carinae do extend to the level of the posterior margins of eyes in *P. pulcher* but not so in *P. divisus*; a pronounced median longitudinal furrow is present on the dorsal surface of alitrunk in *P. divisus* but absent in *P. pulcher.*

Holotype Worker. Philippines: Dumaguete, 1949, J. W. Chapman.

Paratypes. 18 workers with same data as holotype; 14 workers, Philippines: Dumaguete (J. W. Chapman); three workers, Philippines: Dumaguete, Silliman University, 9.v.1949 (Domingo Empeso).

Ecological Information. Unknown.

Pristomyrmex fossulatus (Forel)
Figures 85–86

Tetramorium (Xiphomyrmex) fossulatum Forel, 1910: 428. Syntype workers, South Africa: Natal, Will Broak (Wroughton) (MHNG) [examined].
Pristomyrmex fossulatus (Forel) Santschi, 1916: 51.

Diagnosis (Worker). Masticatory margin of mandible with a long diastema after the preapical tooth; palp formula 4,3; eyes with 8 to 10 ommatidia in the longest row; pronotum lacking teeth or spines; dorsal surfaces of head and alitrunk with scattered foveolate punctures.

Worker. TL 2.63–2.92, HL 0.62–0.71, HW 0.64–0.75, CI 98–106, SL 0.56–0.61, SI 81–88, EL 0.17–0.18, PW 0.44–0.50, AL 0.64–0.74, PPW 0.26–0.28, PPL 0.16–0.19, PPI 147–163 (n = 5).

Mandibles smooth and shining. Dentition of the masticatory margin of mandible: an apical tooth + a preapical tooth + a long diastema + a truncated basal tooth. Basal margin of mandible lacking a tooth-like prominence or curved lobe. Clypeus with a strong median longitudinal carina. Anterior clypeal margin with a median denticle and two to three others on each side, but sometimes two lateral denticles

are fused together. Lateral portions of clypeus reduced to margins, and antennal fossae reaching the lateral anterior margins of clypeus. Ventral center of clypeus with a short transverse ruga. Palp formula 4,3. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobe short, shallow, but distinct, margined by the frontal carina and a longitudinal ruga. Frontal lobes absent; thus, the antennal articulations are completely exposed. Antennal scapes, when lying on the dorsal head, close to the occipital margin of head. Eyes large, containing 8 to 10 ommatidia in the longest row. Pronotum with a pair of blunt tubercles, lacking teeth or spines. Propodeum armed with a pair of spines, about as long as the distance between their bases. Metapleural lobes subtriangular. Petiole node in profile wedge-shaped, with a triangular apex. Subpetiole with a narrow flange. Postpetiole in profile higher than long, with a rounded dorsum, in dorsal view transverse-rectangular and much broader than long. Dorsum of head, except for the scrobal areas, with numerous scattered foveolate punctures. Similar but sparser punctures present on the dorsal surface of alitrunk. Petiole and postpetiole each usually with a longitudinal ruga on each side. Gaster unsculptured. Several pairs of hairs present on the dorsum of head beyond the level of the antennal insertions. A row of forward-projecting hairs present on the anterior clypeal margin. Hairs on the rest of the body as follows—mesonotum (one pair), petiole (zero to one pair), and postpetiole (one to two pairs dorsally)—frequently lost by abrasion (Bolton, 1981: p. 286). First gastral tergite lacking erect or suberect hairs. Scapes and tibiae with short hairs. Color reddish-brown; appendages yellow-brown.

Queen. I have not seen the queen of this species, but Menozzi (1942: 172) gave a description of this caste.

Male. Unknown.

Comments and Discussion. The position of *P. fossulatus* within *Pristomyrmex* is somewhat complicated. *Pristomyrmex fossulatus* occurs only in South Africa and shares certain character states with *P. orbiceps,* an African member of the *quadridens* group. The workers of *P. fossulatus* are similar to those of *P. orbiceps* in (1) the masticatory margin of mandible with a diastema, (2) the pronotum with a pair of broad and blunt tubercles, (3) the size of eyes, (4) the length of propodeal spines, and (5) hairs on the head and body (e.g., two to three pairs of erect hairs along the frontal carinae behind the level of antennal insertions, a pair on the occipital corners, a pair on the mesonotum). But it is very hard for me to place *P. fossulatus* into the *quadridens* group because this species has four segments of the maxillary palpi in the workers. In the 25 members of the *quadridens* group, the maxillary palp of 18 species examined, including *P. orbiceps,* is one or two segments.

Pristomyrmex fossulatus, however, shares important similarities with four Asian species of the *punctatus* group (*P. divisus, P. pulcher, P. punctatus,* and *P. rigidus*). These critical characters, as shown in the workers, include (1) a high palp formula, (2) the masticatory margin of mandible with a diastema after the preapical tooth, (3) pronotum without teeth or spines, (4) anterior face of the petiole node indistinguishable from the upper surface of its anterior peduncle, and (5) postpetiole in dorsal view much broader than long. Thus, *P. fossulatus* is assigned to the *punctatus* group. *P. fossulatus* can be separated from the four species as follows: In the workers of *P. fossulatus,* the propodeal spines are moderately long; the antennal scapes, falling into the range 0.56 to 0.61 (SI 81–88), are only close to the occipital margin of head, when laid on the dorsal head; the dorsum of the alitrunk has only scattered foveolate punctures. In *P. divisus, P. pulcher, P. punctatus,* and *P. rigidus,* the propodeal spines are well developed and long, much longer than the distance between their bases; the antennal scapes, with the length 0.70 to 0.94 (usually above 0.78) and SI 91–118 (usually above 98),

obviously surpass the occipital margin of head; the dorsum of the alitrunk is covered fully with a developed rugoreticulum. It is possible that *P. fossulatus* evolved from the *P. divisus-P. pulcher-P. punctatus-P. rigidus* ancestor but later was divergent from the clade consisting of the four Asian species.

It must be pointed out that if *P. fossulatus* is designated as a member of the *quadridens* group, the *cribrarius* group, also possessing 4,3 palp formula, would become insignificant. As a result, *P. cribrarius* (another African species) would fall into the *quadridens* group.

Pristomyrmex fossulatus differs from two African species of the *quadridens* group (*P. orbiceps* and *P. africanus*) in the workers as follows:

P. fossulatus
- Palp formula 4,3
- Dorsum of head between frontal carinae with numerous foveolate punctures
- Dorsum of alitrunk with some foveolate punctures
- Petiole node in profile wedge-shaped, with a triangular apex

P. orbiceps
- Palp formula 1,3
- Dorsum of head between frontal carinae smooth and shining, except for few punctures bordering frontal carinae
- Dorsum of alitrunk smooth and shining
- Petiole node in profile relatively massive, and broad-rounded dorsally

P. fossulatus
- Palp formula 4,3
- Ventral surface of clypeus with a weak transverse ruga
- Eyes larger, with 8 to 10 ommatidia in the longest row
- Petiole node in profile wedge-shaped, with a triangular apex, lacking a distinct concave between the anterior face of the node and the dorsal surface of the peduncle
- Pronotum with a pair of tubercles
- Dorsal head behind the level of antennal insertions with three to four pairs of hairs; dorsal alitrunk at most with a pair of hairs

P. africanus
- Palp formula 1,3
- Ventral surface of clypeus with two strong toothlike prominences
- Eyes smaller, with four to five ommatidia in the longest row
- Petiole node in profile not wedge-shaped; a distinct concave present between the anterior face of the node and the dorsal surface of the peduncle
- Pronotum usually with a pair of teeth or spines but sometimes with a pair of tubercles
- Dorsal head behind the level of antennal insertions with numerous (at least 10 pairs of) hairs; dorsal alitrunk with several pairs of hairs

Distribution. This species was previously known only from the type series collected from South Africa (Bolton, 1981). Two more specimens (ANIC, MCZC) examined here add the following records: South Africa: Cape Province, Grahamstown, Old P. E. Road (L. H. Weatherill).

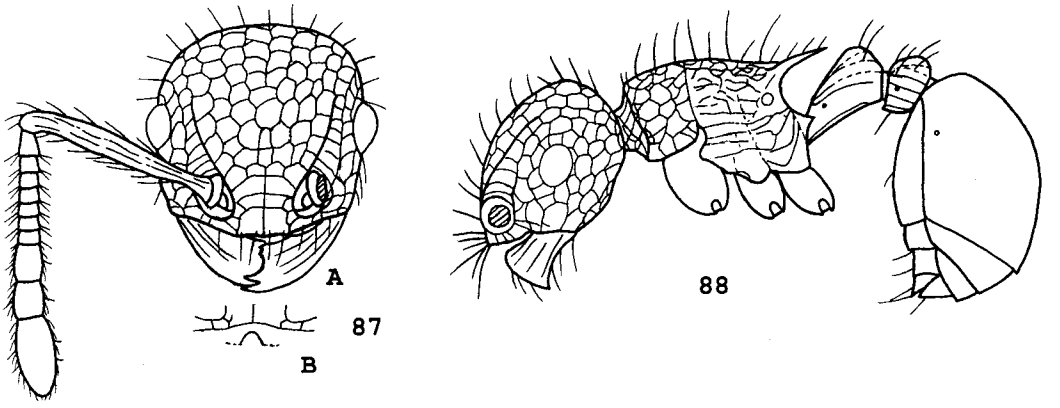
Ecological Information. Unknown.

Pristomyrmex pulcher sp. n.
Figures 87–88

Diagnosis (Worker). Lateral portions of clypeus in front of antennal fossae, developed, not reduced to margins, so that the antennal fossae are placed well behind the anterior clypeal margin; dorsal surfaces of head and alitrunk, as well as the sides of pronotum, with well-developed coarse rugoreticulum.

Holotype Worker (BMNH). TL 2.96, HL 0.76, HW 0.72, CI 95, SL 0.82, SI 114, EL 0.20, PW 0.53, AL 0.76. Paratypes, 11 workers (BMNH, MCZC, ANIC).

Worker. TL 2.70–3.04, HL 0.70–0.77, HW 0.69–0.77, CI 95–100, SL 0.76–0.84, SI 103–114, EL 0.19–0.21, PW 0.50–0.54, AL 0.70–0.78, PPW 0.25–0.29, PPL 0.17–0.20, PPI 135–156 (n = 11).



Figures 87–88. *Pristomyrmex pulcher* **sp. n.** 87A: Worker head, full-face view; 87B: Showing a curved ruga on the ventral clypeus; 88: Worker, lateral view.

Mandibles usually with a few longitudinal rugae but smooth near the masticatory margin. Dentition of the masticatory margin of mandible: the strongest apical tooth + the second strongest preapical + a long diastema + a broad basal tooth usually fused by two small denticles. A broad-based triangular short tooth present about midway on the basal margin of the mandible. Clypeus with sculpture consisting of a strong median longitudinal carina, a transverse carina (sometimes curved or weak or broken), and a few additional short carinae. Anterior clypeal margin lacking distinct denticles. Lateral portions of clypeus, in front of antennal fossae, developed, not reduced to narrow margins. Ventral surface of clypeus usually with a somewhat "∩" ruga that is sometimes interrupted at the middle. Palp formula 5,3. Frontal carinae strong, extending to the level of the posterior margins of eyes. Slightly impressed scrobal areas present lateral to the frontal carinae. Frontal lobes nearly absent; thus, the antennal articulations are completely exposed. Antennal scapes, when lying on the dorsal head, surpassing the occipital margin of head by one-sixth to one-fifth of their length. Eyes large and prominent, containing seven to nine ommatidia in the longest row. Occipital margin straight or feebly concave. In dorsal view, dorsum of the alitrunk marginated and rather depressed. Pronotum unarmed. Propodeal spines well developed, acute, and long, much longer than the distance between their bases. Metapleural lobes triangular. Pedicel segments as in Figure 88. Dorsum of petiole peduncle, together with the anterior face of the node, forming a long declivity that reaches the apex of the node. Ventral surface of petiole without any appendages or with only a very narrow rim. Postpetiole in profile convex dorsally, in dorsal view transverse-rectangular and much broader than long. Dorsal surfaces of head and alitrunk, as well as the sides of pronotum, with developed coarse rugoreticulum. Sides of the rest of the alitrunk irregularly rugulose. Antennal scapes with a few longitudinal rugae. Sides of both petiole and postpetiole usually with a few coarse longitudinal rugae. In dorsal view, petiole and postpetiole each bounded by a rim; dorsal surfaces of petiole and postpetiole, except for rims, very smooth and polished. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. A pair of similar hairs present bilaterally near the top of petiole and two pairs usually on the dorsal postpetiole as in Figure 88. Two or three pairs of long, forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some scattered erect or suberect

hairs. Gaster lacking erect or suberect hairs. Femurs, tibiae light-yellow, in contrast with head, antennae, alitrunk, tarsi, pedicel segments, and gaster, which are reddish-brown.

Queen and Male. Unknown.

Comments. Although *P. pulcher,* an Oriental species, is very similar, in appearance of the workers, to *P. punctatus,* the two species are in fact not closely related within the *punctatus* group. *Pristomyrmex pulcher,* together with *P. divisus,* constitutes a clade that is the sister group of the clade formed by the species *P. rigidus* and *P. punctatus.* The separation of the two clades is summarized under *P. divisus.* Additional characters separating the workers of *P. pulcher* from those of *P. punctatus* are as follows:

P. pulcher

A broad, short tooth present on the basal margin of mandible

Dorsum of petiole node with only a pair of erect hairs

Leg bicolored, with femur and tibia light-yellow and tarsus reddish-brown

Sculpture on the dorsal surfaces of head and alitrunk, and the sides of petiole and postpetiole relatively coarse

Propodeal spines shorter, more robust, and slightly bent basally

P. punctatus

Tooth of the basal margin absent or inconspicuous

Dorsum of petiole node with two or more pairs of hairs

Leg uniformly colored, light-red or reddish-brown

Sculpture on the dorsal surfaces of head and alitrunk, and the sides of petiole and postpetiole relatively fine

Propodeal spines relatively slender, and straight

The separation of *P. pulcher* from *P. divisus* is discussed under *P. divisus.*

Holotype Worker. Malaysia: Negri Sembilan, Pasoh For. Res., primary forest, litter sample, 3.iv.1994 (L. Ficken).

Paratypes. Five workers with same data as holotype; three workers, Malaysia: Negri Sembilan, Pasoh For. Res., litter sample, 3.iv.1994 (M. Brendell, K. Jackson and L. Ficken); three workers, Malaysia: Neg. Sembilan, Pasoh For. Res., litter sample, xi.1994 (M. Brendell, K. Jackson, and S. Lewis).

Ecological Information. This species has been collected from a little sample taken in primary forest.

Pristomyrmex punctatus (F. Smith) Figures 89–93

Myrmica punctata F. Smith, 1860: 108. Syntype workers, Indonesia: Bachian I. (A. R. Wallace) (OXUM) [examined].

Pristomyrmex punctatus (F. Smith) Mayr, 1886: 361.

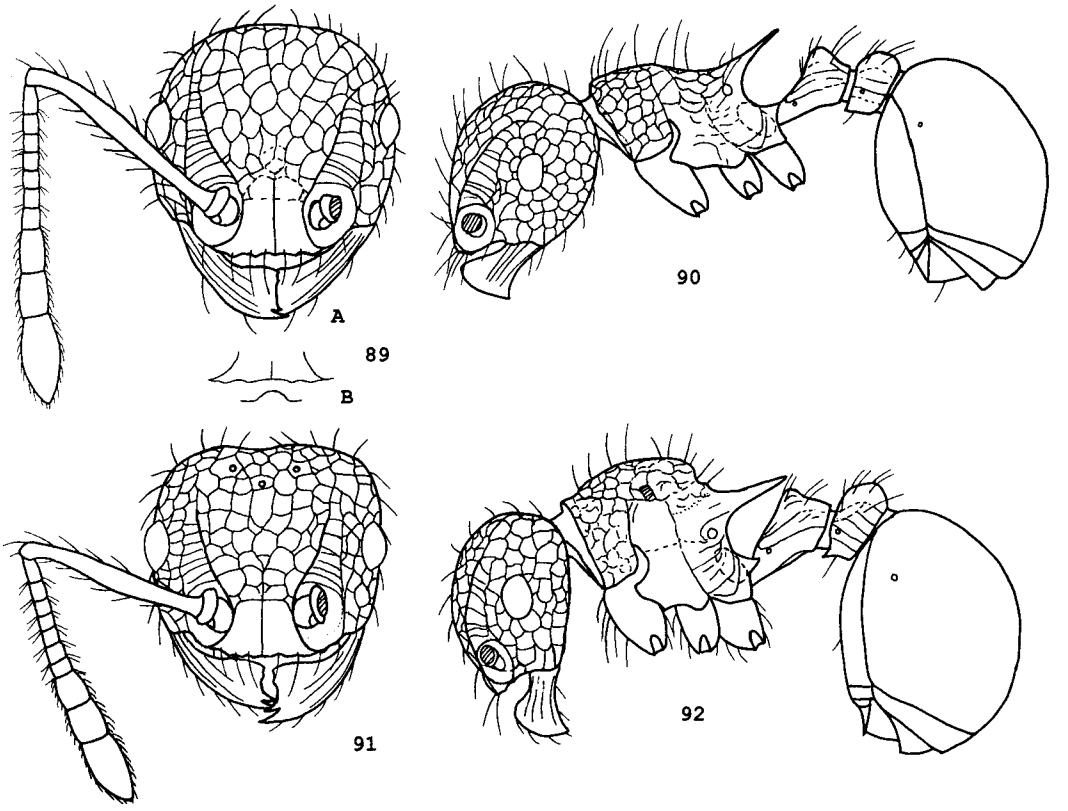
Pristomyrmex pungens Mayr, 1866: 904. Holotype worker, Malaysia: Malacca (?) (NHPS) [examined]. **Syn. n.**

Pristomyrmex japonicus Forel, 1900: 268. Syntype workers, Japan: Osaka (K. Yamada) (MHNG) [examined]. [Synonymy by Viehmeyer, 1922: 207].

Diagnosis (Worker). Eyes with eight or more ommatidia in the longest row; pronotum unarmed; propodeal spines straight, and long, much longer than the distance between their bases; dorsal surfaces of both head and alitrunk covered fully with rugoreticulum; dorsum of petiole node with two or more pairs of hairs.

Worker. TL 2.62–3.22, HL 0.70–0.84, HW 0.68–0.84, CI 94–105, SL 0.78–0.86, SI 102–118, EL 0.15–0.18, PW 0.48–0.56, AL 0.70–0.84, PPW 0.24–0.27, PPL 0.17–0.20, PPI 126–163 (n = 70).

Mandibles usually with a few fine longitudinal rugae but smooth near the masticatory margin. Dentition of the masticatory margin of mandible: the strongest apical tooth + the second strongest preapical + a long diastema + a broad basal tooth (or two small basal denticles). Basal margin of mandible rather straight, lacking a distinct tooth. Clypeus shieldlike, more or less depressed, with a median longitudinal carina extending posteriorly through the frontal area. In some specimens, a few short weak rugae present on each side of the median carina of the clypeus. Anterior clypeal margin equipped with a row of



Figures 89–92. *Pristomyrmex punctatus* (F. Smith). 89A: Worker head, full-face view; 89B: Showing a curved ruga on the ventral clypeus; 90: Worker, lateral view; 91: Ergatoid queen head, full-face view; 92: Ergatoid queen, lateral view.

denticles, but sometimes median denticle indistinct or absent or becoming a broad-truncated lobe. Lateral portions of clypeus reduced to margins, so that the antennal fossae reach the anterior clypeal margin. Ventral surface of clypeus usually with a curved ruga as in Figure 89B. Palp formula 5,3. Frontal carinae distinct, extending to the level of the posterior margins of eyes. Antennal scrobes weak. Frontal lobes almost completely absent; thus, the antennal articulations are entirely exposed. Antennal scapes, when lying on the dorsal head, surpassing the occipital margin of head by one-sixth to one-fifth of their length. Eyes large, with eight or more ommatidia in the longest row. Occipital margin feebly concave. Dorsum of the alitrunk in dorsal view marginated and more or less depressed (Fig. 93). Pronotum unarmed. Propodeal spines long, acute, but slender. Metapleural lobes dentiform and acute. Petiole node in profile wedge-shaped, with a triangular apex. Postpetiole in profile convex dorsally; in dorsal view transverse-rectangular, much broader than long, and also broader than the petiole. Dorsal surfaces of head and alitrunk as well as sides of pronotum covered fully with rugoreticulum, but scrobal areas with only several transverse rugae. Sides of the rest of the alitrunk with numerous irregular rugae. Sides of petiole and postpetiole usually with a few fine longitudinal rugae; sometimes rugae very weak and broken. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect to suberect long hairs. Two (or more) pairs of hairs

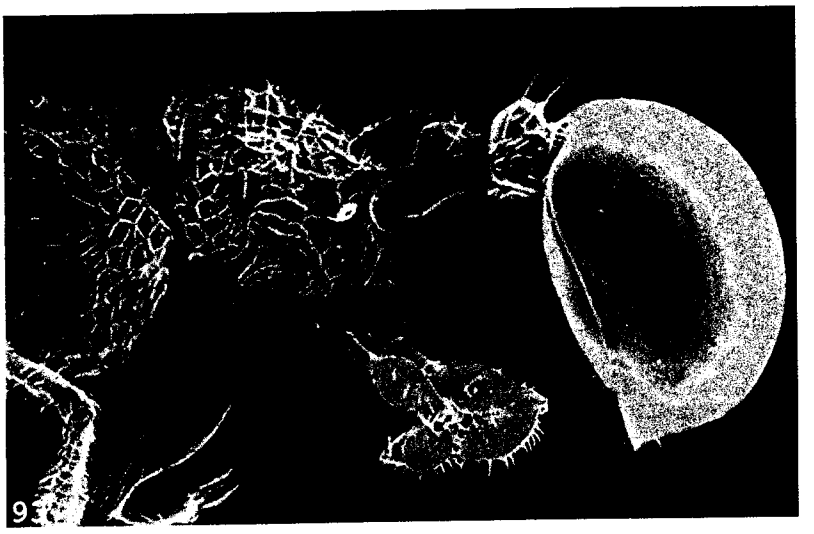


Figure 93. Showing that the worker of *Pristomyrmex punctatus* (F. Smith) has a more or less depressed dorsum of alitrunk.

present, respectively, bilaterally on the dorsums of petiole node and postpetiole, of which usually a pair shorter and the other pair longer. First gastral tergite lacking erect or suberect hairs. A few pairs of long, forward-projecting hairs present near the anterior clypeal margin that are symmetrical on the two sides of the midpoint. Scapes and tibiae with numerous erect to suberect short hairs. Color reddish-brown, but sometimes the gaster much darker or the appendages slightly lighter.

Ergatoid Queen. TL 3.60, 3.72; HL 0.86, 0.88; HW 0.94, 0.94; CI 107, 109; SL 0.89, 0.91; SI 97, 97; EL 0.23, 0.23; PW 0.66, 0.68; AL 0.94, 0.96; PPW 0.31, 0.32; PPL 0.23, 0.24; PPI 133, 135 (n = 2).

Closely resembling the worker in the structure of mandibles, clypeus, petiole, postpetiole and gaster and also in sculpture, color, and pilosity. But the head with three ocelli; eyes larger; pronotum and propodeum narrower than those of worker; mesonotum more convex; an impression present at the approximate positions of promesonotal suture and of metanotal groove, respectively; propodeal spines stronger than in worker. Wing absent, but the rudimentary vestige of a wing is present on the each lateral margin of the mesonotum.

Queen. Unknown.

Male. TL 3.22, HL 0.60, HW 0.57, CI 95, SL 0.18, SI 32, HWE 0.79, EL 0.32, PW 0.74, AL 1.04, PPW 0.26, PPL 0.17, PPI 153 (n = 1; one specimen [MCZC] collected from Nara, Japan, by Silvestri on July 21, 1925, was examined).

Head, including the eyes, broader than long. Clypeus transverse, with a median short carina. Frontal area with a median longitudinal carina. Frontal carinae short, slightly beyond the posterior margins of antennal sockets. Palp formula 5,3. On the mesoscutum, notauli pronounced, forming a Y shape; parapsidal furrows superficially impressed. Propodeum with a pair of teeth. Metapleural lobes subtriangular. Middle and hind tibiae each with a simple spur. Petiole node wedge-shaped, with a triangular apex; dorsum of petiole peduncle forming a declivity that reaches the top of the node. Postpetiole in profile rounded dorsally, in dorsal view transverse-rectangular and distinctly broader than long. Dorsum of head smooth and shining, except for few short rugae present behind the posterior margin of clypeus. Pronotum

and mesoscutum smooth, except for those marked sutures, but mesoscutellum and propodeum sculptured with several longitudinal rugae. Sides of petiole with a few rugae. All dorsal surfaces with abundant erect or suberect hairs, but hairs on the legs and on the scapes somewhat appressed. Colour reddish-brown; wing light-yellow.

Comments and Discussion. The separation of *P. punctatus* from both *P. divisus* and *P. pulcher* is summarized in the discussions of both *P. divisus* and *P. pulcher.* The following characters can be used to separate the workers of *P. punctatus* from those of its closest relative, *P. rigidus*:

P. punctatus

Dorsum of petiole node with two or more pairs of hairs
Tooth absent or inconspicuous from basal margin of mandible
Dorsal surfaces of head and alitrunk, and the sides of petiole and postpetiole more finely sculptured
Propodeal spines relatively slender
Clypeus with a median longitudinal carina that meets the anterior clypeal margin
Dorsum of alitrunk in dorsal view, marginated, and more or less depressed
Ventral surface of clypeus with a curved ruga but lacking distinct toothlike prominences

P. rigidus

Dorsum of petiole node only with a single pair of hairs
In type specimens, a strongly prominent tooth present on basal margin of mandible
Dorsal surfaces of head and alitrunk, and the sides of petiole and postpetiole more coarsely sculptured
Propodeal spines relatively robust
Median clypeal carina often not reaching the anterior clypeal margin
Dorsum of alitrunk in dorsal view, convex
Ventral surface of clypeus usually with two minute toothlike prominences

In addition, an ergatoid queen caste is present in *P. punctatus* but not seen in *P. rigidus,* while a normal queen caste exists in *P. rigidus* but has not been found in *P. punctatus.*

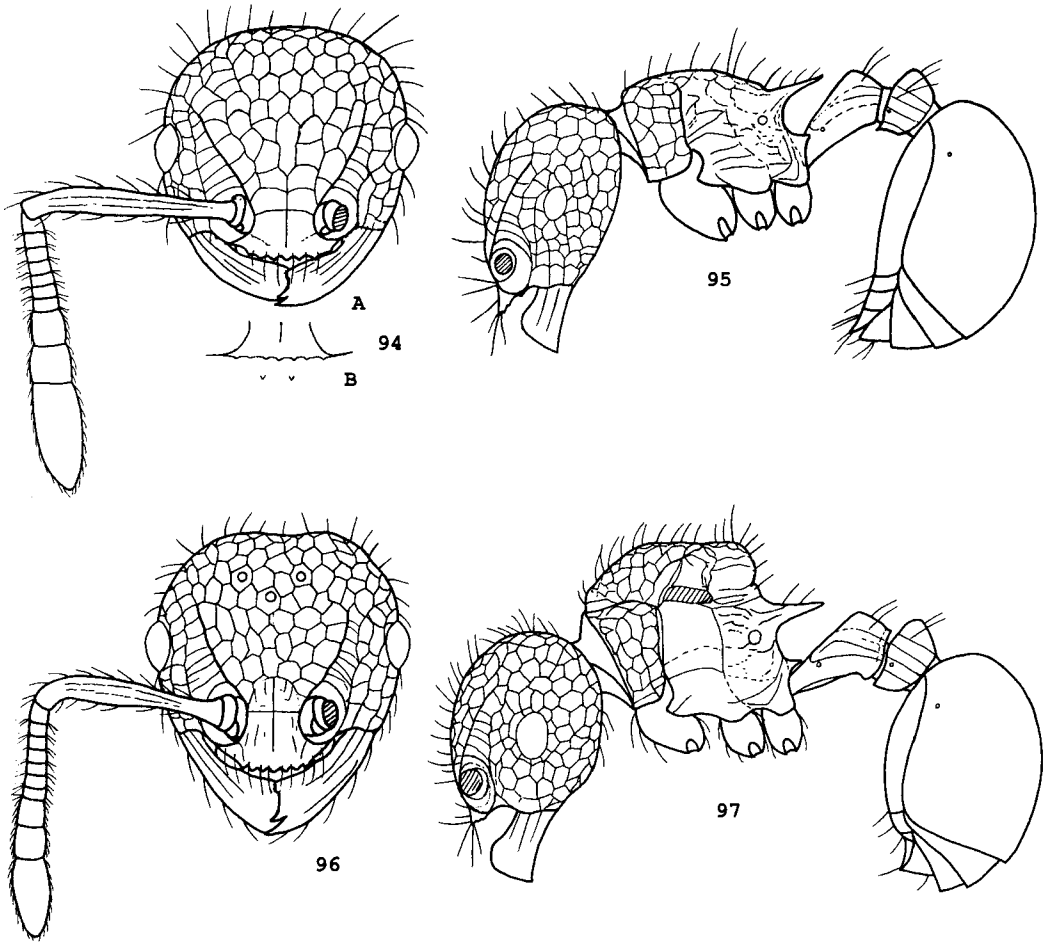
Without a doubt, *P. punctatus* originated in the subtropics or tropics of Asia, as its three close relatives, *P. rigidus, P. pulcher,* and *P. divisus,* are restricted to Sumatra, Malaysia, Brunei, Thailand, and the Philippines, respectively. But *P. punctatus* has a very large range, from New Guinea, Indonesia to Malaysia, Thailand, and then north to China and Japan, indicating its exceptional dispersal ability and tolerance of temperate climates. *Pristomyrmex punctatus* has shown some tendency for dispersal by humens. Interception records from ports in North America suggest that humen commerce may have played a role in this species' spread in temperate Asia.

The chromosome numbers of this species, reported by Imai (1966) and Itow et al. (1984), are $2n$ (diploid) = 24 in the cerebral ganglion cells of the workers and n (haploid) = 12 in the spermatocytes of the males. The larva of this species was described by Wheeler and Wheeler (1954).

Biology. It appears that *P. punctatus* occurs in open habitats. My impression stems from field experience in China as well as from data associated with specimens. This species lacks a normal queen caste; mature colonies usually contain several thousand workers and a few males, but ergatoid queens are rarely found. Eggs are normally laid by workers and can develop into workers or males. Ergatoid queens, when present, can also lay eggs. Brood production begins in April and lasts until the end of September. Young workers remain inside the nest and lay eggs. Older workers forage but lose the ability to lay eggs. Nests are often constructed in leaf litter from June to August but in the soil around trees from September to October. Sometimes arboreal nests are constructed on dead standing trees or in partially dead parts of living trees. The nest entrances of

the arboreal nests and those under rotten wood are often covered with soil particles. See the following references for information on these and other aspects of the biology of *P. punctatus* (Itow et al., 1984; Mizutani, 1980, 1982; Tsuji, 1988a, 1988b, 1988c, 1990a, 1990b, 1994, 1995; Tsuji and Itô, 1986).

Material Examined (ANIC, AMNH, BMHH, BMNH, IZAS, LACM, MCZC, NHMV, USNM). New Guinea: Trian Jaya Ransik (Shah); NETH. Vogelkop, Danowaria (J. L. Gressitt); Vogelkop, Manokwari, 75 m (D. Elmo Hardy); Vogelkop, Fak Fak, S. coast of Bomberai, 10 to 100 m (J. L. Gressitt). Borneo: Sarawak, Nanga Pelagus near Kapit, 180 to 585 m (T. C. Maa); Sarawak, Merirai Valley (T. C. Maa); Sarawak, Bau, Lake Area (T. C. Maa); North Borneo, Tawau, Quoin Hill, Cocoa Res. Sta. (K. J. Kuncheria); North Borneo, Forest Camp, 19 km N of Kalabakan (K. J. Kuncheria); North Borneo (SE), Forest Camp, 9.8 km SW of Tenom (Y. Hirashima). Java: S. Coast, Sukawayani, 2 m, jungle remnant (J. L. Gressitt). Philippines: Samar (McGregor); Mindoro, San Jose (E. S. Ross); P.R. Mindanao, Talacogon, 8.32°N, 125.39°E, relict rainforest, on Agusan River (B. B. Lowery). Singapore (H. Overbeck). Thailand: Chiang Mai Prov., Chiang Rai, Fang Hort. Res. Sta.(D. G. Furth); Chiang Mai Prov., 18.70°N 98.82°E, Mae Wang Dist., Ban Huai Thong, 360 m, agricultural area (orchard), #96-116 (foragers on bamboo shoot) (R. R. Snelling and Saowapa Sonthichai). Vietnam: Perfume Pagoda (P. Jolivet); Cuc Phuong Forest (P. Jolivet). China: Hainan Is. (J. L. Gressitt); Guangxi, Xingping (D. G. Furth); Guangxi, Guilin, Qixing Park (D. G. Furth); Hong Kong, N.T., Campus C.U.H.K., Shatin, 22.38°N, 114.18°E, ca. 20 m, #96-6 (R. R. Snelling); Hong Kong, in bank of mixed orchard (R. Winney); Taipo (G. P. Tung); Shatin (Silvestri); Guangdong Prov., 60 km W of Guangzhou, Ding-Hu Mts. (Boucek); Back Liang (S. F. Light); Fujian Prov., Jiangle (Minsheng Wang); Yenping (S. Ling); Zhejiang Prov., Mokanshan (N. Gist Gee); Shanghai (Silvestri); Soochow (N. Gist Gee); Nanking (G. P. Tung); Hubei Prov., Xiangfan (Minsheng Wang); Guizhou, Leishan (Minsheng Wang); Guizhou, Jiangkou (Minsheng Wang); Szechwan Prov., Hsinching A F (W. L. Brown); Szechuen, near Mt. Ormel (D. C. Graham); Szechuen, Suifu (D. C. Graham); Szechuen, Jang Chen Pu near Mt. Omei (D. C. Graham); Taiwan, Suisha (R. Takahashi); Taiwan, Kosempo (H. Sauter); Taiwan, Bukai (L. Gressitt); Taiwan, Taihoku (J. Sonan, T. Shiraki); Taiwan, Hassenzan (?); Taiwan, Nantou, Lan Wa Chu (D. G. Furth); Taiwan, Nantou, Sung Kang (D. G. Furth); Taiwan, Nantou, Hueisun (D. G. Furth); Taiwan, Nantou, Wushe (D. G. Furth); Taiwan, Taipei, Aukung (D. G. Furth). Japan: Okinawa, Kunigami (Yonaha-dake), under chips (F. G. Werner); Ryukyu, Okinawa (S. M. Fullerton); Amami-Oshima, Loochoo Is. (R. Takahashi); Kagoshima (Silvestri); Kumamotu (Silvestri); Kyushu, Amakusa, Tomioka (S. Murakami); Kyushu Is., Klyamacho, Kakinohara (D. G. Furth); Kyushu Is., Mt. Hikosan, Soeda Notoge Pass (D. G. Furth); Kyushu Is., Mt. Hikosan, Biol. Sta. (D. G. Furth); Fukuoka Pref.,Izuka-machi, Jorogahara (D. G. Furth); Shikoku Is., Tokushima, Kawamata (M. Azuma); Hyogo, Mt. Rokko (M. Azuma); Hyogo, Takarazuka, Namaze (M. Tanaka); 8 mi N. of Kyoto (P. Hammond); Idzu (S. Akiyama); Kyoto (Silvestri); Mt. Maya (Silvestri); Michino-o (Silvestri); Nara (Silvestri); Kuwana (?); Honshu, Toyama Pref., Toyama city (D. G. Furth and K. Suzuki); Nagano Pref., Matsumoto, Shimauchi-Shimoda (D. G. Furth); Kamakura (H. Nagase); Kanagawa Pref., Kamakura (H. Nagase); Kanagawa Pref., Odawara (M. Kubota); Tokyo (L. Gressitt); Tokyo Pref., Hachioji, Minami-Asakawa (D. G. Furth); Yokohama (?); Chiba Pref., Ichikawa, Konodai (D. G. Furth); Bonin Is., Chichi-jima (H. Ikeda); Bonin Is., Chichi-jima, Omura, Camp beach (F. M. Snyder); Bonin Is., Chichijima, Yatsuse R., Gen.'s beach (F. M. Snyder); Bonin Is., Chichijima, Miyanchama,



Figures 94–97. *Pristomyrmex rigidus* **sp. n.** 94A: Worker head, full-face view; 94B: Showing two small denticles on the ventral clypeus; 95: Worker, lateral view; 96: Queen head, full-face view; 97: Queen, lateral view.

Jack Wm's beach (F. M. Snyder); Bonin Is., Chichijima, Sakai-ura, Bull beach (F. M. Snyder).

I have also examined 11 workers collected at the two entry ports of the United States (USNM): nine of them, by Harley and Albrecht, on November 20, 1928, from Philadelphia, Pennsylvania, in lily bulbs imported from Japan; the other two specimens, by J. F. Byrnes, on September 25, 1967, from Anchorage, Alaska, on *Gerberia sp.* imported from Japan. It appears, however, that *P. punctatus* has not yet become established in the United States (Cover, personal communication).

In addition, this species has also been reported from North Korea and South Korea (Collingwood, 1976, 1981; Kim and Kim, 1982; Kim and Kim, 1983).

Pristomyrmex rigidus sp. n.

Figures 94–97

Diagnosis (Worker). Antennal fossae reaching the anterior clypeal margin; eyes with six to eight ommatidia in the longest row; pronotum unarmed; dorsal surfaces

of head and alitrunk covered fully with well-developed coarse rugoreticulum; dorsum of petiole node with a pair of hairs.

Holotype Worker (BMNH). TL 3.40, HL 0.98, HW 0.94, CI 96, SL 0.91, SI 97, EL 0.17, PW 0.64, AL 0.86. Paratypes: 11 workers (MHNG, BMNH, MCZC).

Worker. TL 2.73–3.44, HL 0.75–0.98, HW 0.74–0.94, CI 93–102, SL 0.70–0.94, SI 91–103, EL 0.14–0.17, PW 0.50–0.64, AL 0.70–0.86, PPW 0.24–0.30, PPL 0.16–0.20, PPI 144–167 (n = 32).

Mandibles with a few coarse longitudinal rugae that usually do not reach to the vicinity of the masticatory margin. Dentition of the masticatory margin of mandible: the strongest apical tooth + the second strongest preapical + a long diastema + a truncated basal tooth (or two small denticles). A strongly developed tooth or a broad, subtriangular short prominence present about midway on the basal margin of mandible. Clypeus shield shaped, more or less depressed, with a median longitudinal carina that usually does not reach to the anterior clypeal margin; sometimes a few additional weak rugae are present on the clypeus. Anterior clypeal margin usually with a median denticle and three others on each side, but sometimes with a lateral denticle indistinct or two lateral small denticles fused into a larger one. Lateral portions of clypeus reduced to margins, and antennal fossae reaching the anterior clypeal margin. Ventral surface of clypeus usually with two minute toothlike prominences (Fig. 94B), but sometimes the prominences are very weak. Palp formula 5,3. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobes indistinct. Frontal lobes absent, so that the antennal articulations are entirely exposed. Antennal scapes, when lying on the dorsal head, surpassing the occipital margin of head by one-sixth to one-fifth of their length. Eyes containing six to eight ommatidia in the longest row. Occipital margin rather straight or slightly concave. Dorsal surface of alitrunk somewhat convex. Pronotum unarmed. Propodeal spines robust, acute, and long, much longer than the distance between their bases. Metapleural lobes triangular and acute. Pedicel segments in profile as in Figure 95. In profile, anterior face of the petiole node, together with the dorsal surface of petiole peduncle, forming a long declivity that reaches the top of the node. Petiole node in profile with an approximately right-angled apex. Dorsum of postpetiole in profile sometimes angulate but sometimes rounded. In dorsal view, postpetiole transverse-rectangular, much broader than long and also broader than the petiole node. Dorsal surfaces of head and alitrunk as well as the sides of pronotum fully covered with coarse rugoreticulum. Sides of the rest of alitrunk with numerous irregular coarse rugae. Sides of petiole node and postpetiole usually with a few rims as illustrated in Figure 95, but sometimes some of the rims rather weak. Petiole and postpetiole in dorsal view, except for rims, very smooth and polished. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect long hairs. A pair of similar hairs present on the dorsal petiole, and usually two pairs on the postpetiole as shown in Figure 95. Two or three pairs of long, forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect or suberect hairs. First gastral tergite lacking erect or suberect hairs. Color uniformly reddish-brown.

Queen. TL 3.30–4.02, HL 0.85–1.10, HW 0.86–1.10, CI 100–102, SL 0.76–0.88, SI 80–91, EL 0.18–0.24, PW 0.66–0.86, AL 0.84–1.08, PPW 0.28–0.36, PPL 0.20–0.22, PPI 140–164 (n = 6).

Generally similar to worker, except for caste differences; in addition, the sculpture of mesoscutum is weaker and sparse.

Male. Unknown.

Comments. Pristomyrmex rigidus occurs in the Oriental region. It is closely related to *P. punctatus*. These two species constitute a clade. The separation of the two species is summarized under *P. punctatus*. Characters separating *P. rigidus* from the

P. divisus-P. pulcher clade are given under *P. divisus*.

Discussion. The material that I have examined may contain two species. Specimens from Thailand possess an anterodorsally angulate postpetiole in profile, a strongly prominent tooth on the basal margin of the mandible, and a truncated basal tooth on the masticatory margin of the mandible. Specimens from Indonesia, Malaysia, and Brunei have a rounded dorsal surface of the postpetiole, a weak tooth on the basal margin of the mandible, and two small basal denticles on the masticatory margin. But a single, variable species is maintained for the present because available material is still limited. Further collecting and studying are needed.

Holotype Worker. Thailand: 26. Kaeng Krachan NP., 19.xi.1985 (Löbl and Burckhardt).

Paratypes. 11 workers with same data as holotype.

Additional Material Examined (ANIC, BMNH, MCZC, MHNG, NHMV). Thailand: Khao Sabap NP. (Löbl and Burckhardt). Brunei: Ulu Belalong, W. ridge, 500 ft (R. Levy). Malaysia: Sabah, Tawan Quoin Hill, 750 ft, rainforest, leaf mold, berlesate (R. W. Taylor); Sabah, Poring Hot Springs, 500 to 900 m (Burckhardt and Löbl); Sabah, Poring Hot Springs, Langanan Falls, 950 m (Löbl and Burckhardt); Sabah, Batu Punggul Resort, primary forest, sifting (?); Sarawak, 4th Division, Gn. Mulu NP., limestone forest, 200 m, pitfall trap (H. Vallack); Sarawak, Gn Matang, 20 km W Kuching, 800 m, submontane forest (Löbl and Burckhardt); Negri Sembilan, Pasoh For. Res., litter, primary forest (L. Ficken; M. Brendell, K. Jackson, and L. Ficken); Kuala, Lumpur (B. Bolton); Upper Gombak Val., near K. Lumpur, rainforest, berlesate, ca. 1,500 ft (R. W. Taylor); Kedah State, Gunong Jeral, 5.48N, 100.62E, 550 m, rainforest, berlesate (R. W. Taylor and R. A. Barrett); Pahang, Batu Caves N Kuala, Lumpur (Löbl and Calame); Pahang Gombak, forest litter (Löbl and Calame). Indonesia: Sumatra, Liwa, 5.04S, 104.03E, rainforest, litter (M. S. Harvey).

Ecological Information. This species occurs in rainforest and has been taken in litter berlesates and pitfall traps.

THE *CRIBRARIUS* GROUP

Worker. Medium sized, with the following combination of characters.

(1) Masticatory margin of mandibles with a long diastema between the preapical and the basal tooth.

(2) Palp formula 4,3 (Bolton, 1981).

(3) Frontal carinae present.

(4) Lateral portions of clypeus reduced to a margin, and the antennal fossae reaching the anterior clypeal margin.

(5) Frontal lobes absent.

(6) Lamella that encircles the base of antennal scape, entire.

(7) Dorsum of alitrunk convex, not depressed; pro-mesonotal suture absent.

(8) Pronotum armed with a pair of strong, acute, short spines.

(9) Propodeal spines well developed and long; in dorsal view not forming a "fork".

(10) Petiole node thick in profile; its anterodorsal, posterodorsal, and posteroventral corners showing right angles approximately.

This group contains one species, *P. cribrarius,* from South Africa and Mozambique.

Pristomyrmex cribrarius probably evolved from an Oriental ancestor of the *punctatus* group because *P. cribrarius* is similar, in the workers, to some Oriental species of the *punctatus* group in the following characters: (1) a high palp formula; (2) well-developed, long propodeal spines; and (3) a few coarse longitudinal rugae present on the petiole and on the postpetiole, respectively. However, I erect the *cribrarius* group to accommodate this species instead of placing it in the *punctatus* group because it possesses a distinct petiole node in the workers and queens (i.e., in profile, the anterodorsal, posterodorsal, and posteroventral corners of the node

right-angled), which is not seen in the other species groups. In addition, the workers of *P. cribrarius* possess a pair of robust pronotal spines that are absent in the *punctatus* group.

Without a higher palp formula (4,3), *P. cribrarius* would fall into the *quadridens* group. The *quadridens* group now contains 25 species, but the palp formulae of 18 species examined are 2,3, 2,2, and 1,3. If *P. cribrarius* were placed in the *quadridens* group, the *punctatus* group (differing from the *quadridens* group primarily by its high palp formula) would have no grounds to exist, as two species of the *quadridens* group, *P. eduardi* and *P. orbiceps*, also lack pronotal armaments.

Pristomyrmex cribrarius is also somewhat similar to the three members of the *trispinosus* group, from Mauritius. They all possess robust, acute, but short pronotal spines; long, well-developed propodeal spines; and a very convex dorsum of the alitrunk in the workers. The similarity, however, is superficial. *Pristomyrmex cribrarius* differs from the *trispinosus* group in the workers in several important characters: The frontal carinae are absent in the *trispinosus* group but extend to the level of the posterior margins of eyes in *P. cribrarius*; the promesonotal suture is present in the *trispinosus* group but absent in *P. cribrarius*; the propodeal spines in dorsal view are fused together at the base in the *trispinosus* group, as opposed to be separated at the base in *P. cribrarius*; palp formula is lower (1,2) in the *trispinosus* group but higher (4,3) in *P. cribrarius*; foveolate punctures on the dorsal surfaces of the head and the alitrunk are absent in the *trispinosus* group but dense in *P. cribrarius*; and numerous hairs are present on the first gastral tergite in the *trispinosus* group but not seen in *P. cribrarius*.

Finally, *P. cribrarius* possesses (1) a long diastema on the masticatory margin of mandible separating the preapical tooth from the basal tooth, (2) a higher palp formula (4,3), and (3) a pair of robust spines on the pronotum in the workers, showing it is not closely related to the *levigatus*, *profundus*, and *umbripennis* groups.

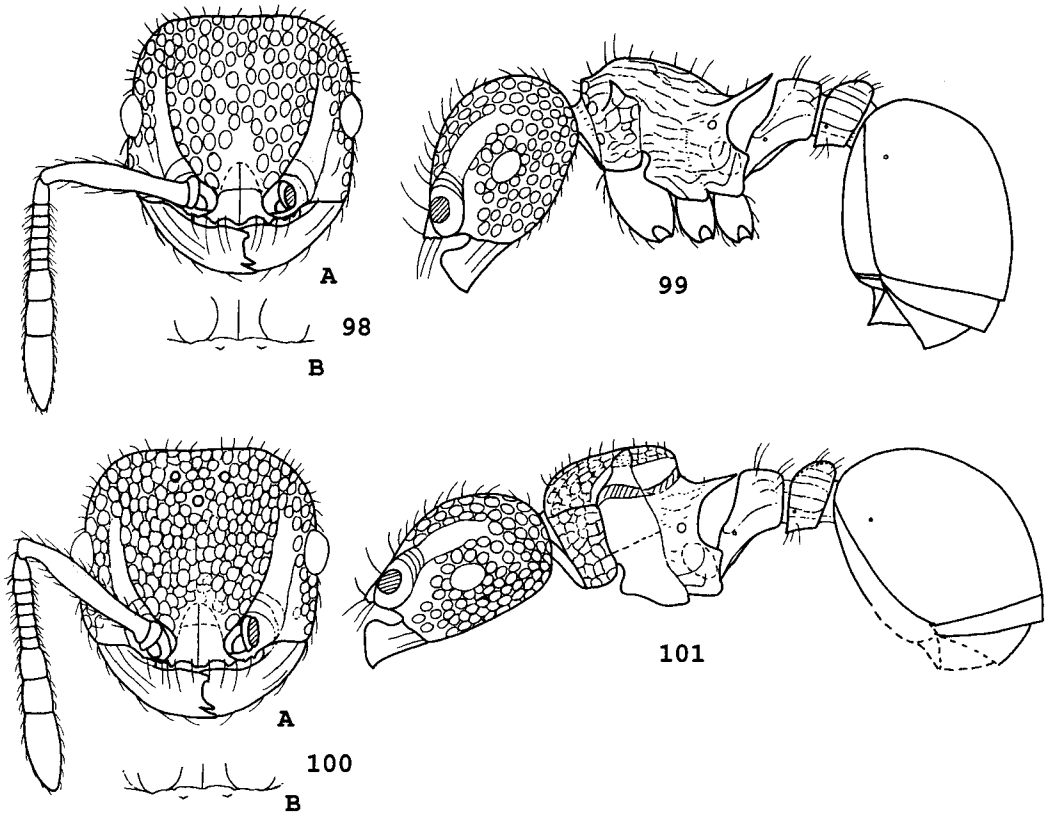
Pristomyrmex cribrarius Arnold
Figures 98–101

Pristomyrmex cribrarius Arnold, 1926: 281. Holotype queen, Mozambique: Amatongas Forest (G. Arnold) (SAMC) [examined].

Diagnosis (Worker). See characters 8 and 10 under the group; additional characters including dorsal surfaces of head and alitrunk with foveolate-reticulate sculpture and postpetiole with a few coarse longitudinal rugae on each side.

Worker. TL 3.10–3.54, HL 0.82–0.96, HW 0.89–1.02, CI 106–110, SL 0.72–0.80, SI 78–82, EL 0.19–0.22, PW 0.55–0.64, AL 0.80–0.90, PPW 0.30–0.36, PPL 0.20–0.22, PPI 143–167 (n = 4).

Mandibles with a few longitudinal basal rugae. Masticatory margin of mandible with an apical tooth + a preapical tooth + a long diastema + a broad and truncated basal tooth. Basal margin of mandible lacking a toothlike prominence or curved lobe. Clypeus with a strong median longitudinal carina. Anterior clypeal margin with a median truncated lobe and usually three to four denticles on each side. Ventral surface of clypeus with two weak toothlike prominences, or unarmed. Palp formula 4,3 (Bolton, 1981). Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobes slightly concave. Antennal articulations entirely exposed. Antennal scapes, when lying on the dorsal head, not reaching the occipital margin of head. Eyes with 9 to 10 ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 99. Dorsum of alitrunk, in profile, strongly convex. Pronotum with a pair of robust short spines, ca. 0.06 to 0.08. Propodeal spines well developed and long, ca. 0.25 to 0.30, much longer than the distance between their bases. Metapleural lobes small and triangular. Petiole node high and thick in profile; its anterodorsal, posterodorsal, and posteroventral corners showing right angles approximately. Postpetiole high in



Figures 98–101. *Pristomyrmex cribrarius* Arnold. 98A: Worker head, full-face view; 98B: Showing two minute denticles on the ventral clypeus; 99: Worker, lateral view; 100A: Queen head, full-face view; 100B: Showing two minute denticles on the ventral clypeus; 101: Queen, lateral view.

profile, curved dorsally; in dorsal view, transverse-rectangular and much broader than long. Dorsum of head, except for the scrobal areas, with foveolate-reticulate sculpture. Dorsum of alitrunk entirely sculptured with coarse longitudinal rugae and blunt foveolate punctures between rugae. Sides of alitrunk irregularly rugulose. Each side of petiole node and postpetiole with a few coarse longitudinal rugae. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Petiole and postpetiole each with a few pairs of hairs dorsally. First gastral tergite lacking hairs. Anterior clypeal margin with a row of forward-projecting hairs. Scapes and tibiae with erect or suberect short hairs. Color reddish-brown, but gaster darker.

Queen. TL 3.84, HL 0.98, HW 1.04, CI 106, SL 0.80, SI 77, EL 0.26, PW 0.82, AL 1.05, PPW 0.36, PPL 0.23, PPI 157 (n = 1).

Generally similar to worker, except for caste differences; in addition, pronotal armaments absent, eyes larger than in conspecific worker.

Male. Unknown.

Comments and Discussion. At first sight, *P. cribrarius* somewhat resembles two Australian species of the *quadridens* group, *P. thoracicus* and *P. foveolatus*: Their workers all possess a pair of short pronotal spines, a pair of long propodeal

spines, foveolate-reticulate sculpture on the dorsal head, and a transversely broad postpetiole in dorsal view. However, *P. cribrarius* is rather different from *P. thoracicus* and *P. foveolatus*. In the workers of *P. cribrarius*, palp formula is 4,3; the ventral surface of clypeus shows two minute teeth; the dorsum of alitrunk is very convex; the petiole and the postpetiole are sculptured with a few coarse longitudinal rugae; the eyes are larger, with 8 to 10 ommatidia in the longest row; and the petiole node, in profile, shows three right angles. But in the workers of *P. thoracicus* and *P. foveolatus*, palp formula is 2,3; the ventral surface of clypeus only has a single distinct tooth at the center; the dorsum of alitrunk is somewhat depressed; the petiole and the postpetiole are unsculptured; the eyes are smaller, with four to six ommatidia in the longest row; and the petiole node in profile lacks an acute posterodorsal angle.

In the African *Pristomyrmex* fauna, *P. cribrarius* is easily recognized by the coarse longitudinal rugae on the dorsal alitrunk and on the sides of the petiole and the postpetiole; its very convex dorsal alitrunk; its well-developed, long propodeal spines; its distinct petiole node; and the numerous erect hairs on the alitrunk, petiole, and postpetiole.

Distribution. South Africa, Mozambique (Bolton, 1981).

Ecological Information. Specimens have been collected by W. L. and D. E. Brown in South Africa on sand, in coast vine forest; by J. C. Faure, in South Africa (Zululand, St Lucia Lake), "by sifting the detritus and damp decaying leaves found under bushes (Arnold, 1948)"; and the holotype by G. Arnold on a tree trunk (Arnold, 1926).

THE *QUADRIDENS* GROUP

Worker. Usually medium- to large-sized ants (HL 0.73–1.46, HW 0.68–1.62, TL 2.90–6.48) with the following combination of characters.

(1) Masticatory margin of mandibles with three to five teeth, which have one of the following three arrangements:

a. the strongest apical + the second strongest preapical + a long diastema + two small teeth of similar size (or one basal tooth, which is sometimes formed by the fusion of the two small teeth) or

b. the strongest apical + the second strongest preapical + a diastema + three small teeth of similar size or

c. the strongest apical + the second strongest preapical + an intercalary small tooth + a very short diastema (or this diastema indistinct) + two small teeth of similar size (i.e., as shown in *P. trachylissus*).

(2) Anterior clypeal margin with five or more denticles in most species, but several species having only three teeth or prominences.

(3) Lateral portions of clypeus in front of antennal fossae reduced to a margin, and the antennal fossae reaching the anterior clypeal margin.

(4) Palp formula 1,3 (in 11 species), or 2,2 (three species), or 2,3 (four species).

(5) Frontal carinae usually extending to the level of the posterior margins of eyes, with the exception in *P. erythropygus, P. longispinus, P. trogor,* and *P. wilsoni.*

(6) Frontal lobes indistinct or very weak.

(7) Antennal scrobes shallow or absent.

(8) Lamella, encircling the base of antennal scape, entire.

(9) Dorsum of alitrunk lacking pro-mesonotal suture.

(10) Pronotum armed with small teeth to well-developed spines, except in *P. eduardi* and *P. orbiceps.*

(11) Petiole node in profile usually high, with the anterodorsal angle elevated above the posterodorsal, but sometimes showing other forms.

(12) Dorsum of head without sculpture, with scattered foveolate punctures, or with foveolate-reticulate sculpture or rugoreticulum.

This group currently contains 25 spe-

cies, accounting for almost half the genus. Of them, three occur in Africa, six in Australia and 16 in the Oriental region. In fact, like many *Pristomyrmex*, many species in this group have a restricted geographic range.

The *quadridens* group species are closely related to the *cribrarius* and *punctatus* groups but differ from them, most importantly by their reduced palp formulae: 1,3, or 2,2, or 2,3 (4,3 in the *cribrarius* group and 4,3 or 5,3 in the *punctatus* group).

The *quadridens* group differs from the *trispinosus* group because in the workers of the *quadridens* group, a promesonotal suture (or impression) is absent, the dorsum of the propodeum in profile is not deeply concave, the propodeal spines in dorsal view do not form a fork, and regular striation is absent from the dorsal surfaces of the head and the alitrunk.

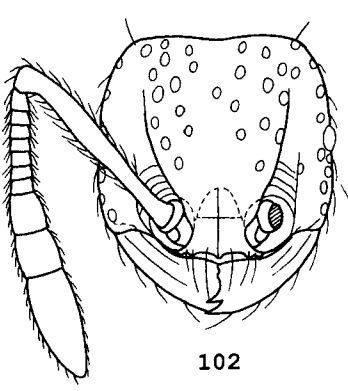
The *quadridens* group differs from the *levigatus, profundus,* and *umbripennis* groups by possessing a distinct diastema on the masticatory margin of mandible in the workers and queens, with the exception of *P. trachylissus*; but in the workers of *P. trachylissus,* five teeth are present on the masticatory margin, and the pronotum is armed with a pair of well-developed, long spines, which are not seen in the *levigatus, profundus,* and *umbripennis* groups.

The evolution of mandibular dentition in the workers and queens is one of the reasons of the diversity of the *quadridens* group. The dental formula "apical tooth + a preapical + a long diastema + two small basal teeth of similar size", possessed by many species of the group, is probably an "ancestral character". It has given rise to three apomorphic dental formulae in the group: (1) an apical + a preapical + an intercalary small tooth + two small teeth of similar size, as in *P. trachylissus*; (2) an apical + a preapical + a diastema + three small teeth of similar size, as in *P. eduardi, P. occultus,* and *P. quindentatus*; and (3) an apical + a preapical + a long diastema + a basal tooth (which evolved through the fusion of the two small teeth), as in *P. erythropygus, P. quadridentatus,* and *P. wheeleri.*

The pronotal armaments in the workers of this group seem to show an evolutionary tendency to increase in size. For example, in *P. brevispinosus,* the pronotum is armed with teeth shorter than or about as long as propodeal armaments. In *P. costatus,* the pronotum is armed with a pair of short spines longer than the propodeal armaments, but much shorter than the distance between the bases of two pronotal spines. In *P. bicolor,* the pronotal spines are very long, much longer than the propodeal armaments and usually much longer than the distance between the bases of two pronotal spines.

In the workers and queens of the *quadridens* group, foveolate punctures on the dorsal head between the frontal carinae show continuous variation, from a complete absence to several punctures present to foveolate-reticulate sculpture (or dense assemblages similar to alveolate sculpture) or rugoreticulum. For example, *P. collinus* and *P. flatus* workers almost completely lack foveolate punctures on the dorsum of head between the frontal carinae. *Pristomyrmex quadridens* workers have scattered foveolate punctures on the dorsum of head between the frontal carinae, but the spaces between foveolae are smooth. *Pristomyrmex brevispinosus* workers have rugoreticulum or foveolate-reticulate sculpture. Some populations, only with foveolate-reticulate sculpture behind the eyes, are considered intermediate forms and are grouped into *P. brevispinosus.*

The males of eight species of this group are known (Figs. 261–266, 270–276). These males are more similar to those of the both *trispinosus* and *levigatus* groups than to the male of *P. punctatus* (*punctatus* group) in palp formula, propodeal armaments, and the shape of petiole or to those of the *umbripennis* group in the size, propodeal armaments, and the shape and sculpture of petiole.



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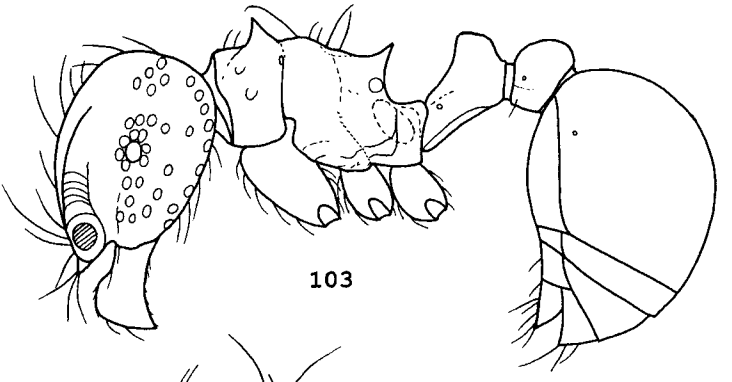

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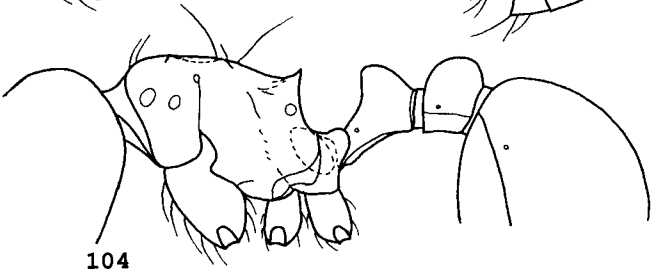

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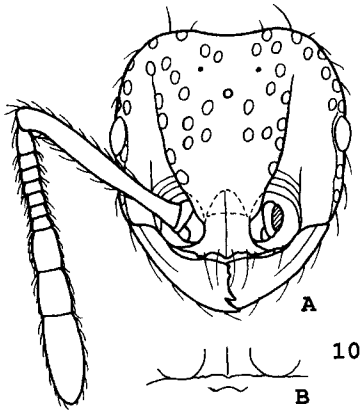

A

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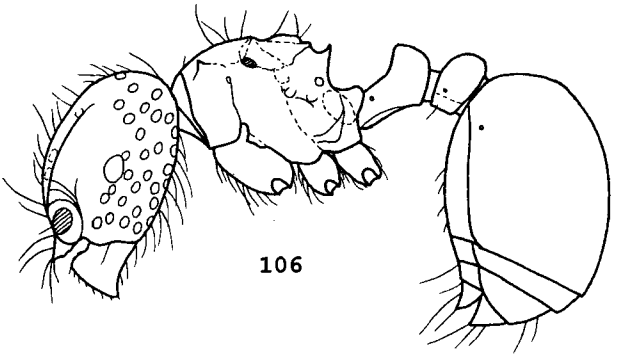
B



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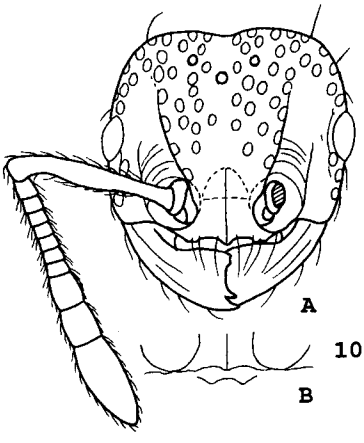

A

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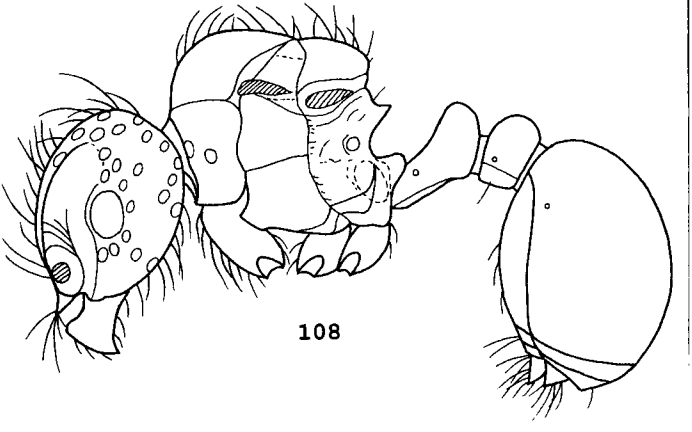
B



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Pristomyrmex africanus Karavaiev
Figures 102–108

Pristomyrmex africanus Karavaiev, 1931: 47. Holotype worker, Kenya: Mabira (Dogiel) (UENC) [examined].

Hylidris myersi Weber, 1941: 190. Syntype workers, Sudan: Equatoria, Aloma Plateau, Khor Aba, 3,700 ft, Lat. 3°47′N/Long. 30°37′E (N. A. Weber) [one syntype (MCZC) examined]. [Synonymy by Bolton, 1981].

Hylidris myersi subsp. *mbomu* Weber, 1952: 19. Holotype worker, Central African Republic: Ubangi-shari, Bas Mbomu, 5 mi W of Bangassau (N. A. Weber) (AMNH). [Synonymy by Bolton, 1981].

Hylidris myersi subsp. *primus* Weber, 1952: 19. Holotype worker, Zaire: Stanleyville (N. A. Weber) (AMNH). [Synonymy by Bolton, 1981].

Hylidris myersi subsp. *beni* Weber, 1952: 20. Syntype workers, Zaire: 15 mi N of Beni (N. A. Weber) [one syntype (MCZC) examined]. [Synonymy by Bolton, 1981].

Diagnosis (Worker). Masticatory margin of mandible with a long diastema after the preapical tooth; ventral surface of clypeus with two toothlike prominences; eyes containing four to five ommatidia in the longest row; dorsal surfaces of head between the frontal carinae and alitrunk with scattered foveolate punctures; petiole and postpetiole without hairs.

Worker. TL 2.76–3.40, HL 0.74–0.90, HW 0.74–0.93, CI 98–104, SL 0.68–0.83, SI 86–95, EL 0.08–0.12, PW 0.48–0.58, AL 0.68–0.85, PPW 0.22–0.27, PPL 0.18–0.22, PPI 110–135 (n = 27).

Mandibles with a few longitudinal basal rugae. Masticatory margin of mandible with an apical tooth + a preapical tooth + a long diastema + a broad and truncated (or somewhat midconcave) basal tooth. Basal margin of mandible almost straight, lacking a toothlike prominence or curved lobe. Clypeus possessing or lacking a median longitudinal carina. Anterior clypeal margin with a median denticle and two others on each side, but two lateral denticles are usually fused into one prominence. Ventral surface of clypeus with two toothlike prominences. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobes indistinct or very weak. Frontal lobes absent; thus, the antennal articulations are entirely exposed. Antennal scapes, when lying on the dorsal head, close to, or slightly surpassing, the occipital margin of head. Eyes containing four to five ommatidia in the longest row. Promesonotum, in dorsal view, sometimes slightly concave. Profile shape of alitrunk and pedicel segments as in Figures 103–104. Pronotum usually with a pair of teeth or short spines but rarely with a pair of tubercles. Propodeum with a pair of teeth or short spines. Metapleural lobes rounded. Petiole node high in profile, higher than long, with a long anterior peduncle; its anterodorsal angle distinctly higher than the posterodorsal one that is usually rounded. Subpetiole with a narrow flange. Postpetiole in profile higher than long, rounded dorsally, in dorsal view broadening from front to back and broader than long. Dorsum of head between the frontal carinae and the sides of head, with numerous scattered foveolate punctures; sometimes the punctures are shallow and sparse. Dorsum of alitrunk smooth, except for a few foveolate punctures shallow or conspicuous, present on each side of the mesonotum. Petiole, postpetiole, and gaster smooth and shining. Dorsum of head between the frontal carinae, with some erect or suberect hairs. Promesonotum with a few pairs of hairs. Propodeum, dorsal surfaces of petiole and postpetiole, and first gaster tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present on the anterior clypeal mar-

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Figures 102–108. *Pristomyrmex africanus* Karavaiev. 102: Worker head, full-face view; 103: Worker, lateral view; 104: Showing that pronotal prominences are very weak in some specimens; 105A: Ergatoid queen, full-face view; 105B: Showing two small denticles on the ventral clypeus; 106: Ergatoid queen, lateral view; 107A: Queen head, full-face view; 107B: Showing two small denticles on the ventral clypeus; 108: Queen, lateral view.

gin. Scapes and tibiae with decumbent hairs. Color reddish-brown, but gaster darker.

Ergatoid Queen. TL 3.70, HL 0.94, HW 1.00, CI 106, SL 0.85, SI 85, EL 0.16, PW 0.60, AL 0.92, PPW 0.30, PPL 0.20, PPI 150 (n = 1).

General shape as in Figures 105–106. Similar to worker; color and pilosity as in worker. Sculpture, except for mesonotum where a few rugae present, as in worker. The head with three ocelli; eyes larger, with six to seven ommatidia in the longest row; pronotum armed with a pair of acute minute spines; propodeum with a pair of short spines; mesonotum more convex, and metanotal groove present. Flight sclerites and wings lacking, but a black speck is present on the each lateral margin of mesonotum.

Queen. TL 3.40–3.82, HL 0.84–0.96, HW 0.86–1.02, CI 102–107, SL 0.74–0.88, SI 82–89, EL 0.20–0.21, PW 0.70–0.74, AL 0.90–1.04, PPW 0.28–0.30, PPL 0.20–0.22, PPI 132–143 (n = 5).

General shape as in Figures 107–108, with normal caste differences from the conspecific worker. Eyes larger. Pronotum lacking teeth or spines but sometimes with a pair of blunt tubercles. Mesonotum with more hairs than in worker. Other characters similar to worker.

Male. Unknown.

Comments. This African species is closely related to the Asian *P. quadridens*. Both worker and queen of *P. africanus* differ from those of *P. quadridens* in having two teeth on the ventral surface of clypeus and lacking erect or suberect hairs on both petiole and postpetiole. The separation of *P. africanus*, together with *P. trogor*, from the other two Oriental species, *P. flatus* and *P. collinus*, is provided under *P. flatus*. The workers of *P. africanus* and *P. trogor* differ from the workers of three Australian species, *P. wheeleri*, *P. erythropygus*, and *P. quadridentatus* as follows:

P. africanus and ***P. trogor***

Dorsum and sides of both petiole and postpetiole lacking erect or suberect hairs

Metapleural lobes rounded

Dorsal alitrunk lacking a transverse ridge at the position of metanotal groove

P. wheeleri*, *P. erythropygus*,** and ***P. quadridentatus

Dorsum and sides of both petiole and postpetiole with erect or suberect hairs

Metapleural lobes elongate-triangular, with an apex

Dorsal alitrunk with a transverse ridge at the approximate position of matanotal groove

In addition, in *P. africanus* and *P. trogor* the denticles of the anterior clypeal margin are smaller but larger and stronger in *P. wheeleri*, *P. erythropygus*, and *P. quadridentatus*. *Pristomyrmex africanus* and *P. trogor* possess two toothlike prominences on the ventral clypeus that are not seen in *P. wheeleri* and *P. erythropygus*. *Pristomyrmex erythropygus* has several short rugae on the juncture between the pronotum and the mesonotum and has erect or suberect hairs on the first gastral tergite that are absent in *P. africanus* and *P. trogor*. *Pristomyrmex trogor* lacks a longitudinal median carina on the clypeus, possessed by *P. wheeleri*, *P. erythropygus*, and *P. quadridentatus*.

The workers of *P. africanus* can be separated from those of the other four African *Pristomyrmex* species as follows: (1) *P. africanus* possesses numerous foveolate punctures on the dorsal head between the frontal carinae that are not seen in *P. trogor* and *P. orbiceps*; (2) *P. africanus* has eyes containing four to five ommatidia in the longest row, as compared with eight or more usually present in *P. orbiceps*, *P. fossulatus*, and *P. cribrarius*; (3) *P. africanus* has two teeth on the ventral clypeus that are absent in *P. orbiceps* and *P. fossulatus*; (4) *P. africanus* lacks coarse longitudinal rugae and erect or suberect hairs on the petiole and the postpetiole that are present in *P. cribrarius*.

Distribution. Ghana, Cameroon, Gabon, Kenya, Zaire, and Angola (Bolton, 1981). Some more records, including some ecological information, added here (MCZC, ANIC): Zaire: Ituri F. Beni-Irumu (N. A. Weber). Sudan: Equatoria, Imatong Mts. (N. A. Weber). Angola: Falls R. Chicapa, Saurimo, 9.39°S, 20.24°E, gallery forest, berlesate (Luna de Carvalho); R. Kahingo, 7.39°S, 20.51°E, gallery forest, berlesate (Mwaoka); Dundo, R. Mussungue, gallery for., berlesate (Luna de Carvalho); Dundo, dry forest (Luna de Carvalho); Dundo, Carrisso Park, R. Luachimo, 7.22°S, 20.50°E, gallery forest, berlesate (Luna de Carvalho); R. Camudembele, gallery forest, berlesate (Luna de Carvalho); Ghana: E.R., Mt. Atewa, rainforest, Berlesate (R. W. Taylor); E.R., Nkwanda For., near Enyiresi, rainforest, Berlesate (R. W. Taylor); Tafo, Eastern Reg., rainforest, Berlesate (R. W. Taylor).

Ecological Information. Weber (1941: 192; 1952: 18–20) noted that "workers were in rainforest of a luxuriant type referred to as gallery forest"; they were among the leaf and humus cover on the forest floor and were slow moving in habit; "when disturbed they became motionless, 'feigning death' momentarily".

Pristomyrmex bicolor Emery **stat. n.**
Figures 109–112

Pristomyrmex trachylissa var. *bicolor* Emery, 1900: 678. Syntype workers, Sumatra: Si-Rambé, xii.1890–iii.1891 (E. Modigliani) (MCSN, NHMV, USNM) [examined].

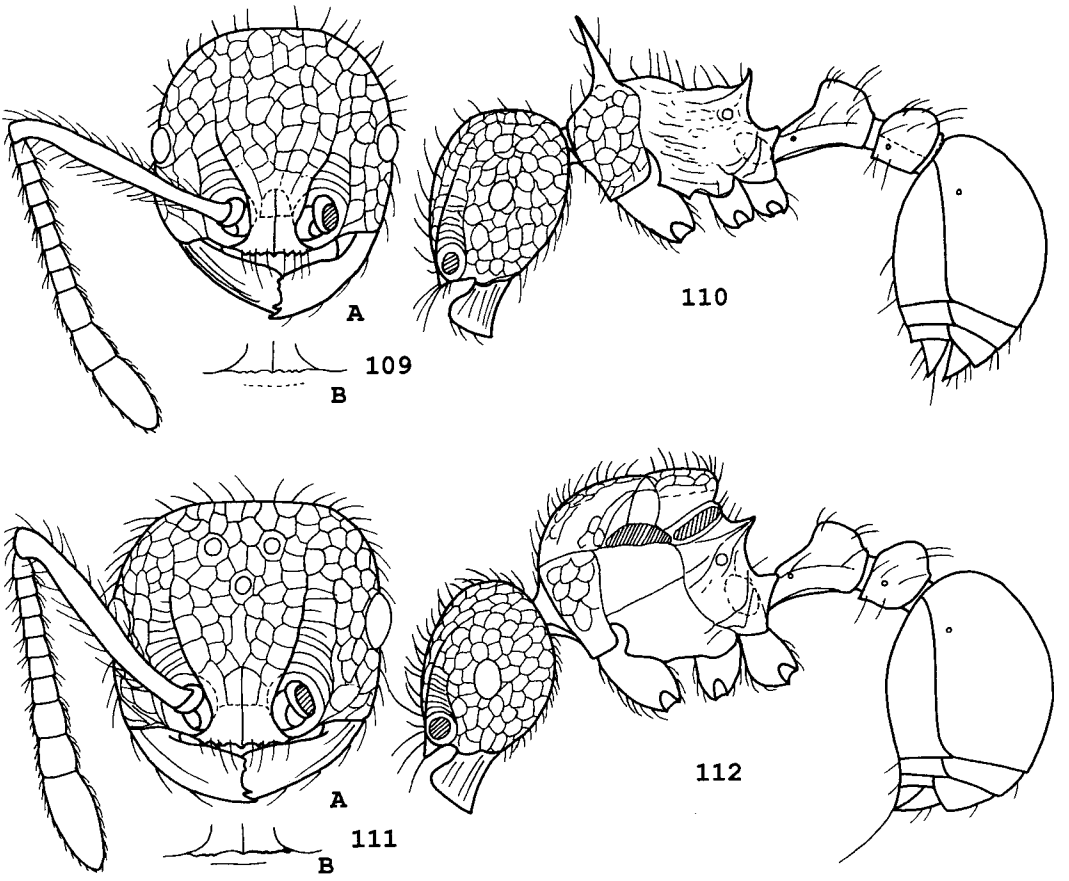
Pristomyrmex taurus Stitz, 1925: 120. Holotype worker, Philippines: N. Palawan, Binaluan, xi.–xii.1913 (G. Boettcher) (MNHU) [examined]. **Syn. n.**

Note: The unique holotype of *P. taurus* differs from the syntypes of *P. bicolor.* In the former, the pronotal spine length is 0.58, and the anterior half of the dorsum of the alitrunk is smooth and shining. In the latter, the pronotal spine length is 0.36 to 0.40, and sometimes only a rather narrow smooth area is present between the bases of two pronotal spines. *Pristomyrmex taurus,* however, is here regarded as a junior synonym of *P. bicolor* because, after examining all the specimens available, I find that the pronotal spine length is continuously variable in the range of 0.36 to 0.66, and sculpture on the anterior half of the dorsal alitrunk also shows continuous variation. I cannot use any lines to separate this composite at the present. The size of the holotype of *P. taurus* is HL 1.10, HW 1.08, CI 98, SL 1.14, SI 106, EL 0.20, PW 0.74, AL 1.18, PSL2 0.24. The sizes of three syntype workers of *P. bicolor* are HL 1.20–1.28, HW 1.24–1.32, CI 103–107, SL 1.38–1.46, SI 108–111, EL 0.24–0.26, PW 0.84–0.90, AL 1.40–1.44, PSL2 0.10–0.12.

Diagnosis (Worker). Masticatory margin of mandible with four teeth and a long diastema after the preapical tooth; pronotal spines exceptionally long (usually 0.40–0.66), much longer than propodeal armaments (teeth or short spines); dorsum of head sculptured with coarse rugoreticulum.

Worker. TL 4.58–6.14, HL 1.04–1.42, HW 1.08–1.46, CI 98–109, SL 1.14–1.58, SI 106–120, EL 0.20–0.26, PW 0.65–0.96, AL 1.18–1.64, PPW 0.33–0.40, PPL 0.38–0.48, PPI 77–93 (n = 83).

Mandibles usually with several longitudinal rugae, varying from superficial to rather coarse. Masticatory margin of mandible with four teeth arranged as: two adjacent strong apical teeth + a long diastema + two small basal teeth that are roughly the same size. Basal margin of mandible lacking a distinctly curved lobe or tooth. Clypeus with a strong median longitudinal carina. Anterior clypeal margin sometimes with seven denticles: a median denticle and three others on each side, but sometimes one or a few are weak or indistinct, or two to three of the lateral denticles are fused into a larger one. Ventral center of clypeus usually with a transverse ruga of varying length, sometimes with a very weak prominence at middle and sometimes without either of these characters. Palp formula 1,3. Frontal carinae strong,



Figures 109–112. *Pristomyrmex bicolor* Emery. 109A: Worker head, full-face view; 109B: Showing a weak transverse ruga on the ventral clypeus; 110: Worker, lateral view; 111A: Queen head, full-face view; 111B: Showing a transverse ruga on the ventral clypeus; 112: Queen, lateral view.

extending to the level of the posterior margins of eyes. Slightly concave scrobal areas present. Frontal lobes absent; thus, the antennal articulations are entirely exposed. Antennal scapes, when lying on the dorsal head, usually surpassing the occipital margin by one-third to one-fourth of their length. Eyes usually containing 10 to 12 ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 110. Pronotal spines well developed and exceptionally long, varying in length, usually 0.40 to 0.66, but in a few specimens they are 0.37 to 0.39. Propodeum usually with a pair of acute short spines, which are 0.12 to 0.20, much more slender and much shorter than the pronotal ones. Propodeal armaments occasionally reduced to a pair of teeth. Both pronotal and propodeal spines upward pointed. Metapleural lobes subtriangular. In profile, petiole node high, with a long anterior peduncle; its anterodorsal angle elevated above the posterodorsal. In dorsal view, crest of petiole node rounded. Postpetiole in profile convex dorsally, in dorsal view longer than broad and broadening from front to back. Dorsum of head with well-developed coarse rugoreticulum. Dorsal surface of alitrunk variably sculptured: At one extreme, in a series from North Borneo (SE, Forest Camp, 9.8 km

SW of Tenom), the dorsum of alitrunk is entirely rugoreticulate. In a few other series, the rugoreticulum is absent between the bases of two pronotal spines, and some weak rugae or a smooth (broad or narrow) area are present there. At the other extreme, the sculpture is completely absent, and the area is smooth and shining on the anterior half of the dorsum, but the rest of the dorsal alitrunk is coarsely rugulose. Sides of pronotum with a rugoreticulum or many large coarse foveolate punctures. Sides of the rest of alitrunk irregularly coarsely rugulose. Dorsal surfaces of petiole node and postpetiole smooth and shining, but a longitudinal ruga present on each side of petiole. Gaster unsculptured, smooth, and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Petiole node with a few (usually two to three) pairs of hairs dorsally. Dorsum of postpetiole with at least a pair of hairs. First gastral tergite lacking erect or suberect hairs. A row of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect or suberect hairs. Color usually reddish-brown but sometimes black-brown.

Queen. TL 6.54, 6.56; HL 1.34, 1.44; HW 1.38, 1.50; CI 103, 104; SL 1.48, 1.51; SI 99, 109; EL 0.32, 0.34; PW 1.20, 1.24; AL 1.72, 1.82; PPW 0.41, 0.43; PPL 0.48, 0.48; PPI 85, 90 (n = 2).

General shape as in Figures 111–112, with normal caste differences from the conspecific worker; pronotum unarmed. Other characters similar to worker.

Male. Unknown.

Comments and Discussion. Pristomyrmex bicolor occurs in the Oriental region. It possesses a pair of exceptionally long pronotal spines, which implies that this species may have evolved from the ancestor of *P. costatus*. Only slight differences separate the workers of *P. bicolor* and of *P. costatus*, as follows:

P. bicolor

Pronotal spines well developed and exceptionally long, usually 0.40 to 0.66 (rarely 0.37–0.39), and usually longer than the distance between their bases

Dorsal surfaces of petiole node and postpetiole usually with one to three pairs of hairs

Area between the bases of the pronotal spines smooth or sculptured; if sculptured, pronotal spine length is over 0.40

Larger species (HW usually 1.20–1.46, rarely 1.04–1.19; HL usually 1.20–1.42, rarely 1.08–1.19)

P. costatus

Pronotal spines moderately long, usually 0.18 to 0.27 (rarely 0.32), and shorter than the distance between their bases

Dorsal surfaces of petiole node and postpetiole with five or more pairs of hairs

Entire dorsum of alitrunk with developed rugoreticulum

Smaller species (HW 0.90–1.16, HL 0.91–1.16)

Another alternative is that *P. bicolor* may be derived from a *P. curvulus*–like ancestor. Characters separating *P. bicolor* from *P. curvulus* are provided under *P. curvulus*.

Pristomyrmex bicolor is also very similar in appearance to *P. trachylissus*. The two species are all from the Oriental region. The separation of the two species is summarized under *P. trachylissus*.

It must be pointed out that *P. bicolor* is a highly variable species. I cannot separate any more sibling species from this mass at the present time. Further collecting and study will help clarify the situation.

Material Examined (ANIC, BMHH, BMNH, LACM, MCZC, NHMV). Indonesia: W. Java, 9 km W Djasinga, Dungus Iwul, lowland rainforest (W. L. Brown); Java, Bali I., Tjanoi Kuning (J. Winkler); Borneo: Kalimantan Timur, ITCI Timber Camp, via Balikpapan, on fallen trees (N. Johnson); SE Borneo, 17 to 46 km W Batulitjin, rainforest (W. L. Brown). Malaysia: North Borneo (SE), Forest Camp, 9.8 km SW of Tenom (Y. Hirashima); Sabah, Batu

Punggul Resort, primary forest, sifting (?); Sarawak, Genting Highlands (B. Bolton); Sarawak, 4th Div., G. Mulu Nat. Pk., RGS Expd., Long pala, lowland rainforest, on fallen tree and on rotten log (B. Bolton; P. M. Hammond and J. E. Marshall); Sarawak, Mt. Penrissen, 4,500 ft (E. Mjöberg); Sarawak, Mt. Poi (E. Mjöberg); Malaya, Sq. Patani (G. H. Lowe); Selangor, Ulu Gombak For. Reserve, hill forest, Tree lookout area, ca. 450 m (R. Crozier); Selangor, Genting Highlands, below Sri Layan, 900 m, hill forest (W. L. Brown); Neg. Sembilan, Pasoh For. Res. (M. Brendell, K. Jackson, and S. Lewis). Philippines: Luzon, Lagunas, Mt. Banahaw above Kinabuhayan, 600 to 700 m (J. Kodada and B. Rigova).? : Tjibodas, 1,500 m (?).

Ecological Information. This species occurs in rainforest and has been collected on fallen trees and rotten logs.

Pristomyrmex brevispinosus Emery
Figures 113–118, 261, 270

Pristomyrmex brevispinosus Emery, 1887: 451. Syntype workers and male, Sumatra: Mt. Singalang, Luglio, 1878 (O. Beccari) [syntype workers (MCSN, NMMV, USNM) examined].

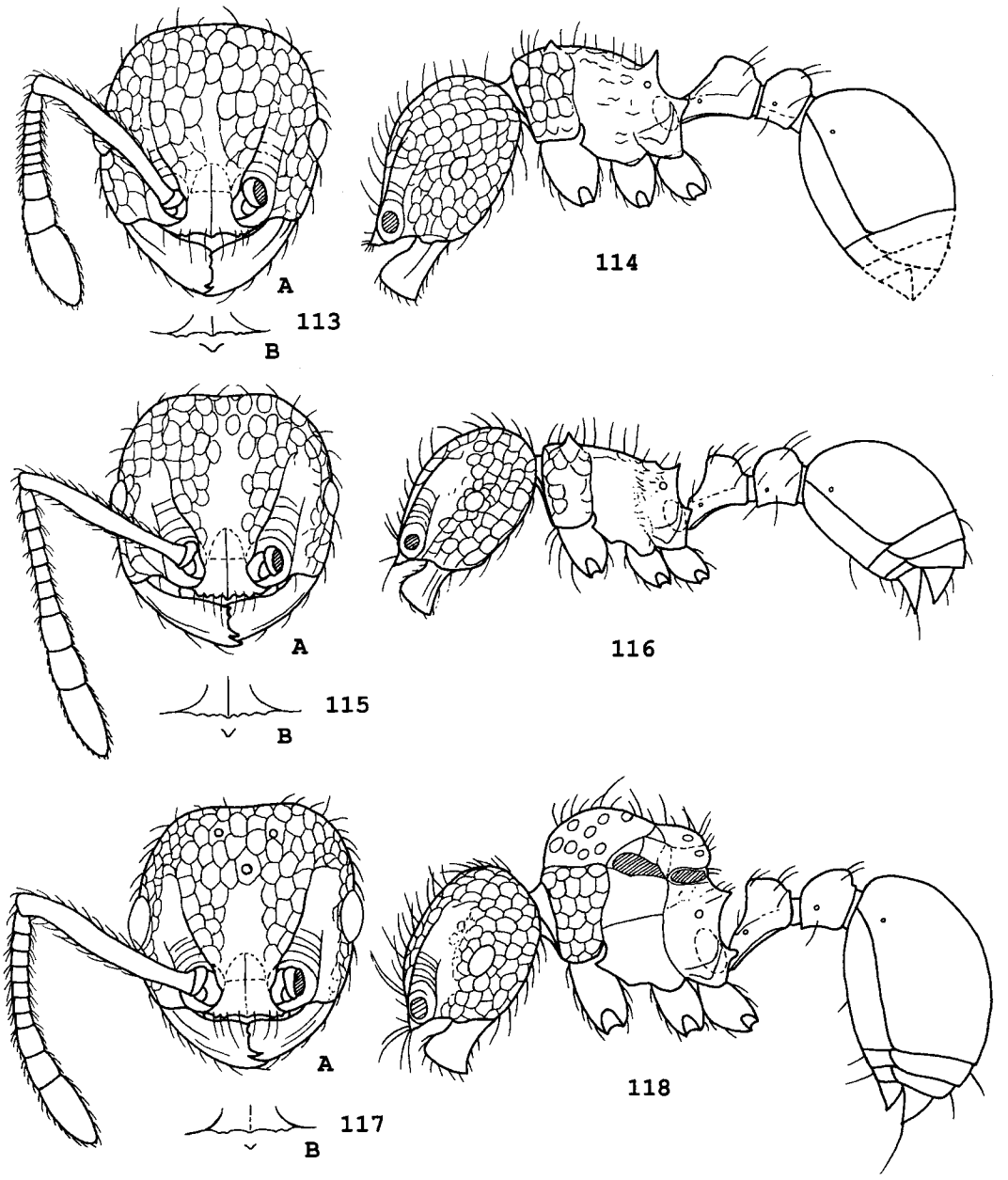
Pristomyrmex yaeyamensis* Yamane and Terayama, 1999: 17. Holotype worker, Japan: Okinawa Pref., Yaeyama Is., Iriomote-jima, 7.viii.1985 (K. Kinomura) (MNHA). **Syn. n.

Diagnosis (Worker). Masticatory margin of mandible with at most four teeth; pronotal armaments toothlike, about long as propodeal armaments that are a pair of triangular teeth or short spines; dorsum of head, at least behind the level of eyes, with foveolate-reticulate sculpture or rugoreticulum.

Worker. TL 3.00–4.26, HL 0.73–1.04, HW 0.68–1.04, CI 93–102, SL 0.64–1.06, SI 94–108, EL 0.14–0.19, PW 0.48–0.68, AL 0.76–1.10, PPW 0.21–0.27, PPL 0.18–0.30, PPI 86–113 (n = 100).

Mandibles generally rather smooth but sometimes with a few longitudinal rugae. Dentition of the masticatory margin of mandible arranged as: the strongest apical + the second strongest preapical + a long diastema + two small teeth of similar size (or a broad tooth with two points). Basal margin of mandible almost straight, lacking a distinctly curved lobe or tooth. Clypeus with a median longitudinal carina that is sometimes interrupted. Anterior clypeal margin with a median denticle and two to three others on each side. Ventral center of clypeus usually with an acute tooth, but sometimes this tooth somewhat low and broad. Palp formula 1,3. Frontal carinae strong, extending to the level of the posterior margins of eyes. Antennal scrobes indistinct, but in some specimens shallow scrobal areas present lateral to the frontal carinae. Frontal lobes very weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the dorsal head, slightly surpassing the occipital margin of head. Eye usually containing seven to eight ommatidia in the longest row. Profile of alitrunk and pedicel segments as in Figures 114 and 116. Pronotum armed with a pair of toothlike armaments that vary in length, approximately from 0.06 to 0.10. Propodeum with a pair of triangular teeth or short spines varying from 0.04 to 0.12. Metapleural lobe subtriangular or with a somewhat rounded apex. Shape of petiole varying: In some populations, the anterior face of the petiole node in profile is almost inseparable from the upper surface of the peduncle (Fig. 114), but in other populations, the anterior face of the petiole node is distinct from the upper surface of the pedun-

* Note: I have seen photographs of *Pristomyrmex yaeyamensis* from Japanese Ants Image Database (which were placed under the name *Pristomyrmex brevispinosus sulcatus*). I propose *Prystomyrmex yaeyamensis* as a junior synonym of *P. brevispinosus* for the following reason: Although *P. yaeyamensis* possesses an ergatoid queen caste (Yamane and Terayama, 1999), this condition, at this moment, is not enough to separate *P. yaeyamensis* from *P. brevispinosus* because the type specimens of *P. brevispinosus* contain only workers and male. In other words, it is not known, at the present, whether *P. brevispinosus* possesses a normal queen caste, an ergatoid queen caste, or both. (In *Pristomyrmex*, some species, e.g., *P. wheeleri* and *P. africanus*, contain both castes.) Thus, further ecological investigation is needed.



Figures 113–118. *Pristomyrmex brevispinosus* Emery. 113A: Syntype worker head, full-face view; 114: Syntype worker, lateral view; 115A: Non-type worker head, full-face view; 116: Non-type worker, lateral view, showing some variation in the shape of petiole node and in the length of pronotal armaments; 117A: Queen head, full-face view; 118: Queen, lateral view; 113B, 115B and 117B: A tooth present on the ventral center of clypeus of syntype worker, non-type worker, and queen, respectively.

cle, as shown in Figure 116. Anterodorsal angle of petiole node higher than the posterodorsal. Postpetiole in profile convex dorsally, in dorsal view broadening from front to back. Density and intensity of cephalic sculpture variable: The dorsum of head is covered fully with coarse forveolate-reticulate sculpture in type series, but with rugoreticulum in the some other series and sometimes with foveolate-reticulate sculpture only behind the eyes. Dorsum of the alitrunk showing similar sculptural variation but usually possessing a few longitudinal coarse carinae. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Two pairs of hairs usually present bilaterally on the dorsum of petiole node. Usually, a pair, but sometimes two to three pairs, of hairs on the dorsum of postpetiole. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown to blackish-brown.

Queen. TL 3.42–4.81, HL 0.82–1.09, HW 0.79–1.10, CI 93–106, SL 0.76–1.06, SI 93–101, EL 0.20–0.27, PW 0.66–0.89, AL 0.94–1.30, PPW 0.24–0.32, PPL 0.24–0.33, PPI 90–111 (n = 16).

General shape as in Figures 117–118, with normal caste differences from the conspecific worker, pronotum unarmed; other characters similar to worker.

Ergatoid queen. This caste was reported (Onoyama, 1976; see also Yamane and Terayama, 1999).

Male (Figs. 261, 270). Two male specimens, together with 31 workers and six queens, constitute a series, collected in Indonesia (SE Celebes, 1–2 km E of Wolasi, 42 km S. Kendari, ca. 350 m), by W. L. Brown, and each of the two males was originally mounted, respectively, with a worker on the same pin: TL 3.10, 3.36; HL 0.60, 0.62; HW 0.61, 0.62; CI 102, 105; SL 0.21, 0.22; SI 35, 39; HWE 0.77, 0.80; EL 0.31, 0.32; PW 0.78, 0.84; AL 1.06, 1.16; PPW 0.21, 0.21; PPL 0.22, 0.22; PPI 95, 95 (n = 2).

Head, including the eyes, distinctly broader than long. Clypeus convex, without a median longitudinal carina. Palp formula 1,3. Frontal carinae weak and short, just reaching the level of the posterior margins of antennal insertions. Maximum diameter of the median ocellus 0.10 to 0.11. On the mesonotum, notauli pronounced, forming a Y shape; parapsidal furrows indistinct. Scuto-scutellar sulcus with 12 to 13 narrow longitudinal ridges. Middle and hind tibiae without any spurs. Propodeum slightly tuberculate, lacking teeth or spines. Metapleural lobe with a somewhat rounded apex. Petiole node in profile low and rounded dorsally, with a fairly long anterior peduncle. Postpetiole in profile low and rounded dorsally and in dorsal view slightly longer than broad. Dorsum of head smooth and shining. Alitrunk smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster smooth and shining. All dorsal surfaces with abundant erect or suberect hairs. Scapes and tibiae with numerous erect or suberect hairs. Body reddish-brown; funicular segments of antennae light-yellow and wings slightly infuscated. In general, the male of *P. brevispinosus* is extremely similar to the males of both *P. quadridens* and *P. sulcatus*.

Comments and Discussion. Pristomyrmex brevispinosus is the most widely distributed species in the *quadridens* group. So far, it has been found in Sumatra, Celebes, Malaya, Sarawak, Sabah, Thailand, the Philippines, Taiwan, and Japan.

It is obvious that *P. brevispinosus* has evolved from a *P. quadridens*–like ancestor. *Pristomyrmex brevispinosus* possesses densely assembled forveolate punctures (i.e., foveolate-reticulate sculpture) or rugoreticulum on the cephalic dorsum in the workers and queens, on the dorsal alitrunk in the workers, and on the sides of the pronotum in the workers and queens. But *P. quadridens* has only scattered foveolate punctures in these areas.

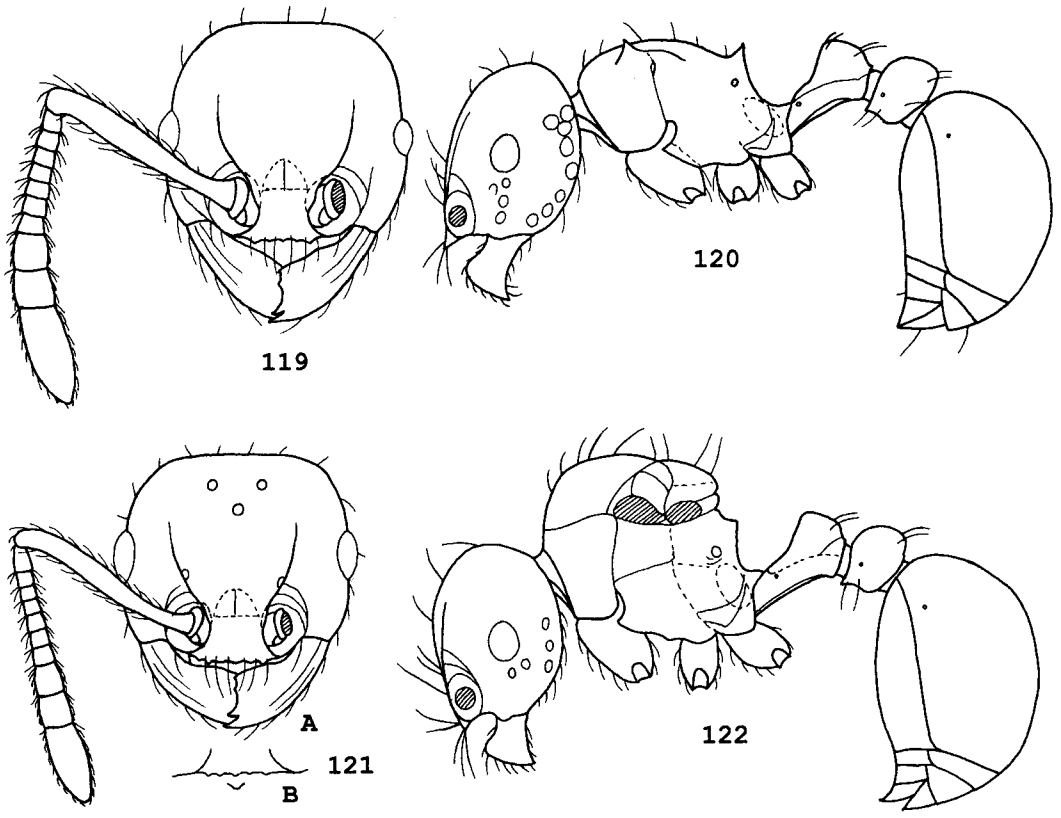
Some intermediate forms are present between *P. brevispinosus* and *P. quadridens*, but they may be easily assigned to either of the two species as follows: Those populations possessing a few coarse longitudinal carinae or some coarse rugae on the dorsum of the alitrunk or possessing foveolate-reticulate sculpture only behind the eyes should be assigned to *P. brevispinosus*, but those possessing only foveolate punctures and lacking coarse longitudinal carinae or rugae on the dorsal alitrunk should be assigned to *P. quadridens*.

The male of *P. brevispinosus* is indistinguishable at present from that of *P. quadridens*; this strengthens the conclusion that these two species are closely related. Another close relative of *P. brevispinosus* is *P. sulcatus*; their differentiation is discussed under *P. sulcatus*. Characters separating *P. brevispinosus* from the two Australian species, *P. foveolatus* and *P. thoracicus*, are provided under *P. foveolatus*.

Pristomyrmex brevispinosus may be split into two species in the future. One species would show that the anterior face of the petiole node, in profile, is inseparable from the upper surface of its anterior peduncle, and the other species would show that the anterior face of the petiole node, in profile, is distinct from the upper surface of the peduncle and that a concave shape is present between the two faces. However, at this moment, I cannot use this single line to separate the composite.

Note: Lin and Wu (1998) elevated *P. brevispinosus sulcatus* var. *formosae* Forel to species rank. As an infrasubspecific taxon, "*formosae*" is not an available name in the genus, according to the International Code of Zoological Nomenclature (also see Bolton, 1995: 365). If the specimens assigned to "*formosae*" represent a good species differing from *P. brevispinosus*, the correct procedure would be to describe it as new to science. I have, however, examined three syntypes of "*formosae*", and they fit comfortably with *P. brevispinosus* as defined in this revision.

Material Examined (ANIC, BMHH, BMNH, LACM, MCZC, MHNG, NHMV, USNM). Indonesia: Sumatra, Pematang, Siantar (Mann); Si-Rambé (E. Modigliani); Sulawesi Tengah, near Morowali, Ranu River Area (M. J. D. Brendell); Sulawesi Utara, Dumoga-Bone N.P., lowland forest, 200 to 400 m, litter (?); Sulawesi, Dumoga-Bone N.P. (D. F. and A. K. Roche); S. Celebes, Balampesoang Forest, 5 to 8 km NE Tanete, 400 m, degraded rainforest (W. L. Brown); SE Celebes, 1 to 2 km E of Wolasi, 42 km S Kendari, ca. 350 m, rainforest, rotten wood (W. L. Brown); N. Celebes, Mt. Tangkoko-Batuangus Res. 10 to 200 m, tropical evergreen forest, under bark log (W. L. Brown); N. Celebes, SW slope Mt. Klabat, 400 to 600 m, rainforest, rotten wood (W. L. Brown). Malaysia: Malaya, Genting, Highlands (B. Bolton); Selangor, Ulu Gombak For. Reserve, Univ. Malaya Field Studies Center, ca. 260 m, rainforest (R. Crozier); Negri Sembilan, Sungei Menyala For. Res., near Port Dickson, lowland rainforest (W. L. Brown and Tho Yow Pong); Perak, Sungei, Simei Falls, Cameron Hlds (T. Jaccoud and P. Marcuard); Trengganu, Kuala Buka near Trengganu, berlesate (T. Jaccoud and P. Marcuard); Sarawak, Semengoh For. Reserve, 11 mi SW Kuching, rainforest, nest ex rotten log (R. W. Taylor); Sarawak, Gn Matang, 20 km E Kuching, 850 m, submontane forest (Löbl and Burckhardt); N. Borneo (E. Mjoberg); N. Borneo, W. coast Residency, Ranau, 500 m (T. C. Maa); Sabah, Poring Hot Springs, 500 m (Burckhardt and Löbl); Sabah, 7 km N Tambunan, 700 m (Löbl and Burckhardt); Sabah, Batu Punggul Resort, primary forest, sifting (?); Sabah, Crocker Range NP., Gg. Emas Highland Res., 1,500 to 1,700 m (?); Neg. Sembilan Pasoh For. Res. (M. Brendell, K. Jackson, and S. Levvis); Pahang, Genting, Highlands Awana, 1,150 m (Löbl and Calame); Pahang, Ringlet, ravine, 1,250 m (Löbl and Calame); Pahang, Batu Caves N Kuala, Lumpur (Löbl and Calame). Philippines: P.R. Mindanao, 2 km N Malaybalay, 670 m, 8.09°N/125.05°E, reforestation area (B. B. Lowery). Thailand:



Figures 119–122. *Pristomyrmex collinus* **sp. n.** 119: Worker head, full-face view; 120: Worker, lateral view; 121A: Queen head, full-face view; 121B: Showing a tooth on the ventral clypeus; 122: Queen, lateral view.

Trang Prov.: Khao Chong Nature Education Center, lowland tropical rainforest, (07.35°N/99.46°E, misc stray foragers, sifted leaf in mixed forest; 07.55°N/99.58°E, misc stray foragers) (R. R. Snelling and Saowapa Sonthichari). Taiwan: Pilam (H. Sauter).

Ecological Information. This species occurs in rainforest and has been collected on rotten logs.

Pristomyrmex collinus sp. n.
Figures 119–122

Diagnosis (Worker). Pronotum and propodeum each with a pair of short spines; dorsal surfaces of head and alitrunk unsculptured, smooth, and highly polished; petiole node with one to two pairs of hairs, and with the anterior face of the node distinct from the upper surface of peduncle; HW 0.77–0.94 and HL 0.82–0.94.

Holotype Worker (MCZC). TL 3.51, HL 0.88, HW 0.84, CI 95, SL 0.86, SI 102, PW 0.59, AL 0.91. Paratypes, 40 workers and nine queens (MCZC, BMNH, MHNG).

Worker. TL 3.36–3.84, HL 0.82–0.94, HW 0.77–0.94, CI 93–103, SL 0.80–0.94, SI 98–110, EL 0.14–0.18, PW 0.54–0.62, AL 0.86–1.00, PPW 0.25–0.26, PPL 0.25–0.28, PPI 89–100 (n = 40).

Mandibles usually smooth and shining but sometimes with a few longitudinal rugae. Dentition of the masticatory margin of mandible: the strongest apical + the second strongest preapical + a long dia-

stema + two small teeth that are subequal in size. Basal margin of mandible somewhat straight, lacking a distinct tooth. Clypeus depressed and smooth, usually unsculptured but very rarely with a longitudinal median carina. Anterior clypeal margin usually with a median denticle and two others on each side but sometimes with a lateral denticle indistinct or two lateral denticles fused into a larger one. Ventral surface of clypeus with a low, broad-based, central tooth. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the dorsal head, slightly surpassing the occipital margin of head. Eyes moderate, usually containing six to seven ommatidia in the longest row. Pronotum with a pair of short but acute spines that are slightly variable in length. Propodeum armed with a pair of short spines that are about equal to or slightly longer than the pronotal ones. Metapleural lobes subtriangular. In both profile and dorsal view, the dorsum of alitrunk convex, that is, pronotum plus mesonotum forming a convex dorsum. Petiole node in profile with a fairly long anterior peduncle, its anterodorsal angle higher than the posterodorsal. Postpetiole in profile rounded dorsally, in dorsal view slightly longer than broad, or about as long as broad, but always slightly broadening from front to back. Dorsum of head, except for a few punctures bordering the frontal carinae, smooth and highly polished. Dorsum of alitrunk unsculptured and highly polished. Very rarely, the dorsal surfaces of head and alitrunk with a few feeble punctures. Petiole, postpetiole, and gaster smooth and shining. A weak longitudinal ruga usually present on each side of the petiole but absent in few specimens. Dorsal surfaces of head and alitrunk with some sparse erect or suberect hairs. One or two pairs of hairs present on the dorsal surfaces of petiole node and postpetiole, respectively. First gastral tergite lacking hairs. Three pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with erect to suberect short hairs. Color uniformly reddish-brown.

Queen. TL 4.04–4.38, HL 0.87–0.94, HW 0.85–0.96, CI 94–105, SL 0.84–0.94, SI 98–102, EL 0.22–0.26, PW 0.76–0.84, AL 0.92–1.26, PPW 0.27–0.30, PPL 0.26–0.29, PPI 100–111 (n = 8).

Generally similar to worker, except for normal caste differences. In addition, pronotum unarmed; propodeal armaments toothlike, shorter than those of the conspecific worker.

Male. Unknown.

Comments. This species is known only from the Philippines so far. It has a number of relatives. Two of them occur in Southeast Asia: *P. flatus,* also from the Philippines, and *P. quadridens,* from New Guinea, Indonesia, and Pohnpei. Of its more distant five relatives, two, *P. africanus* and *P. trogor,* occur in Africa; and the other three, *P. quadridentatus, P. wheeleri,* and *P. erythropygus,* are endemic to Australia.

The following characters can be used to separate the workers of *P. collinus* from those of *P. flatus*:

P. collinus

Promesonotum in dorsal view showing a convex dorsum

Anterior face of petiole node, in profile, distinct from the upper surface of its anterior peduncle

Smaller species, with HW 0.77–0.94, HL 0.82–0.94, EL 0.14–0.18

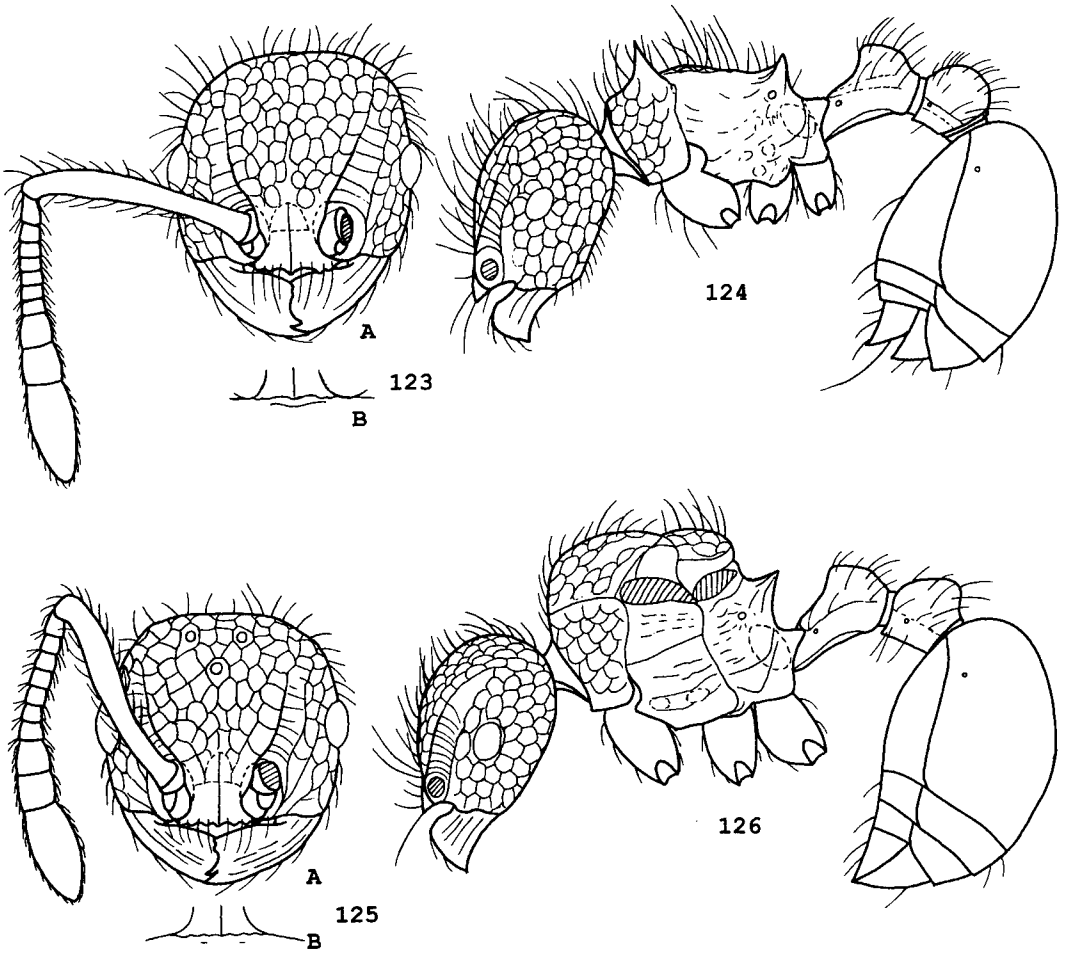
P. flatus

Promesonotum in dorsal view depressed or shallow-concave

Anterior face of petiole node not distinct from the upper surface of the peduncle

Larger species, with HW 0.98–1.04, HL 0.94–1.02, EL 0.22–0.24

A list of characters separating *P. collinus* and *P. flatus* from *P. quadridens* and from



Figures 123–126. *Pristomyrmex costatus* **sp. n.** 123A: Worker head, full-face view; 123B: Showing a transverse ruga on the ventral clypeus; 124: Worker, lateral view; 125A: Queen head, full-face view; 125B: Ventral clypeus without a toothlike prominence; 126: Queen, lateral view.

two African and from three Australian species is provided under *P. flatus*.

Holotype Worker. Philippines: Dumaguete (J. W. Chapman).

Paratypes. 40 workers and nine queens with same data as holotype.

Additional Material Examined (BMHH, USNM, NHMV, MCZC). Philippines: Dumaguete, Horns of Negros, 3,600 ft (J. W. Chapman); Dumaguete, Camp (J. W. Chapman); Los Banos (F. X. Williams); Luzon, Mt. Makiling (F. X. Williams; L. Quate and C. Yoshimoto); Luzon, Laguna, Mt. Makiling, 500 to 1,144 m (H. Zettel); Luzon, Laguna, Mt. Banahaw above Kinabuhayan, 600 to 700 m (J. Kodada and B. Rigova); Romblon Prov., Tablas, S. Agustin, Dubduban, Busai Falls (H. Zettel); Panay Is., forest, 300 m (R. C. Mcqregor).

Ecological Information. This species occur in forest, according to the present records.

Pristomyrmex costatus sp. n.
Figures 123–126

Diagnosis (Worker). Ventral surface of clypeus lacking a developed tooth, but usually with a transverse ruga; pronotal

spines fairly long, ca. 1.5 to 2 times the length of propodeal armaments, but distinctly shorter than the distance between the bases of two pronotal spines; dorsal surfaces of head and alitrunk sculptured with coarse rugoreticulum; petiole node lacking foveolate punctures; first gastral tergite lacking erect or suberect hairs.

Holotype Worker (BMNH). TL 4.14, HL 0.99, HW 0.96, CI 97, SL 0.96, SI 100, EL 0.21, PW 0.68, AL 1.12, PPW 0.30, PPL 0.30, PPI 100. Paratypes, 3 workers (MCZC): TL 4.48–4.54, HL 1.04–1.08, HW 0.98–1.02, CI 94–94, SL 1.07–1.12, SI 108–110, EL 0.20–0.20, PW 0.68–0.72, AL 1.18–1.24, PPW 0.30–0.31, PPL 0.33–0.34, PPI 91–94.

Mandibles usually with several longitudinal rugae. Masticatory margin of mandible with four teeth arranged as two adjacent strong apical teeth + a long diastema + two small basal teeth of similar size. Basal margin of mandible lacking a distinctly curved lobe or tooth. Clypeus with a strong median longitudinal carina. Anterior clypeal margin with a median denticle and two to three others on each side. Ventral surface of clypeus possessing or lacking a transverse ruga, never armed with a developed, acute tooth. Palp formula 1,3. Frontal carinae strong, extending to the level of the posterior margins of eyes. Slightly concave scrobal areas present lateral to the frontal carinae. Frontal lobes weak so that the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the dorsal head, slightly surpassing the occipital margin of head. Eyes containing 9 to 10 ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 124. Pronotum armed with a pair of strong and fairly long spines that are ca. 0.19 to 0.27, 1.5 to 2 times the length of propodeal armaments, but distinctly shorter than the distance between the bases of two pronotal spines. Propodeum with a pair of acute short spines that are ca. 0.10 to 0.16 and more slender than the pronotal ones. Metapleural lobes subtriangular. Petiole node in profile, slightly higher than long, with a fairly long anterior peduncle; its anterodorsal angle is on a higher level than the posterdorsal. Postpetiole in profile rounded dorsally, in dorsal view broadening from front to back. Dorsum of head, except for the scrobal areas where there are only some transverse rugae, with well-developed coarse rugoreticulum. Similar sculpture present on the sides of pronotum and the dorsum of alitrunk. Petiole with a coarse longitudinal ruga on each side, but dorsum of petiole node unsculptured and smooth. Dorsum of postpetiole unsculptured and smooth. Gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect long hairs. Sides and dorsum of petiole node and postpetiole with five or more pairs of hairs in the type specimens. First gastral tergite lacking erect or suberect hairs. Several pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect hairs. Color reddish-brown.

Queen. Two queens, respectively, from N. Borneo and Sarawak, with the following measurements: TL 5.24, 5.26; HL 1.12, 1.20; HW 1.16, 1.22; CI 102, 104; SL 1.18, 1.20; SI 98, 102; EL 0.28, 0.31; PW 1.00, 1.10; AL 1.44, 1.62; PPW 0.38, 0.44, PPL 0.40, 0.44, PPI 95, 100.

General shape as in Figures 125–126, with normal caste differences from the worker, pronotum unarmed; other characters similar to worker.

Male. Unknown.

Comments and Discussion. Pristomyrmex costatus is extremely similar in appearance to the another Oriental species, *P. sulcatus.* The workers and queens of the two species can be separated as follows: In *P. costatus,* the ventral surface of the clypeus lacks a toothlike prominence, usually with a transverse ruga; in *P. sulcatus,* the ventral center of the clypeus has an acutely prominent tooth and no transverse ruga.

The separation of *P. costatus* from *P. modestus* and from *P. bicolor* is summarized under the latter names.

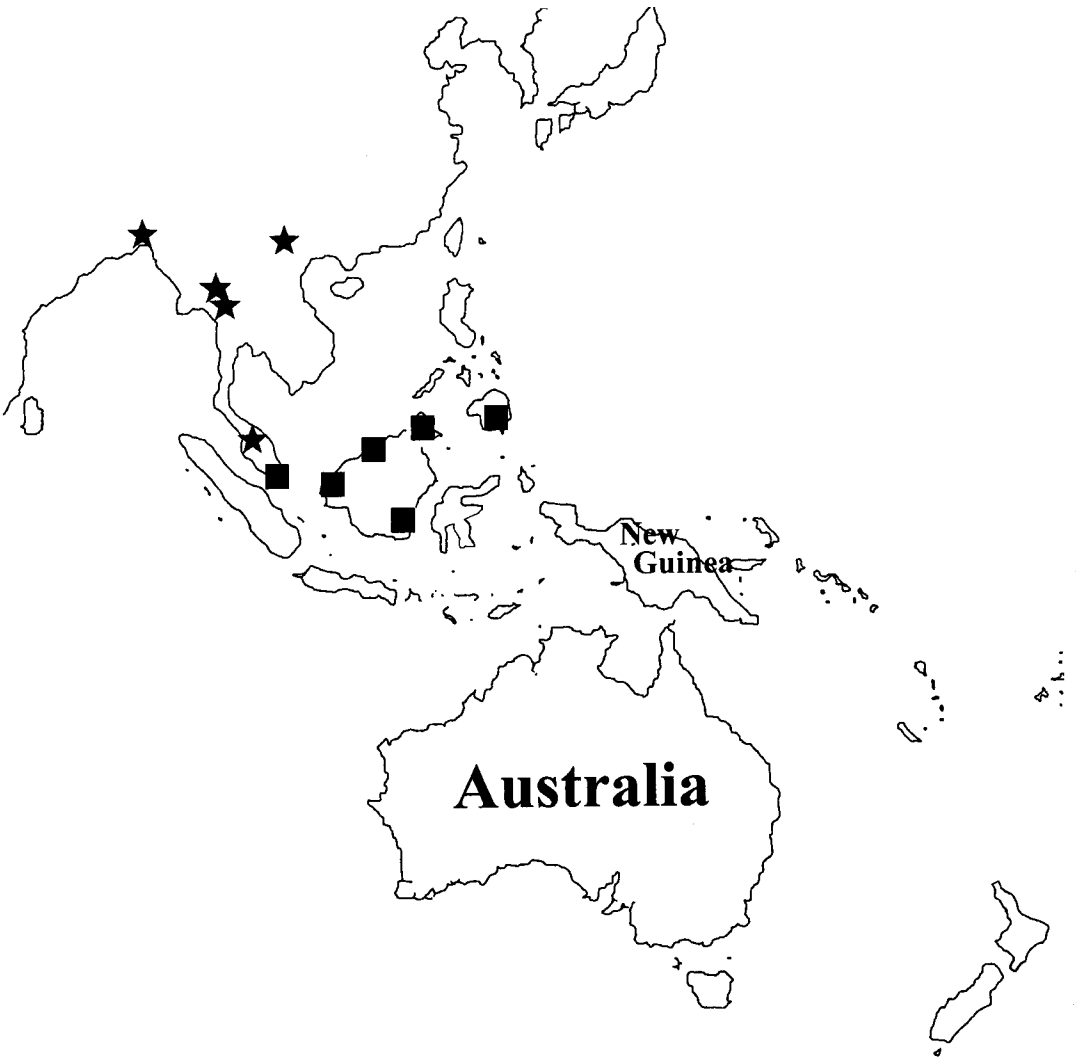


Figure 127. Distributions of *Pristomyrmex costatus* and *Pristomyrmex sulcatus.*

Whether or not *P. costatus* and *P. sulcatus* have a relationship of allopatric distribution needs further studies. According to the present records, as shown in Figure 127, *P. costatus* occurs in Negri Sembilan of Malaya, Singapore, Sabah, Sarawak, Borneo, and the Philippines but *P. sulcatus* in Pahang of Malaya, Thailand, Nepal, Burma, and China. Further, whether *P. sulcatus, P. costatus,* and *P. brevispinosus* evolved from the results of character displacement also needs further studies (*P.*

costatus is more distant to sympatric *P. brevispinosus* than to *P. sulcatus*).

The following additional material shows some interesting variation: In nine workers, the dorsums of petiole node and postpetiole have five or more pairs of hairs, but the ventral surface of clypeus has only a short ruga. Four workers from Singapore have two pairs of hairs on the dorsum of petiole node and a pair on the dorsum of postpetiole. In a worker from Sabah, the anterodorsal angle of the petiole node in profile is not distinctly higher than the posterodorsal. In three workers, one from Sarawak and the other two from Sabah, the ventral center of clypeus lacks any transverse ruga but possesses a minute prominence instead of an acute tooth, and the dorsal surfaces of petiole and postpetiole have more than seven pairs of hairs. A single specimen, from the Philippines, shows reduced sculpture of the dorsal surfaces of head and alitrunk. The measurements of the previously described specimens are TL 3.94–4.54, HL 0.91–1.18, HW 0.90–1.13, CI 89–103, SL 0.96–1.21, SI 100–112, EL 0.18–0.24, PW 0.60–0.76, AL 0.98–1.30 (n = 18).

In addition, a series from Borneo appears to be intermediate in size between *P. costatus* and *P. bicolor* by possessing the following worker measurements: TL 4.64–5.62, HL 1.00–1.14, HW 1.03–1.14, CI 98–104, SL 1.14–1.22, SI 103–113, EL 0.20–0.22, PW 0.70–0.78, AL 1.16–1.37, PSL1 0.28–0.32, PSL2 0.10–0.16 (n = 25).

It is possible that the previously described material may comprise one or more sibling species. Further collecting and biological investigation are needed to resolve this possibility.

Holotype Worker. Malaysia: Neg. Sembilan, Pasoh For. Res., xi.1994, (M. Brendell, K. Jackson, and S. Lewis).

Paratypes. Three workers, N. Borneo (E. Mjöberg).

Records of the Previously Examined Non-Type Material (ANIC, BMHH, BMNH, MCZC, MHNG, NHMV). Singapore: Nee Soon, Swamp forest, rainforest, nest ex rotten log (R. W. Taylor); Bukit Timah Nat. Res., degraded coastal hill forest, on granite (D. H. Murphy). SE Borneo: 17 to 46 km W Batulitjin, lowland rainforest (W. L. Brown); Borneo: Pajan (E. Mjöberg). Sarawak: Gunong Matang 120 m (T. C. Maa); 4th Div., G. Mulu Nat. Pk., RGS Expd., Long pala, lowland rainforest, on rotten log and in leaf litter (B. Bolton); Semengoh NSG, 30 km S Kuching (H. Zettel). Sabah: Batu Punggul Resort primary forest, sifting (?); 43 mi, labuk Rd. ex Sandakan (Lungmanis) (R. W. Taylor); 7 km N Tambunan, 700 m (Löbl and Burchhardt); N. Borneo, Tutu River (E. Mjöberg); N. Borneo, (SE) Forest Camp, 9.8 km SW of Tenom (K. J. Kuncheria). Philippines: Mindanao, Davao Province, Mt. McKinley, E. slope, 3,300 ft, under bark (F. G. Werner).

Note: An unusual worker (BMNH), collected from Sabah (K. K.-Tambunan, Crocker Range, 1,600 m), having a smooth patch present between the bases of two shorter pronotal spines, is tentatively placed under *P. costatus*; the size of the specimen is TL 3.84, HL 0.96, HW 0.92, CI 96, SL 0.96, SI 104, EL 0.18, PW 0.64, AL 0.96, PSL1 ca. 0.16, PSL2 ca. 0.08.

Ecological Information. See the section "Records of the Previously Examined Non-Type Material".

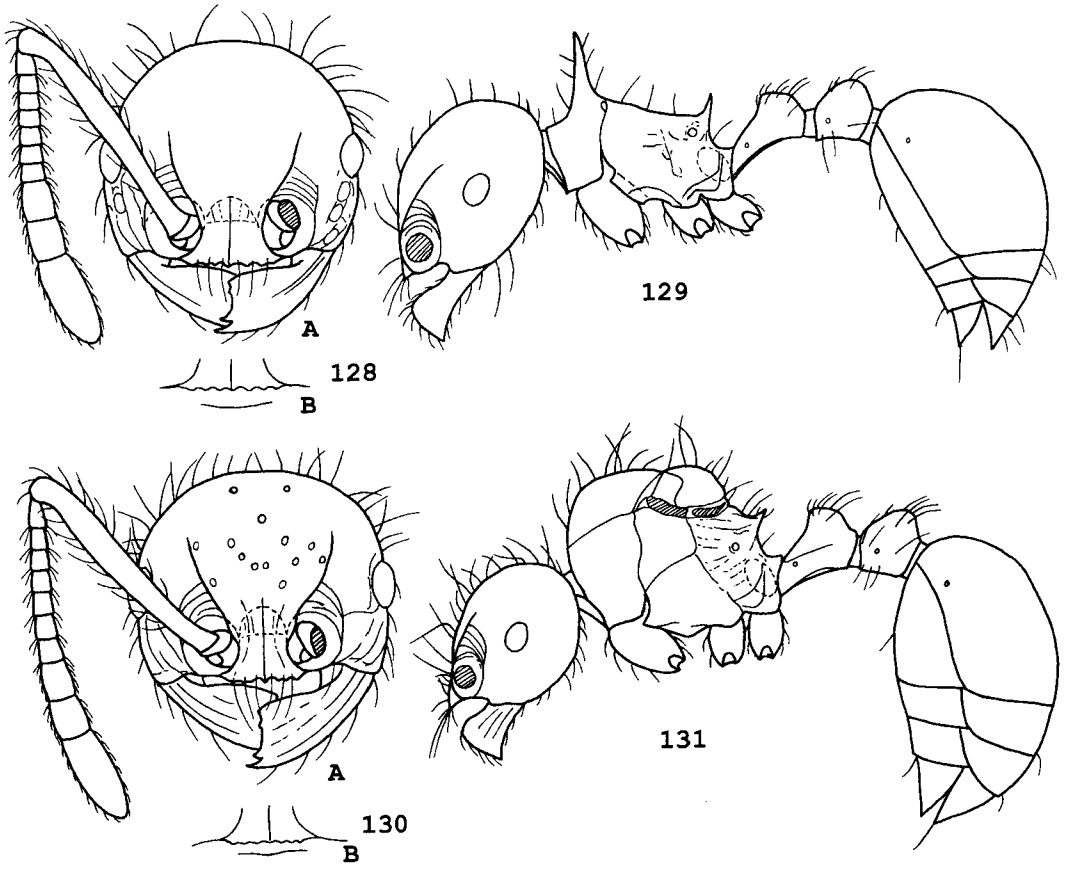
Pristomyrmex curvulus sp. n.

Figures 128–131

Diagnosis (Worker). Pronotal spines exceptionally long, about 0.38 to 0.44; propodeal spine length ca. 0.12 to 0.16; anterior face of petiole node distinctly separable from the upper surface of peduncle; dorsal surfaces of head and alitrunk smooth and shining.

Holotype Worker (MCZC). TL 5.24, HL 1.18, HW 1.20, CI 102, SL 1.36, SI 113, EL 0.22, PW 0.79, AL 1.26. Paratypes, 34 workers and one queen (MCZC, BMNH, LACM, MHNG).

Worker. TL 4.62–5.30, HL 1.08–1.26, HW 1.08–1.25, CI 97–105, SL 1.22–1.41, SI 106–117, EL 0.20–0.26, PW 0.74–0.82,



Figures 128–131. *Pristomyrmex curvulus* **sp. n.** 128A: Worker head, full-face view; 128B: Showing a transverse ruga on the ventral clypeus; 129: Worker, lateral view; 130A: Queen head, full-face view; 130B: Showing a transverse ruga on the ventral clypeus; 131: Queen, lateral view.

AL 1.16–1.40, PPW 0.30–0.34, PPL 0.35–0.40, PPI 78–94 (n = 20).

Mandibles generally smooth and shining, with a few basal longitudinal rugae. Masticatory margin of mandible with four teeth: an apical + a preapical + a long diastema + two small denticles that are roughly the same size. Basal margin of mandible lacking a toothlike prominence. Clypeus shining, with a median longitudinal carina; sometimes a few additional superficial rugae present. Ventral surface of clypeus usually with a long transverse ruga. Anterior clypeal margin usually with seven denticles (a median one and three others on each side), but in some specimens, one to two denticles weak or rudimentary. Palp formula 1,3. Frontal carinae just extending to the level of the posterior margins of eyes. Slightly concave scrobal areas present lateral to the frontal carinae. Frontal lobes weak so that the antennal articulations are almost entirely exposed. Antennal scapes long, surpassing the occipital margin by one-fourth to one-third of their length. Eyes usually containing over 10 ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 129. Pronotum armed with a pair of exceptionally long spines that are about 0.38 to 0.44 and longer than the distance between their bases. Propodeum

with a pair of acute short spines that are ca. 0.12 to 0.16, about as long as the distance between their bases, and shorter than 0.5 times pronotal spine length. Both pronotal and propodeal spines directed upward. Metapleural lobes subtriangular. Petiole in profile nodiform, with a long anterior peduncle; the anterior face of the node distinctly separable from the upper surface of its anterior peduncle, and its dorsum sloping somewhat downward posteriorly. Postpetiole in profile rounded dorsally, in dorsal view distinctly longer than broad and broadening from front to back. Dorsum of head generally smooth and shining, but gena with a few foveolate punctures, and frontal area usually with a few weak short rugae. Dorsal alitrunk, petiole, and postpetiole unsculptured, smooth, and shining. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Petiole node and postpetiole each with some hairs as shown in Figure 129. Antennal scapes and tibiae with numerous erect or suberect hairs. First gastral tergite without erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Color reddish brown but light yellow in a few specimens.

Queen. TL 6.16, HL 1.18, HW 1.28, CI 108, SL 1.37, SI 107, EL 0.29, PW 1.12, AL 1.62, PPW 0.40, PPL 0.44, PPI 91 (n = 1).

General shape as in Figures 130–131, with normal caste differences from conspecific worker; pronotum unarmed; petiole with a lateral longitudinal ruga on each side. Other characters similar to worker.

Male. Unknown.

Comments and Discussion. This species is closely related to *P. longispinus*, also from Dumaguete, Philippines, but the workers of these two species can be separated by the following characters:

P. curvulus

Anterior face of petiole node, in profile, distinct from the upper surface of peduncle
Clypeus with a median longitudinal carina
Frontal carinae extending to the posterior margins of eyes
Propodeal spines shorter, about as long as the distance between their bases.
Anterior clypeal margin usually with seven small denticles

P. longispinus

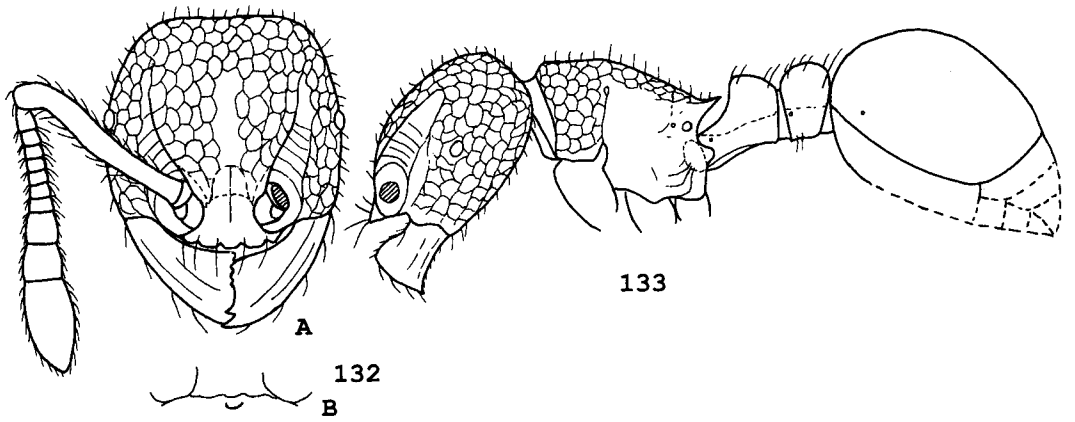
Anterior face of petiole node, in profile, not distinct from the upper surface of peduncle
Clypeus lacking a median longitudinal carina
Frontal carinae not extending to the posterior margins of eyes
Propodeal spines longer, about two to three times the distance between their bases in length
Anterior clypeal margin usually with three to five denticles

Pristomyrmex curvulus may also have a close relationship with *P. bicolor.* The workers and queens of the two species can be separated as follows: In *P. curvulus,* the dorsal surfaces of the head and the alitrunk are smooth and shining, with only a few shallow foveolate punctures present on the genae and a few short rugae on the frontal area, whereas in *P. bicolor,* the dorsum of the head is entirely covered with coarse rugoreticulum, and the dorsum of the alitrunk is also strongly sculptured with coarse rugae.

It is possible that *P. curvulus* is derived from a *P. collinus*–like ancestor. The worker of *P. curvulus,* apart from the exceptionally long pronotal spines, a transverse ruga on the ventral surface of the clypeus, and its larger size, is similar to that of *P. collinus.* The queen of *P. curvulus* is also similar to that of *P. collinus,* but in the former it is larger, and the ventral surface of the clypeus has a transverse ruga, not a toothlike prominence as in *P. collinus.*

Holotype Worker. Philippines: Dumaguete (J. W. Chapman).

Paratypes. Philippines: two workers, Dumaguete, 7.vi.1942 (J. W. Chapman);



Figures 132–133. *Pristomyrmex eduardi* Forel. 132A: Worker head, full-face view; 132B: Showing a toothlike prominence on the ventral clypeus; 133: Worker, lateral view.

two workers, Dumaguete, 14.vi.1942 (J. W. Chapman); 12 workers, Dumaguete, 10.v.1947 (J. W. Chapman); two workers, Dumaguete, 4.v.1948 (J. W. Chapman); one worker, Dumaguete, 1949 (J. W. Chapman); two workers and one queen, Dumaguete, 1950 (J. W. Chapman); 11 workers, Dumaguete, Horns of Negros, 3,600 ft (J. W. Chapman); two workers, Dumaguete, Horns of Negros, 3,600 ft (Domingo Empeso).

Additional Material Examined (MCZC). Some specimens, also collected in Dumaguete, Philippines, by J. W. Chapman, are not included in the type series because they are badly mounted or damaged.

Ecological Information. Unknown.

Pristomyrmex eduardi Forel
Figures 132–133

Pristomyrmex eduardi Forel, 1914: 232. Holotype worker, Sumatra Oriental, Bah Boelian (M. v. Buttel) (MHNG) [examined].

Diagnosis (Worker). Masticatory margin of mandible with five teeth; pronotum unarmed; eyes with three to four ommatidia in the largest row.

Worker. TL 2.9, HL 0.77, HW 0.74, CI 96, SL 0.68, SI 92, EL 0.07, PW 0.50, AL 0.78 (n = 1).

Mandibles smooth and shining, except for a few longitudinal rugae. Masticatory margin of mandible with five teeth arranged as the strongest apical + the second strongest preapical + a diastema + three small denticles of similar size; the length of diastema is about equal to the distance covered by three small denticles. Basal margin of mandible lacking a toothlike prominence. Clypeus depressed, with a short median carina that does not reach the anterior clypeal margin but runs through the frontal area. Anterior clypeal margin with five toothlike prominences; the median three somewhat truncated. Ventral center of clypeus with a prominent tooth. Frontal carinae strong, extending to the level of the posterior margins of eyes and forming the dorsal margins of the shallow scrobes. Frontal lobes weak. Eye small, with three to four ommatidia in the longest row. Occipital margin in full-face view feebly concave. Profile of alitrunk and pedicel segments as in Figure 133. Pronotum unarmed, lacking a pair of teeth or spines. Propodeum armed with a pair of acute short spines. Metapleural lobes prominent and rounded. Petiole in profile view with a fairly long anterior peduncle; the anterodorsal angle of the node high, and its dorsum sloping downward posteriorly. Postpetiole in profile with a rounded dorsum. Dorsum of head with coarse rugoreticulum, except for a smooth, me-

dian longitudinal strip. Dorsum of alitrunk, as well as two sides of pronotum, with developed rugoreticulum. Petiole and postpetiole smooth and shining. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect short hairs. Two pairs of the similar hairs present on the dorsum of petiolar node and three pairs on the dorsum of postpetiole as shown in Figure 133. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown.

Queen and Male. Unknown.

Comments. This species is known only from the holotype. Its two close relatives are *P. quindentatus,* from Indonesia, and *P. occultus,* from Indonesia and Malaysia. *Pristomyrmex eduardi* can be separated from *P. quindentatus* and *P. occultus* because it lacks pronotal armaments and possesses smaller eyes (EL = 0.07, with three to four ommatidia in the longest row) in the workers.

Though it was considered by Forel (1914) to be similar to *P. punctatus* (=*P. pungens* = *P. japonicus*), *P. eduardi* cannot be placed in the *punctatus* group because (1) it has five teeth present on the masticatory margins of the mandibles, (2) its eyes are very small, (3) the ventral center of the clypeus is equipped with a prominent tooth, and (4) the petiole node has a distinct anterior face. In addition, its propodeal spines are much shorter than those in the four Oriental species of the *punctatus* group. Incidentally, the palp formula of *P. eduardi* cannot be determined from the unique holotype and thus remains unknown at this time.

Ecological Information. Unknown.

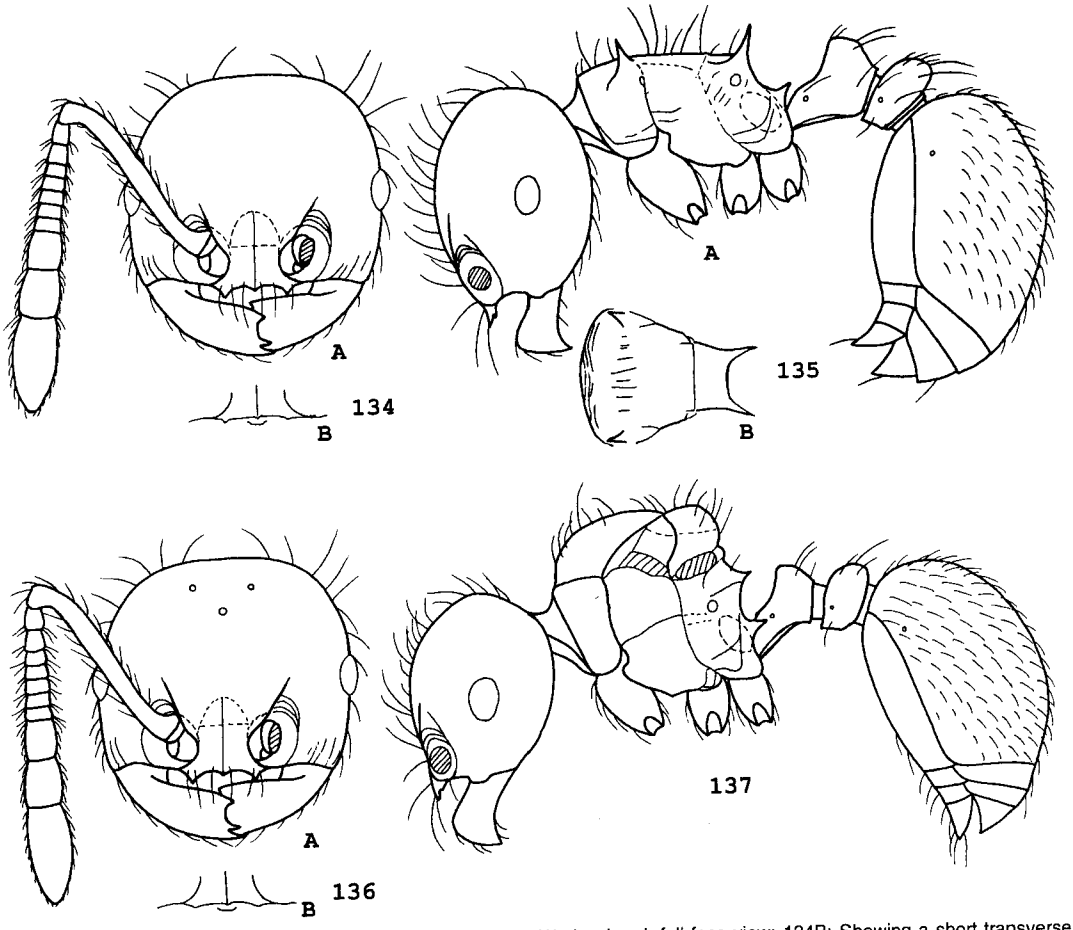
Pristomyrmex erythropygus Taylor
Figures 134–137

Pristomyrmex erythropygus Taylor, 1968: 65. Holotype worker, Australia: NE. New South Wales, Acacia Plateau, near Old Koreelah, ca. 28°24′S, 152°25′E, in rotten logs, xi.1957 (Darlingtons) (ANIC) [examined].

Diagnosis (Worker). Masticatory margin of mandible with three teeth; anterior clypeal margin with three strong teeth; propodeal armaments, ca. 0.13 to 0.20, usually slightly longer than pronotal spines; dorsum of head smooth, but dorsal alitrunk with several longitudinal rugae present at the juncture between the pronotum and the mesonotum; first gastral tergite usually with erect or suberect hairs.

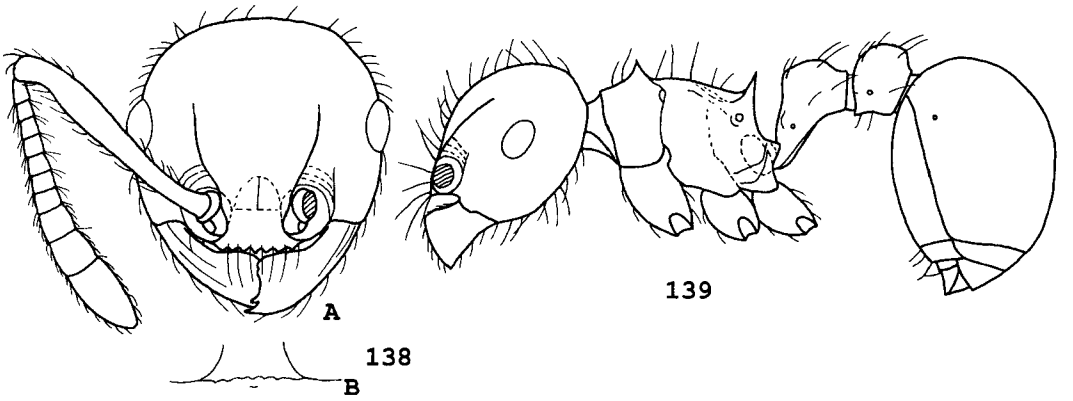
Worker. TL 3.48–3.90, HL 0.90–1.08, HW 0.94–1.18, CI 104–110, SL 0.92–1.00, SI 88–97, EL 0.16–0.20, PW 0.56–0.66, AL 0.84–0.98, PPW 0.24–0.30, PPL 0.19–0.23, PPI 114–130 (n = 8).

Mandibles generally smooth and shining, but sometimes with a few basal longitudinal rugae. Dentition of the masticatory margin of mandible: an apical tooth + a preapical + a long diastema + a somewhat truncated basal tooth. Basal margin of mandible lacking a distinctly curved lobe or tooth. Clypeus with a median longitudinal carina. Anterior clypeal margin with three teeth: a median denticle and one on each side. Ventral surface of clypeus with a short transverse carina or with a low, broad prominence. Palp formula 2,2. Frontal carinae short, not extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes absent; thus, the antennal articulations are entirely exposed. Antennal scapes, laid on the dorsal head, slightly surpassing the occipital margin of head. Eyes containing eight to nine ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 135A. Pronotum armed with a pair of moderately long spines, varying in length from 0.08 to 0.13. Propodeal spines usually slightly longer than pronotal ones, varying in length from 0.13 to 0.20. Metapleural lobes triangular and much shorter than propodeal spines. Petiole node in profile with the anterodorsal angle higher than the posterodorsal. Anterior and dorsal faces of the postpetiole in pro-



Figures 134–137. *Pristomyrmex erythropygus* Taylor. 134A: Worker head, full-face view; 134B: Showing a short transverse carina or a low, broad prominence on the ventral clypeus; 135A: Worker, lateral view; 135B: Dorsum of the worker alitrunk, dorsal view; 136A: Queen head, full-face view; 136B: Showing a short transverse ruga, or a low, broad prominence on the ventral clypeus; 137: Queen, lateral view.

file forming a single curved surface; in dorsal view, postpetiole distinctly broader than long. Dorsum of head smooth and shining, except for a few short rugae present below the frontal carinae around the antennal fossae and on the genae. Dorsum of alitrunk possessing (1) several short rugae present approximately at the juncture between the pronotum and the mesonotum (but weak in a smaller specimen), (2) a few transverse rugae present near the anterior pronotal margin, and (3) a transverse ridge present at the approximate position of metanotal groove. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Dorsal surfaces of petiole node and postpetiole, respectively, with a pair of bilaterally distributed long hairs; sometimes the crests of petiole node and postpetiole with additional one to two pairs of short hairs. First gastral tergite with numerous, evenly distributed, erect or suberect hairs. (Note: In three specimens placed under *P. erythropygus,* several longitudinal rugae are present at the juncture between the pronotum and the mesonotum, but erect or



Figures 138–139. *Pristomyrmex flatus* **sp. n.** 138A: Worker head, full-face view; 138B: Showing a very short ruga on the ventral clypeus; 139: Worker, lateral view.

suberect hairs are absent from the first gastral tergite. Are these hairs artificially erased? Further collecting is needed to clarify this question.) A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown to blackish-brown.

Queen. TL 4.40, HL 1.14, HW 1.27, CI 111, SL 1.02, SI 80, EL 0.22, PW 0.86, AL 1.20, PPW 0.34, PPL 0.24, PPI 142 (*n* = 1).

General shape as in Figures 136–137, with normal caste differences from the conspecific worker; pronotum unarmed; pro-mesonotum lacking longitudinal rugae; propodeal spines distinctly shorter than those in conspecific worker; other characters similar to those in the conspecific worker.

Male. Unknown.

Comments. Pristomyrmex erythropygus is a sibling species of *P. wheeleri* and also related to *P. quadridentatus.* The three species are all from Australia. *Pristomyrmex erythropygus* differs from *P. wheeleri* and *P. quadridentatus* because the former possesses numerous erect or suberect hairs on the first gastral tergite and several short longitudinal rugae at the juncture between the pronotum and the mesonotum in the workers that are absent in the latter two species. In addition, the propodeal spines are usually slightly longer than the pronotal ones in the workers of *P. erythropygus* but much shorter than the pronotal spines in *P. quadridentatus.*

The differences between *P. erythropygus* and the two Oriental species (*P. flatus* and *P. collinus*) and between *P. erythropygus* and the two African species (*P. africanus* and *P. trogor*) are mentioned under *P. flatus* and *P. africanus,* respectively.

Material Examined (ANIC, MCZC). Australia: New South Wales, Acacia Plateau, in rotten logs (Darlingtons); NE New South Wales, Nothofagus Mt., via Woodenbong, *Nothofagus* forest, 1,100 m, sieved litter, Q. M. Berlesale No. 414 (G. Monteith and G. Thompson); NE New South Wales, Gibraltar Range N.P., rainforest, granite, sieved litter, QM. Berlesate No. 270 (G. B. Monteith); New South Wales, Gibraltar Range Nat. Pk., 920 m, 29.31°S/152.22°E, Berlesate ANIC 836, closed forest litter (L. Hill); New South Wales, 10.5 km W of Gibraltar Ra N.P. (HQ), rainforest, sieved litter, QM. Berlesate No. 213 (G. B. Monteith).

Ecological Information. This species occurs in rainforest and has been collected in rotten logs and in litter berlesates.

Pristomyrmex flatus sp. n.

Figures 138–139

Diagnosis (Worker). Pronotum and propodeum each with a pair of short spines;

dorsal surfaces of head and alitrunk smooth and unsculptured; petiole node with at least two pairs of hairs; anterior face of petiole node indistinguishable from the upper surface of its anterior peduncle; HW 0.98–1.04 and HL 0.94–1.02.

Holotype Worker (MCZC). TL 3.94, HL 1.02, HW 1.04, CI 102, SL 1.10, SI 106, EL 0.24, PW 0.66, AL 1.03. Paratypes, three workers (MCZC, BMNH).

Worker. TL 3.79–4.14, HL 0.94–1.02, HW 0.98–1.04, CI 102–106, SL 1.02–1.12, SI 104–108, EL 0.22–0.24, PW 0.64–0.67, AL 1.02–1.08, PPW 0.28–0.30, PPL 0.28–0.30, PPI 93–100 (n = 4).

Mandibles generally smooth and shining, with a few basal short rugae. Dentition of the masticatory margin of mandible: the strongest apical tooth + the second strongest preapical + a long diastema + two small denticles that are about equal in size. Basal margin of mandible lacking a toothlike prominence. Clypeus depressed and smooth, but the frontal area with a median carina that extends a little to the clypeus. Anterior clypeal margin usually with a median denticle and three other small denticles on each side, but sometimes one of the lateral denticles very weak and indistinct. Ventral center of clypeus with a weak, toothlike prominence. Palp formula 1,3. Frontal carinae approximately reaching to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes very weak so that the antennal articulations are almost completely exposed. Antennal scapes rather long, when lying on the dorsal head, surpassing the occipital margin by one-fifth to one-fourth of their length. Eyes containing eight to nine ommatidia in the longest row. Pronotum armed with a pair of short robust spines as in Figure 139. Propodeum with a pair of slender acute spines that are directed upward and slightly longer than the pronotal ones. Metapleural lobes subtriangular. Pronotum and mesonotum in dorsal view slightly concave between the pronotal spines and between the two lateral margins of mesonotum, respectively. Petiole node massive; its anterior face in profile indistinguishable from the upper surface of petiole peduncle (Fig. 139). Dorsum of petiole node in dorsal view about rounded. Postpetiole in profile convex dorsally, in dorsal view slightly longer than broad or about as long as broad, broadening from front to back. Dorsum of head usually smooth and shining, but some small and shallow hair pits present. Dorsum of alitrunk unsculptured, smooth and shining. Sides and dorsum of petiole and postpetiole smooth and shining. Gaster unsculptured. Dorsal surfaces of head with numerous erect or suberect hairs. Dorsum of alitrunk with sparse erect to suberect hairs. Two pairs of hairs present on the dorsum of petiole node, and two to three pairs on the dorsum of postpetiole. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect to suberect short hairs. Color reddish-brown but sometimes yellow-brown.

Queen. Unknown.

Male. See the following note.

Comments. Like *P. collinus*, *P. flatus* is also known only from the Philippines. *Pristomyrmex flatus* is similar to *P. collinus*, *P. quadridens*, *P. africanus*, *P. trogor*, *P. quadridentatus*, *P. wheeleri*, and *P. erythropygus*. The workers of *P. flatus* can be immediately recognized; because in *P. flatus*, the anterior face of the petiole node is not distinct from the upper surface of its anterior peduncle, which is different in the previously mentioned species.

A more detailed discussion of the separation of *P. flatus* from *P. collinus* is provided under *P. collinus*.

Pristomyrmex flatus and *P. collinus* differ from *P. quadridens* in the workers as follows:

P. flatus and ***P. collinus***

Dorsum of alitrunk unsculptured, smooth, and shining

Dorsum of head smooth and shining,

except for a few punctures bordering the frontal carinae

P. quadridens
Dorsum of alitrunk with scattered foveolate punctures; sometimes some short rugae present
Dorsum of head with a few to many foveolate punctures, except for those bordering the frontal carinae

Pristomyrmex flatus and *P. collinus* differ from two African species, *P. africanus* and *P. trogor,* in the workers as follows:

P. flatus and ***P. collinus***
Ventral center of clypeus with a short ruga or small toothlike prominence
At least one to two pairs of hairs present on the petiole node and postpetiole
Metapleural lobes triangular

P. africanus and ***P. trogor***
Ventral surface of clypeus with two teeth
Petiole and postpetiole lacking erect or suberect hairs
Metapleural lobes rounded

The other differences include that the anterior face of the petiole node is distinct from the upper surface of the peduncle in the workers of *P. africanus* and *P. trogor* but almost indistinct in *P. flatus*; the dorsum of the alitrunk in dorsal view is convex in the workers of *P. collinus* but distinctly shallowly concave in *P. africanus* and *P. trogor*; the dorsum of the head is sculptured with scattered foveolate punctures in the workers of *P. africanus* but is generally smooth and shining in *P. flatus* and *P. collinus*; the frontal carinae extend to the level of the posterior margins of eyes in the workers of *P. flatus* and *P. collinus* but not so in *P. trogor.*

Pristomyrmex flatus and *P. collinus* differ from three Australian species *P. quadridentatus, P. wheeleri,* and *P. erythropygus* in the workers as follows:

P. flatus and ***P. collinus***
Anterior clypeal margin with five to seven smaller denticles
Clypeus unsculptured
Masticatory margin of mandible with four teeth, consisting of an apical, a preapical, and two small basal denticles
Palp formula 1,3.
Alitrunk in dorsal view unsculptured

P. quadridentatus, P. wheeleri, and ***P. erythropygus***
Anterior clypeal margin with three strong and larger teeth
Clypeus sculptured with a strong median carina
Masticatory margin of mandible with three teeth, consisting of an apical, a preapical, and a basal tooth
Palp formula 2,2
Alitrunk in dorsal view with a transverse ridge present at the approximate position of metanotal groove

In addition, the anterior face of the petiole node, in profile, is distinct from the upper surface of the peduncle in the workers of *P. quadridentatus, P. wheeleri,* and *P. erythropygus* but almost indistinct in *P. flatus*; the dorsum of the alitrunk is convex in the workers of *P. collinus* but almost flat or shallowly concave in *P. quadridentatus, P. wheeleri,* and *P. erythropygus.*

Holotype Worker. Philippines: Luzon I., Bauqui; xi.1923. (R.C.Mcq.).

Paratypes. Three workers with same data as holotype.

Ecological Information. Unknown.

Note: The following five male specimens, with same data as holotype and paratypes, may represent the male of this species. I tentatively place these males under *P. flatus,* which needs further confirmation.

Male (Figs. 262, 271). TL 3.62–3.94, HL 0.64–0.68, HW 0.56–0.59, CI 85–91, SL 0.22–0.25, SI 39–43, HWE 0.98–1.04, EL 0.48–0.51, PW 0.74–0.80, AL 1.16–1.24, PPW 0.24–0.24, PPL 0.24–0.24, PPI 100–100 (n = 5).

Head, including the eyes, much broader than long; while excluding the eyes, distinctly longer than broad. Eyes very large

and prominent; their length is about three-fourths of the head length. Clypeus convex, somewhat semicircular, its anterior margin straight and posterior one semicircular. Palp formula 1,3. Frontal carinae absent or short, slightly beyond the anterior margins of antennal insertions. Frontal area usually with a median longitudinal carina. Ocelli developed; maximum diameter of median ocellus 0.16 to 0.18. On the mesoscutum, notauli distinct, forming a Y shape, but usually without distinct ridges in them; parapsidal furrows absent. Scutoscutellar sulcus usually with 9 to 10 narrow ridges. Propodeum lacking armaments. Metapleural lobes subtriangular. Middle and hind tibiae without any spurs. Petiole node in profile low, with a subtriangular apex and a rather long anterior peduncle; anterior face of the node, together with the dorsal surface of its anterior peduncle, forming a long declivity, which reaches the top of the node. Postpetiole in profile low, rounded dorsally, in dorsal view about as broad as long. Dorsum of head smooth and shining, except for a few short rugae present on the posterior margin of clypeus. Alitrunk generally smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster unsculptured, smooth, and shining. All dorsal surfaces with abundant long hairs. Scapes and tibiae with numerous erect or suberect short hairs. Color reddish-brown; hairs reddish-brown; antennae sometimes yellow-brown; wings somewhat infuscated.

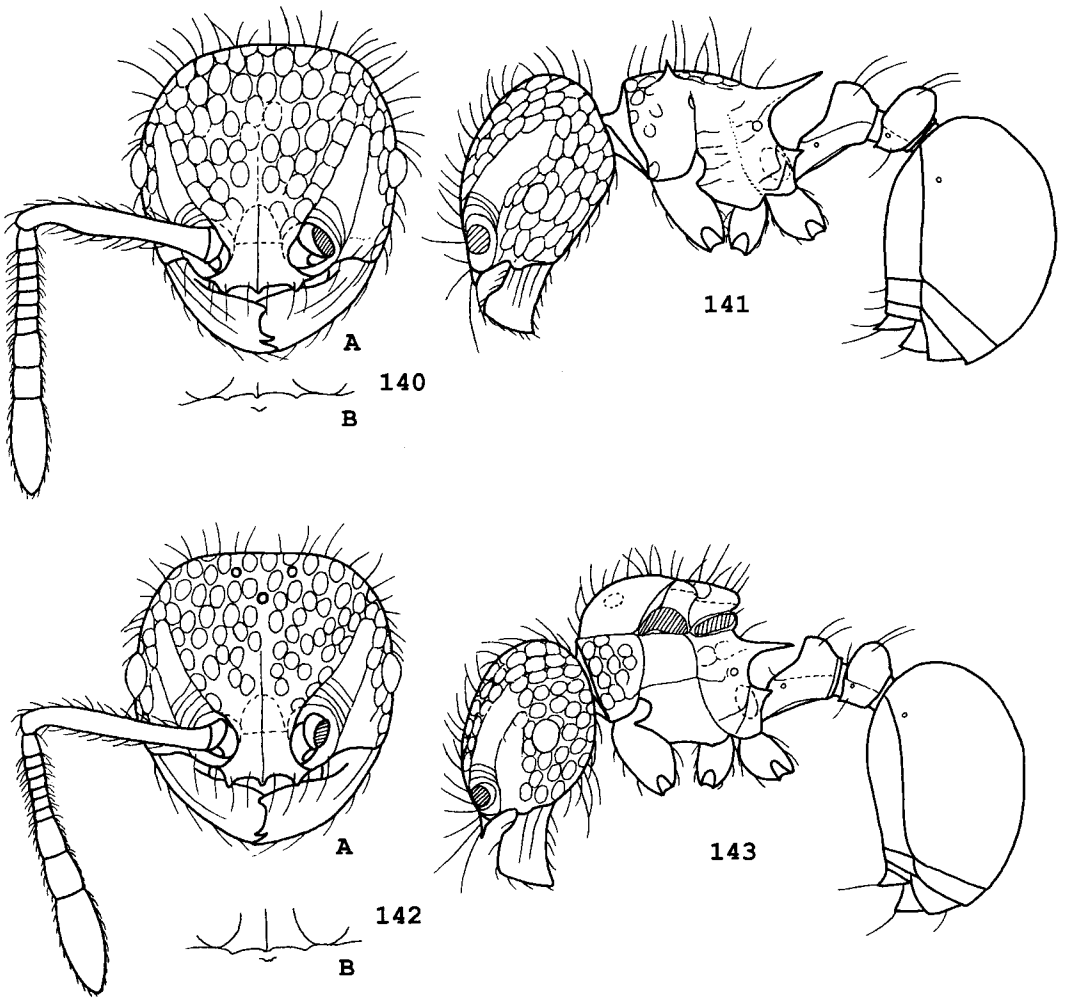
Pristomyrmex foveolatus Taylor
Figures 140–143

Pristomyrmex foveolatus Taylor, 1965: 38. Holotype worker, Australia: N. Queensland, west of Tully, Clump Point, rainforest, a few feet above sea level, 25.vi.1962 (R. W. Taylor) (MCZC) [examined].

Diagnosis (Worker). Pronotum with a pair of triangular short spines (ca. 0.06–0.13); propodeal spines long (ca. 0.20–0.30); dorsum of head, except for the antennal scrobes, with foveolate-reticulate sculpture; postpetiole unsculptured; PPI 133–150; SL 0.70–0.82 and SI 81–93.

Worker. TL 2.74–3.26, HL 0.78–0.92, HW 0.80–0.96, CI 100–108, SL 0.70–0.82, SI 81–93, EL 0.11–0.14, PW 0.50–0.62, AL 0.68–0.86, PPW 0.23–0.27, PPL 0.16–0.20, PPI 133–150 (n = 74).

Mandibles usually with a few longitudinal rugae. Masticatory margin of mandible with three teeth: an apical + a preapical + a long diastema + a truncated basal tooth. Basal margin of mandible lacking a distinctly curved lobe or tooth. Clypeus with a strong median carina. Anterior clypeal margin with a median denticle and usually two to three others on each side; two or three lateral denticles are often fused into one prominence. Ventral center of clypeus with a low, broad, toothlike prominence. Palp formula 2,3. Frontal carinae well developed, beyond the level of the posterior margins of eyes. Scrobal areas shallow, present below the frontal carinae. Frontal lobes almost completely absent so that the antennal articulations are entirely exposed. Antennal scapes, when lying in the antennal scrobes, close to or just reaching the occipital margin of head. Eyes containing five to six ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 141. Pronotum armed with a pair of short spines (ca. 0.06–0.13). Propodeal spines long, ca. 0.20 to 0.30, usually straight but sometimes slightly upcurved along their length. Metapleural lobe small-triangular, usually with an acute apex. Petiole node in profile higher than long, with a long anterior peduncle, its anterodorsal angle forming an apex and its dorsum sloping downward posteriorly. Postpetiole in profile much higher than long, with a rounded dorsum; in dorsal view, postpetiole transverse-rectangled, much broader than long, with the two sides subparallel. Dorsum of head, except for the antennal scrobes where there are only a few transverse rugae, with well-developed foveolate-reticulate sculpture. Dorsum of alitrunk usually with foveolate-reticulate sculpture and a few coarse longitudinal rugae. Sides of



Figures 140–143. *Pristomyrmex foveolatus* Taylor. 140A: Worker head, full-face view; 140B: Showing a toothlike prominence on the center of ventral clypeus; 141: Worker, lateral view; 142A: Queen head, full-face view; 142B: Showing a toothlike prominence on the center of ventral clypeus; 143: Queen, lateral view.

pronotum with a few foveolate punctures; sides of the rest of alitrunk with some irregularly superficial rugae. Petiole node and postpetiole smooth and shining. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect long hairs. Dorsal surfaces of petiole node and postpetiole with a pair of long hairs, respectively, as shown in Figure 141. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown.

Queen. TL 3.20, HL 0.83, HW 0.86, CI 104, SL 0.74, SI 86, EL 0.16, PW 0.66, AL 0.87, PPW 0.25, PPL 0.16, PPI 139 (n = 1).

General shape as in Figures 142–143, with normal caste differences from the conspecific worker; pronotum unarmed;

other characters similar to worker; propodeal spine length 0.25.

Male. Unknown.

Comments. Pristomyrmex foveolatus is extremely similar to *P. thoracicus,* also from Australia, in many characters in the workers and queens, such as (1) the dentition of the masticatory margin of mandible, (2) palp formula, (3) structure and shape of the clypeus, (4) length and shape of the pronotal and propodeal spines, and (5) sculpture of the dorsal surfaces of the head and the alitrunk. The differences between the workers of these two species are slight, as follows:

P. foveolatus

Antennal scapes shorter (SL 0.70–0.82, SI 81–93)

Postpetiole in dorsal view much broader than long, PPI 133–150, with the two sides subparallel, showing a transverse rectangle

P. thoracicus

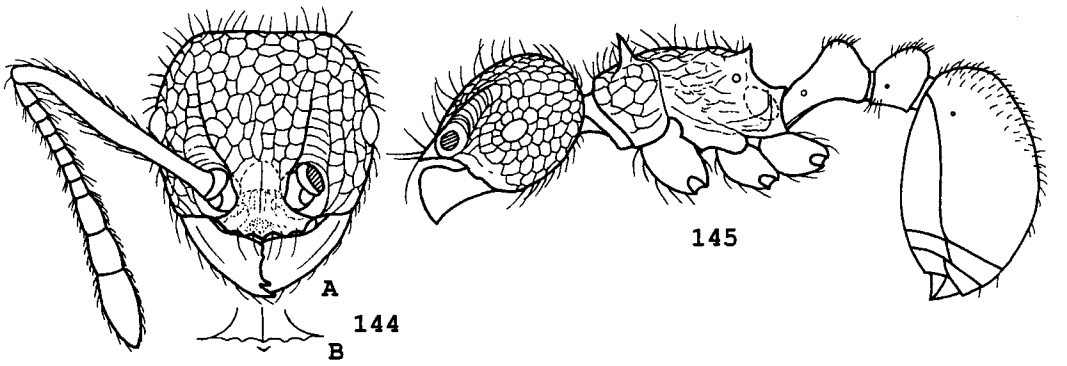
Antennal scapes longer (SL 0.86–0.98, SI 97–103)

Postpetiole in dorsal view slightly broader than long, PPI 109–121, with the two sides not subparallel, showing a trapezoid

Without doubt, *P. foveolatus* and *P. thoracicus* are closely related to *P. brevispinosus,* from the Oriental region. The workers of these three species all show the following characters: (1) a pair of short pronotal spines, (2) a toothlike prominence on the ventral center of the clypeus, (3) a similar structure and shape of petiole node in both profile and dorsal views, (4) a similar structure and shape of postpetiole in profile, (5) well-developed foveolate-reticulate sculpture on the dorsal head, and (6) dorsal alitrunk with a few coarse longitudinal rugae. But *P. foveolatus* and *P. thoracicus* can be separated from *P. brevispinosus* as follows: The former two species have a pair of long propodeal spines (ca. 0.19–0.30), two segments of maxillary palpi, and a truncated basal tooth on the masticatory margin of mandible in the workers and queens, while *P. brevispinosus* has a pair of short propodeal spines or teeth (ca. 0.04–0.12), one segment of maxillary palp, and usually two small basal teeth on the masticatory margin of mandible.

The separation of both *P. foveolatus* and *P. thoracicus* from the African *P. cribrarius* (a member of the *cribrarius* group) is provided under *P. cribrarius.*

Material Examined (ANIC, MCZC). Australia: N. Queensland, Clump Point, rainforest floor, ex small wood fragment (R. W. Taylor); Q., Clump Point, <20 m, berlesate (Taylor and Feehan); N. Q., NW of Daintree, Mt. Alexander, rainforest (P. F. Darlington); Q., Alexandra Bay, 16.12°S, 145.26°E, rainforest, <50 m, berlesate (Taylor and Feehan); Q. NE, Road, summit on Alexandra, Ra. Daintree, 16.15°S, 145.26°E, rainforest, 250 m, berlesate, sieved litter (G. Monteith); Q., Kuranda, Black Mt. Rd. 360 m, 17.47°S, 145.39°E, rainforest, berlesate, sieved litter (G. Monteith); Q., Kuranda, Black Mt. Rd. 430 m, 16.45 × 145.35, rainforest, berlesate (Taylor and Feehan); Q., 4 km W of Kuranda, 450 m, 16.49 × 145.36, rainforest, berlesate (Taylor and Feehan); Q., 1 km W of Kuranda, closed forest litter, berlesate (J. Doyen); N Q., Kuranda, RF, in log (B. B. Lowery); Q., NE, C. Tribulation, 16.08°S, 145.28°E, 20 m, rainforest, berlesate, sieved litter (G. Monteith); Q., NE, Cape Tribulation, Noah Ck, 5 m (G. B. Monteith); NE Q., 1.5 km W of Cape Tribulation (Site 3), 16.05°S, 145.28°E, 150 m, rainforest, berlesate, sieved litter (Monteith, Yeates, and Thomson); NE Q., 2.0 km WNW of Cape Tribulation (Site 2), 16.05°S, 145.28°E, 50 m, rainforest, berlesate, sieved litter (Monteith, Yeates, and Thomson); Q., near Cape Tribulation, 16.06°S, 145.28°E, 50 m, rainforest, berlesate (Taylor and Feehan); Q., Thorton Range, 16.14°S, 145.26°E, 100 to 150 m, rainforest, berlesate (Taylor and Feehan); Q., 20 km N of Cairns, rainforest (B. B. Lowery); NE Q., Lyons Lookout, Rex Hwy, Mossman, 400 m, rainforest, berlesate, sieved litter (G. Monteith and D.



Figures 144–145. *Pristomyrmex hirsutus* **sp. n.** 144A: Worker head, full-face view; 144B: Showing a toothlike prominence on the ventral clypeus; 145: Worker, lateral view.

Cook); NE Q., Hinchinbrook Is., Gayundah Creek, 18.22°S, 146.13°E, 10 to 80 m, rainforest, berlesate, sieved litter (Monteith, Davies, Thompson, and Gallon); Q., NE, Mossman Gorge, 16.25°S, 145.20°E, rainforest, berlesate, sieved litter (G. Monteith); NE Q., Bakers Blue Mt., 17 km W Mt. Molloy, 1,000 m, rainforest, berlesate, sieved litter (G. Monteith and D. Cook); Q., Mt. Cook, Nat. Pk., 15.29°S, 145.16°E, rainforest, berlesate (A. Calder and J. Feehan); Q., Gap Creek, 15.50°S, 145.20°E, 5 km ESE of Mt. Finnigan, rainforest, berlesate (A. Calder and J. Feehan); Q., N Pingin Hill (J. Holt); Q., Mt. Windsor Tableland, ca. 850 m, 16.18°S, 145.05°E, rainforest, berlesate (R. W. Taylor); N Q., 28 km NNW Mt. Carbine, Windsor Tableland, 900 m, rainforest, berlesate, sieved litter (Monteith, Yeates, and Cook); Q., ME, Cannon Vale, 20.16°S, 148.43°E, 10 m, dry rainforest, berlesate, stick brushing (G. Monteith); Q., ME, Mt. Dryander, 20.15°S, 148.33°E, 500 to 650 m, rainforest, berlesate, stick brushing (G. Monteith); Q., ME, Brandy Ck Rd, Conway SF, 20.20°S, 148.42°E, 60 m, rainforest, berlesate, sieved litter and stick brushing (G. Monteith); Q., Finch Hatton Gorge, 21.04°S, 148.38°E, 470 m, mesophyll notophyll vine forest, berlesate (A. Gillison); Q., Finch Hatton Gorge, 21.05°S, 148.38°E, 200 m, rainforest, berlesate (R. W. Taylor and T. A. Weir); N Q., 15.50°S, 145.20°E, 12-mi scrub Gap Creek, complex mesophyll vine for. (Davies and Raven); N Q., 20 km N of Cairns, lowland RF, creek between rocks (B. B. Lowery).

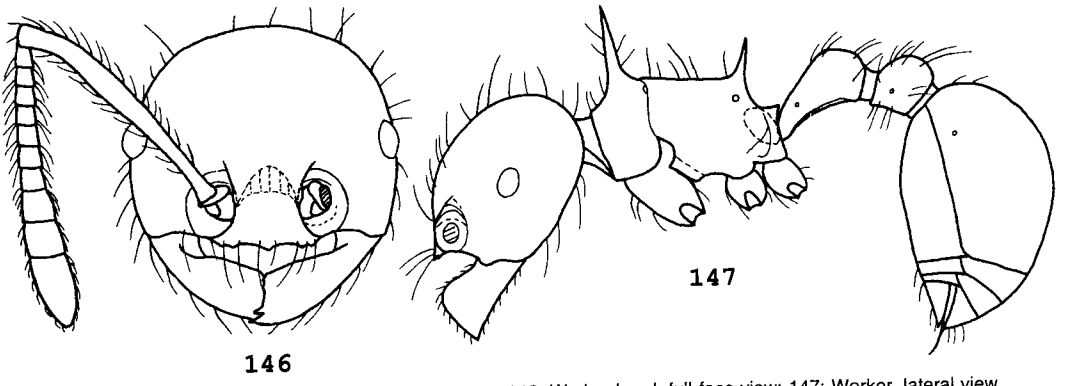
Ecological Information. This species occurs only in rainforest in North Queensland, Australia, and has been collected in litter berlesates; its nests are constructed in rotting logs (Taylor, 1965).

Pristomyrmex hirsutus sp. n.
Figures 144–145

Diagnosis (Worker). Masticatory margin of mandible with a long diastema; dorsal head with a well-developed rugoreticulum; petiole node in profile high, with a single evenly blunt-rounded apex; first gastral tergite with numerous erect or suberect short hairs.

Holotype Worker (BMHH). TL 5.78, HL 1.38, HW 1.40, CI 101, SL 1.60, SI 114, EL 0.28, PW 0.90, AL 1.52, PPW 0.38, PPL 0.42, PPI 90.

Mandibles smooth and shining. Masticatory margin of mandible with four teeth arranged as two adjacent strong apical teeth + a long diastema + two basal denticles of similar size. Basal margin of mandible lacking a toothlike prominence. Clypeus somewhat uneven, with a few weak short rugae. Anterior clypeal margin with a median denticle and two others on each side (but one of them appears to be fused by two small denticles). Frontal ca-



Figures 146–147. *Pristomyrmex longispinus* **sp. n.** 146: Worker head, full-face view; 147: Worker, lateral view.

rinae extending to the level of the posterior margins of the eyes. Antennal scrobes shallow, approximately ending at the level of the posterior margins of eyes. Frontal lobes weak so that the antennal articulations are almost entirely exposed. Antennal scapes long, when laid on the dorsal head, surpassing the occipital margin by about one-third of their length. Profile shape of alitrunk and pedicel segments as in Figure 145. Pronotum armed with a pair of spines (ca. 0.19). Propodeum with a pair of somewhat elongate-triangular teeth (ca. 0. 09). Metapleural lobes subtriangular. Petiole node in profile high (ca. 0.46), with a single evenly blunt-rounded apex. Postpetiole in profile rounded dorsally, in dorsal view longer than broad and broadening from front to back. Dorsum of head, except for the scrobal areas, with well-developed coarse rugoreticulum. Similar sculpture present on the dorsum of the alitrunk and the two sides of the pronotum. Sides of the rest of the alitrunk with irregular coarse rugae. Petiole, postpetiole, and gaster smooth and shining. All dorsal surfaces of body, including head, alitrunk, petiole node, postpetiole, and gaster, with numerous erect or suberect hairs, as shown in Figure 145. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with erect or suberect hairs. Color reddish-brown.

Queen and Male. Unknown.

Comments. Though only a single specimen is available so far, it undoubtedly represents a good species because it has numerous erect or suberect hairs on the first gastral tergite, which is possessed only by this new species in the Oriental fauna of the *quadridens* group. In addition, this species has an uneven clypeus and a distinct petiole node (bearing a single evenly blunt-rounded apex) that is not seen in the other Oriental species of the group.

Holotype Worker. Philippines: Misamis or Mt. Balatukan, 15 km SW of Gingoog, 1,000 to 2,000 m, 1–5.v.1960 (H. Torrevillas).

Note: The holotype of this species is an old specimen, and many hairs have obviously been removed from its first gastral tergite. Therefore, the figure can not accurately show this character.

Ecological Information. Unknown.

Pristomyrmex longispinus sp. n.
Figures 146–147, 263, 272

Diagnosis (Worker). Frontal carinae short, usually not extending to the level of the posterior margins of eyes; pronotal spines exceptionally long (0.42–0.50); propodeal spines moderately long (0.18–0.26); anterior face of petiole node, in profile, indistinguishable from the upper surface of its anterior peduncle.

Holotype Worker (MCZC). TL 5.30, HL

1.21, HW 1.28, CI 106, SL 1.34, SI 1.05, EL 0.24, PW 0.80, AL 1.26. Paratypes, 73 workers and three males (BMNH, LACM, MCZC, MHNG, USNM).

Worker. TL 4.52–5.62, HL 1.09–1.26, HW 1.15–1.35, CI 103–109, SL 1.26–1.40, SI 103–113, EL 0.21–0.26, PW 0.76–0.86, AL 1.14–1.32, PPW 0.31–0.35, PPL 0.36–0.40, PPI 84–89 (n = 20).

Mandibles generally unsculptured, smooth, and shining. Masticatory margin of mandible with four teeth: the strongest apical + the second strongest preapical + a long diastema + two small teeth that are roughly the same size. Basal margin of mandible lacking a toothlike prominence. Clypeus depressed, unsculptured, and shining; its anterior margin with a median denticle and usually two others on each side, but sometimes two lateral denticles are fused into one prominence. Ventral center of clypeus with a short transverse ruga or a broad-based weak prominence. Palp formula 1,3. Frontal carinae short, usually not extending to the level of the posterior margins of the eyes. Antennal scrobes absent. Frontal lobes very weak so that the antennal articulations are almost entirely exposed. Antennal scapes long, when lying on the dorsal head, surpassing the occipital margin by about one-fifth to one-fourth of their length. Head in full-face view subglobal. Profile shape of alitrunk and pedicel segments as in Figure 147. Pronotum armed with a pair of exceptionally long spines that are about 0.42 to 0.50 and longer than the distance between their bases. Propodeum with a pair of moderately long spines that are 0.18 to 0.26 and over two times the distance between their bases. Both pronotal and propodeal spines acute and directed upward. Metapleural lobes subtriangular. Dorsum of alitrunk sometimes slightly concave. Anterior face of petiole node, in profile, indistinguishable from the dorsal surface of its anterior peduncle (i.e., the anterior face of petiole node and the dorsal surface of peduncle forming a long declivity from the base of peduncle to the top of petiole node). Postpetiole in profile rounded dorsally, in dorsal view longer than broad. Dorsum of head generally smooth and shining, but a few weak short rugae present on the frontal area and sometimes a few foveolate punctures on the genae. Alitrunk smooth and polished. Petiole, postpetiole, and gaster unsculptured, smooth, and shining. Dorsal surfaces of head and alitrunk with some erect or suberect long hairs. Usually two to three pairs of similar hairs present on the dorsal surfaces of petiole node and postpetiole, respectively. First gastral tergite usually lacking erect or suberect hairs, rarely with few hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect or suberect hairs. Color reddish-brown.

Queen. Unknown.

Male (Figs. 263, 272). Three male specimens, together with 48 workers, collected in Dumaguete, Philippines, by J. W. Chapman, constitute a series; and two of the three males were originally mounted, respectively, with a worker on the same pin: TL 4.42–4.54, HL 0.67–0.73, HW 0.64–0.66, CI 88–96, SL 0.20–0.22, SI 31–34, HWE 0.94–0.98, EL 0.43–0.46, PW 0.88–0.93, AL 1.32–1.44, PPW 0.28–0.30, PPL 0.24–0.26, PPI 115–117 (n = 3).

Head, including the eyes, distinctly broader than long. Clypeus convex, without a median longitudinal carina. Palp formula 1,3. Frontal carinae sometimes absent but sometimes present, just reaching the level of the posterior margins of antennal insertions. Maximum length of the median ocellus 0.12 to 0.12. On the mesonotum, notauli pronounced, forming a Y shape; parapsidal furrows absent. Scutoscutellar sulcus with 12 to 13 narrow ridges. Middle and hind tibiae without any spurs. Propodeum slightly tuberculate, lacking spines and teeth. Metapleural lobes prominent and subtriangular. Petiole node in profile low, with a subtriangular apex and a rather long anterior peduncle; anterior face of the node, together with the dorsal surface of the peduncle, form-

ing a long declivity that reaches the top of the node. Postpetiole in profile low, rounded dorsally, and in dorsal view broader than long. Dorsum of head smooth and shining, but frontal area usually with a median longitudinal carina. Alitrunk smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster unsculptured, smooth, and shining. All dorsal surfaces with abundant erect or suberect hairs. Scapes and tibiae with numerous erect or suberect short hairs. Color reddish-brown; hairs reddish-brown; wings somewhat infuscated.

Comments and Discussion. Pristomyrmex longispinus is closely related to *P. curvulus*. The former is very similar in the workers to the latter in the shape of pronotal and propodeal spines as well as in the size, sculpture, hair, and color of body. The differences between the two species are provided under *P. curvulus*.

Pristomyrmex longispinus may have evolved from a *P. flatus*–like ancestor. Except for the well-developed pronotal spines, its larger size, and shorter frontal carinae, the workers of *P. longispinus* are similar to those of *P. flatus*.

It is possible that a *P. collinus*–like ancestor may have split into the four species *P. collinus, P. flatus, P. curvulus,* and *P. longispinus* because morphological characters show that (1) *P. collinus* and *P. flatus* are a pair of sibling species, (2) *P. curvulus* and *P. longispinus* are another pair of sibling species, and (3) *P. curvulus* seems to be derived from a *P. collinus*–like ancestor (see the discussion under *P. curvulus*). This hypothesis also obtains support from biogeographic data. The four species are all endemic to the Philippines. *Pristomyrmex curvulus* and *P. longispinus* are found only in Dumaguete and *P. flatus* only in Luzon. But *P. collinus* has a larger range; it occurs sympatrically with *P. curvulus* and *P. longispinus* in Dumaguete and with *P. flatus* in Luzon.

Holotype Worker. Philippines: Dumaguete (J. W. Chapman).

Paratypes. Philippines: 48 workers and three males with same data as holotype; four workers, Dumaguete, Horns of Negros (J. W. Chapman); two workers, Dumaguete, 1942 (J. W. Chapman); one worker, Dumaguete, 7.xi.43 (J. W. Chapman); two workers, Dumaguete, v.1947 (J. W. Chapman); one worker, Dumaguete, 13.v.1947 (J. W. Chapman); one worker, Dumaguete, Silliman University, 1948 (Domingo Empeso); 13 workers, Dumaguete, 1949 (J. W. Chapman); one worker, Dumaguete, 18.vi.49. (J. W. Chapman).

Additional Material Examined. More than two dozen specimens from Camp, Dumaguete, Philippines, are treated as non-type material because of in a poor situation.

Ecological Information. Unknown.

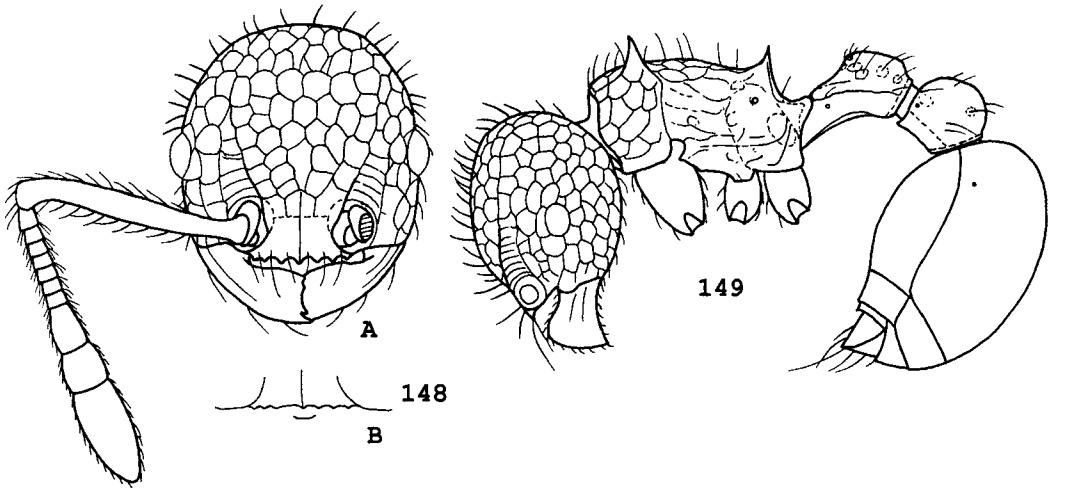
Pristomyrmex modestus sp. n.

Figures 148–149

Diagnosis (Worker). Pronotum with a pair of moderately long, robust spines; dorsal surfaces of head and alitrunk, as well as the two sides of pronotum, with a coarse rugoreticulum; petiole node in profile somewhat transrectangular, slightly longer than high, with seven to eight foveolate punctures.

Holotype Worker (BMNH). TL 4.00, HL 0.99, HW 0.92, CI 93, SL 0.95, SI 103, EL 0.19, PW 0.64, AL 1.04, PPW 0.35, PPL 0.35, PPI 100.

Mandibles with a few longitudinal rugae. Masticatory margin of mandible with two adjacent strong apical teeth + a long diastema + one broad, somewhat concave basal tooth. Basal margin of mandible lacking a distinctly curved lobe or tooth. Clypeus with a strong median carina. Anterior clypeal margin with a median denticle and three others on each side. Ventral surface of clypeus with a short transverse ruga. Frontal carinae strong, extending to the level of the posterior margins of the eyes. Antennal scrobes indistinct. Frontal lobes weak so that the antennal articulations are almost entirely exposed. Antennal scapes, laid on the dorsal head, slightly surpassing the occipital margin of head. Eyes rather



Figures 148–149. *Pristomyrmex modestus* **sp. n.** 148A: Worker head, full-face view; 148B: Showing a short transverse ruga on the ventral clypeus; 149: Worker, lateral view.

large. Profile shape of alitrunk and pedicel segments as in Figure 149. Pronotal spines robust, ca. 0.14, shorter than the distance between their bases. Propodeal spines acute, slender, ca. 0.11. Metapleural lobes developed, prominent, ca. 0.14, each with a rounded apex. In profile view, petiole node slightly longer than high, somewhat transrectangular, with the anterodorsal angle on approximately the same level as or weakly higher than the posterodorsal; in dorsal view, petiole node longer than broad. Postpetiole in profile rounded dorsally; in dorsal view, approximately quadrate and about as long as broad. Dorsal surfaces of head and alitrunk, as well as the two sides of pronotum, entirely sculptured with coarse rugoreticulum. Dorsum and the sides of petiole node with seven to eight large foveolate punctures. Postpetiole with a few shallow foveolate punctures. Gaster unsculptured, smooth, and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Petiole node and postpetiole each with a few pairs of hairs, as shown in Figure 149. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with sparse erect or suberect hairs. Color reddish-brown.

Queen and Male. Unknown.

Comments. This species must have evolved from the ancestor of *P. costatus*. It differs from *P. costatus* in the workers as follows:

P. modestus

Petiole node in profile longer than high, somewhat rectangular, with the anterodorsal angle on approximately the same level as the posterodorsal

Dorsum and sides of petiole node with seven to eight foveolate punctures

P. costatus

Petiole node in profile higher than long; its anterodorsal angle is distinctly higher than the posterdorsal

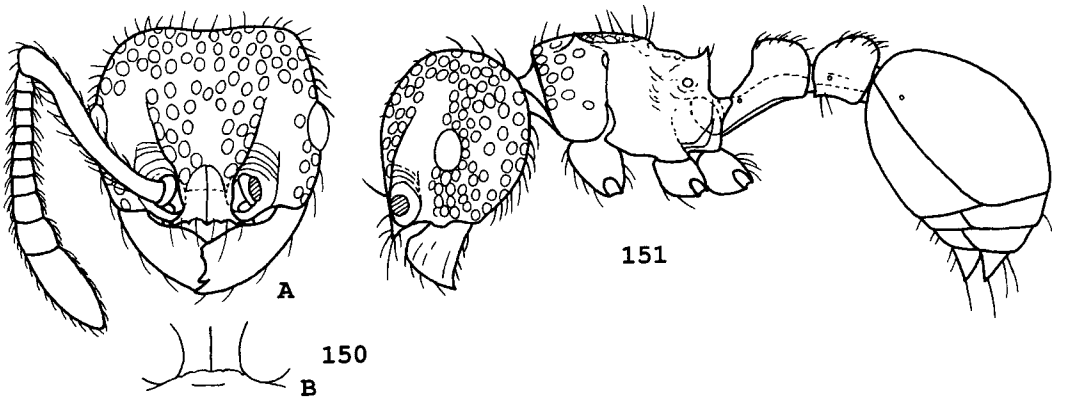
Dorsum and sides of petiole node without foveolate punctures

Holotype Worker. Malaysia: Sarawak, 4th Division, Gn. Mulu N.P., Kerangas for., leaf litter, 19.iii.1978 (H. Vallack).

Ecological Information. The holotype is collected from a forest.

Pristomyrmex nitidissimus Donisthorpe Figures 150–151

Pristomyrmex nitidissimus Donisthorpe, 1949: 411. Holotype worker, New Guinea: Maffin Bay, ix.1944 (E. S. Ross) (CASC) [examined].



Figures 150–151. *Pristomyrmex nitidissimus* Donisthorpe. 150A: Worker head, full-face view; 150B: Showing a short transverse ruga on the ventral clypeus; 151: Worker, lateral view.

Diagnosis (Worker). Pronotum armed with a pair of teeth; dorsal surfaces of head and alitrunk with numerous scattered foveolate punctures; ventral surface of clypeus with a coarse transverse carina; larger size (HL 1.10–1.16, HW 1.22–1.24, and EL 0.24–0.25).

Worker. TL 4.58, 4.69; HL 1.10, 1.16; HW 1.22, 1.24; CI 107, 111; SL 1.14, 1.16; SI 93, 94; EL 0.24, 0.25; PW 0.75, 0.78; AL 1.20, 1.30 (n = 2).

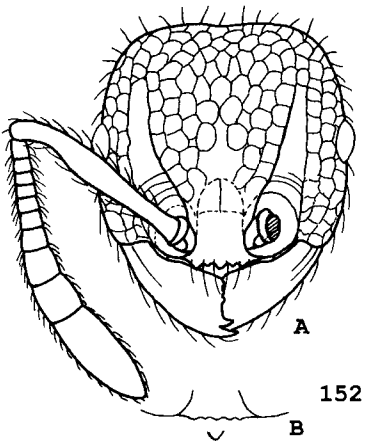
Mandibles with a few longitudinal rugae. Dentition of the masticatory margin of mandible: the strongest apical + the second strongest preapical + a short diastema + a broad basal tooth showing two minute points (which is formed by the fusion of two basal denticles). Basal margin of mandible with a central, broadly curved lobe. Clypeus with a median longitudinal carina. Anterior clypeal margin with a median denticle and two others on each side. Ventral surface of clypeus with a transverse ridge. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobe indistinct, but a smooth area present below the frontal carina. Frontal lobes very weak so that the antennal articulations are almost entirely exposed. Antennal scapes, laid on the dorsal head, slightly surpassing the occipital margin of head. Eyes large. Pronotum armed with a pair of teeth. Propodeum with a pair of subtriangular short spines that are slightly longer than the pronotal teeth. Metapleural lobes each with a subtriangular apex. Petiole node in profile as in Figure 151, with a fairly long anterior peduncle, in dorsal view longer than broad. Postpetiole in profile rounded dorsally, in dorsal view slightly longer than broad. Dorsum of head with numerous rather large, scattered foveolate punctures; space between foveolae usually smooth. Similar foveolate punctures present on the dorsal surface of alitrunk, but promesonotum with a smooth, unsculptured median strip. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head, alitrunk, petiole node, and postpetiole with numerous erect or suberect hairs. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color blackish-brown.

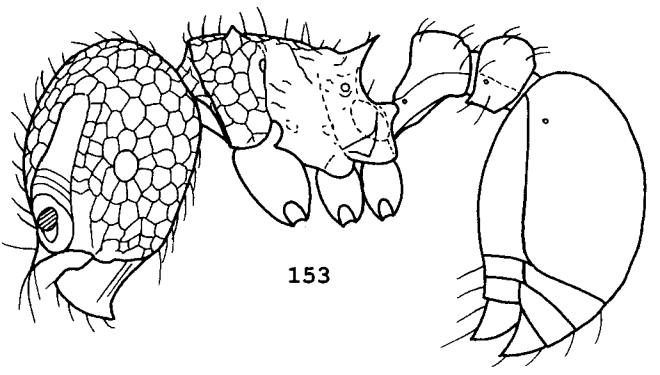
Queen and Male. Unknown.

Comments. At first glance, *P. nitidissimus* appears to resemble *P. quadridens* very much, but after being compared in detail, the workers of the two species are separable as follows:

P. nitidissimus

Ventral surface of clypeus with a coarse transverse ruga, lacking a toothlike prominence





Figures 152–153. *Pristomyrmex occultus* **sp. n.** 152A: Worker head, full-face view; 152B: Showing a tooth on the center of ventral clypeus; 153: Worker, lateral view.

Larger species, with HW 1.22–1.24, HL 1.10–1.16, EL 0.24–0.25
Basal margin of mandible with a central, broadly curved lobe
Four to five pairs of short hairs present on the dorsums of both petiole node and postpetiole

P. quadridens
Ventral center of clypeus with a toothlike prominence
Smaller species, with HW 0.82–1.02, HL 0.82–1.02, EL 0.14–0.20
Basal margin of mandible almost straight, without a distinctly convex lobe
Usually one to two pairs of hairs present on the dorsums of both petiole node and postpetiole

The workers of *P. nitidissimus* are obviously different from those of the African *P. africanus* because the latter are smaller (HW < 1.00, HW < 1.00, EL < 0.14) and lack hairs on the dorsal surfaces of the petiole node and the postpetiole. The workers of *P. africanus* also possess two toothlike prominences on the ventral surface of the clypeus and have a concave dorsum of the alitrunk and an almost straight basal margin of the mandible.

Material Examined (CASC). One worker, with same data as holotype: New Guinea: Maffin Bay, ix.44 (E. S. Ross).

Ecological Information. Unknown.

Pristomyrmex occultus sp. n.
Figures 152–153

Diagnosis (Worker). Masticatory margin of mandible with five teeth; pronotum with a pair of triangular short spines; dorsal surfaces of head and alitrunk, as well as the two sides of pronotum, with coarse rugoreticulum.

Holotype worker (BMNH). TL 3.10, HL 0.84, HW 0.81, CI 96, SL 0.72, SI 89, EL 0.10, PW 0.56, AL 0.80. Paratypes, three workers (MHNG, MCZC).

Worker. TL 3.04–3.23, HL 0.84–0.88, HW 0.80–0.84, CI 93–98, SL 0.72–0.75, SI 87–93, EL 0.10–0.13, PW 0.52–0.56, AL 0.76–0.80, PPW 0.22–0.24, PPL 0.20–0.22, PPI 109–120 (n = 5).

Mandibles generally smooth and shining, with a few basal longitudinal rugae. Masticatory margin of mandible with five teeth arranged as the strongest apical + the second strongest preapical + a diastema + three small denticles of similar size of which the middle one is sometimes weak (i.e., smaller than the two others) or worn down, but the length of the masticatory margin covered by the three den-

ticles is longer than the diastema. Basal margin of mandible lacking a toothlike prominence. Clypeus depressed, smooth, and shining. Anterior clypeal margin with a median denticle and two to three others on each side. Ventral center of clypeus with a strongly prominent tooth. Frontal carinae strong, extending to the level of the posterior margins of eyes. Antennal scrobes shallow. Frontal lobes weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, laid on the dorsal head, just reaching to the occipital margin of head. Eyes moderately sized, containing five to six ommatidia in the longest row. Occipital margin in full-face view feebly concave. Pronotum armed with a pair of triangular short spines. Propodeal spines acute, about two times the length of the pronotal teeth. Metapleural lobes prominent and rounded. Dorsum of alitrunk in dorsal view somewhat depressed. Petiole node high in profile, with a fairly long anterior peduncle; its anterodorsal angle higher than the posterodorsal. Subpetiole with a narrow, long, semitranslucent lamella. Postpetiole in profile rounded dorsally, in dorsal view slightly broader than long. Dorsal surfaces of head and alitrunk, as well as the two sides of pronotum, with coarse, strongly sculptured rugoreticulum, but the scrobal areas lacking this sculpture. Petiole and postpetiole smooth and shining, except for a lateral longitudinal carina on each side that separates the tergite from the sternite. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Two pairs of hairs present on the dorsum of petiole node and usually two to three pairs on the dorsum of postpetiole. First gastral tergite lacking erect or suberect hairs. A few of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown.

Queen and Male. Unknown.

Comments. Pristomyrmex occultus is a sibling species of *P. quindentatus*. The two species are all from the Oriental region. The separation of the two species is discussed under *P. quindentatus*.

Pristomyrmex occultus is also very similar in appearance to *P. brevispinosus*. But in the workers of *P. occultus*, the masticatory margin of the mandible possesses five teeth, the length of the masticatory margin covered by three small denticles is slightly longer than that of diastema, and the propodeum is armed with a pair of fairly long spines. In *P. brevispinosus*, the masticatory margin of the mandible has four teeth, the length of the masticatory margin covered by two basal denticles is not longer than that of diastema, and the propodeum is armed with a pair of triangular teeth.

Holotype Worker. E. Malaysia: Sarawak, confl. Sun Oyan and Mujong riv., E Kapit 50 m, 18.v.1994 (Löbl and Burchhardt).

Paratypes. Three workers, Malaysia: Sabah, Poring Hot Springs, 600 m, 9.v.1987 (Burckhardt and Löbl).

Additional Material Examined. Two workers (BMNH, MCZC), collected in Malaysia (Sabah, Poring Hot Springs, 500 m), by Burckhardt and Löbl on 7.v.1987, show only four distinct teeth on the masticatory margin of the mandible. But the length of the masticatory margin covered by two small basal denticles is slightly longer than that of diastema.

Ecological Information. Unknown.

Pristomyrmex orbiceps (Santschi)
Figures 154–157, 264, 273

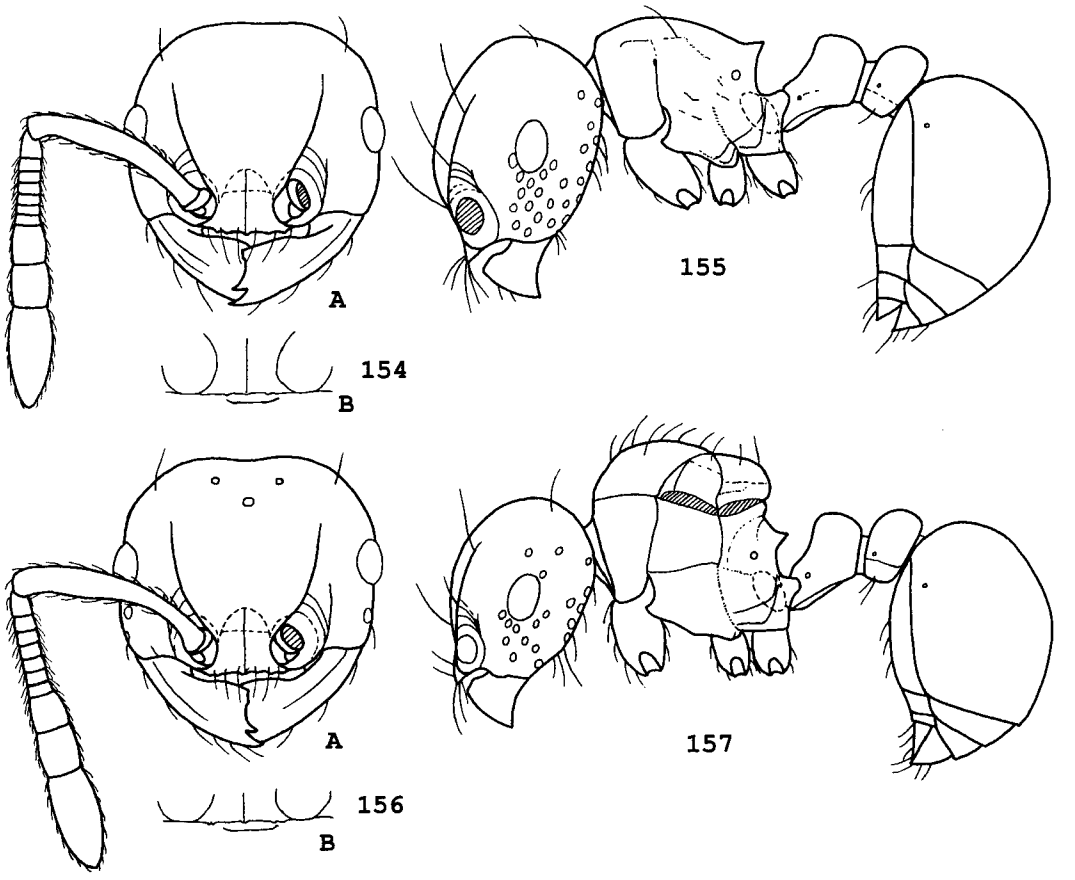
Xiphomyrmex orbiceps Santschi, 1914: 367. Syntype workers, Cameroon: Victoria (F. Silvestri); and Ghana: Aburi (F. Silvestri) (NHMB) (Bolton, 1981).

Pristomyrmex orbiceps (Santschi) Santschi, 1916: 51.

Hylidris laevigatus Weber, 1952: 20. Holotype worker, Zaire: 13 mi S of Asa, lat. 4°40′N, long. 25°40′E (N. A. Weber) (AMNH). [Synonymy by Bolton, 1981].

Note: I have not seen the type material, but I did view some specimens of this species, which has been compared with the type by B. Bolton.

Diagnosis (Worker). Masticatory margin of mandible with a diastema, after the



Figures 154–157. *Pristomyrmex orbiceps* (Santschi). 154A: Worker head, full-face view; 154B: Showing a transverse ruga on the ventral clypeus; 155: Worker, lateral view; 156A: Queen head, full-face view; 156B: Showing a transverse ruga on the ventral clypeus; 157: Queen, lateral view.

preapical tooth; pronotum lacking teeth or spines; dorsal surfaces of head between the frontal carinae and alitrunk unsculptured, smooth, and shining; petiole and postpetiole lacking erect or suberect hairs.

Worker. TL 2.66–3.40, HL 0.78–0.92, HW 0.80–0.98, CI 100–110, SL 0.68–0.80, SI 79–85, EL 0.14–0.21, PW 0.51–0.60, AL 0.68–0.80, PPW 0.24–0.30, PPL 0.18–0.22, PPI 125–144 (n = 35).

Mandibles smooth, at most with two longitudinal basal rugae. Masticatory margin of mandible with an apical tooth + a preapical tooth + a diastema + a broad, truncated (or sometimes somewhat midconcave) basal tooth. Basal margin of mandible lacking a toothlike prominence or curved lobe. Clypeus possessing or lacking a longitudinal median carina. Ventral surface of clypeus with a long transverse ridge. Anterior clypeal margin with a median denticle and two to three others on each side, but some of the denticles are usually vestigial or very weak; sometimes, the margin without any distinct denticles. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes absent. Antennal scapes, when lying on the dorsal head, close to the occipital margin of head. Eyes containing six to nine ommatidia in the longest row. Pronotum

tuberculate, lacking teeth or spines. Propodeum armed with a pair of triangular teeth or short spines. Metapleural lobes rounded. In profile view, petiole node massive, higher than long, with a robust anterior peduncle; its anterodorsal and posterodorsal angles rounded, but the former is higher than the latter (Fig. 155). In dorsal view, petiole node slightly broader than long. Postpetiole in profile higher than long, rounded dorsally, in dorsal view broadening from front to back and distinctly broader than long. Dorsum of head between the frontal carinae smooth and shining. A few foveolate punctures present on the sides of the dorsal head and sometimes bordering the frontal carinae. Alitrunk, petiole, postpetiole, and gaster unsculptured, smooth, and shining. Dorsum of head beyond the level of antennal insertions with about four pairs of hairs: three pairs on the frontal carinae and one pair on the occipital corners. Dorsal surface of alitrunk with only a pair of hairs present on the mesonotum. Petiole, postpetiole, and first gastral tergite lacking erect or suberect hairs. Several pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with appressed hairs. Color blackish-brown.

Queen. TL 3.24–3.59, HL 0.85–0.90, HW 0.91–0.99, CI 106–110, SL 0.74–0.79, SI 80–85, EL 0.23–0.26, PW 0.70–0.77, AL 0.90–1.00, PPW 0.29–0.32, PPL 0.21–0.24, PPI 129–145 (n = 8).

General shape as in Figures 156–157, with normal caste differences from conspecific worker; eyes larger; mesonotum with more hairs than in the conspecific worker. Other characters similar to worker.

Male. (Figs. 264, 273). Two male specimens, one collected in Ghana (Tafo, twig in leaf litter), by B. Bolton, and the second male in Ivory Coast (Orston Expt. Sta., 17 km. W. of Abidjan), by W. L. Brown, were originally mounted, respectively, together with one and two workers on the same pins: TL 2.58, 2.76; HL 0.48, 0.50; HW 0.47, 0.48; CI 96, 100, SL 0.18, 0.18; SI 38, 38; HWE 0.63, 0.66; EL 0.24, 0.26; PW 0.57, 0.58; AL 0.87, 0.92; PPW 0.20, 0.21; PPL 0.17, 0.18; PPI 117, 118 (n = 2).

Head, including the eyes, distinctly broader than long. Clypeus narrow, convex in middle; anterior clypeal margin transverse. Maximum diameter of the median ocellus 0.08 to 0.09. On the mesoscutum, notauli distinct, forming a Y shape; parapsidal furrows absent. Scuto-scutellar sulcus with 8 to 11 short ridges. Propodeum slightly tuberculate, lacking teeth or spines. Metapleural lobes subtriangular. Petiole node low in profile, with a fairly long anterior peduncle; its anterior face, together with the dorsal surface of the peduncle, forming a declivity. Postpetiole in profile low, rounded dorsally, and in dorsal view slightly broader than long. Dorsum of head generally smooth and shining, but with about 8 to 10 short rugae on the posterior clypeal margin. A few short rugae present on the frontal area. A weak, curved ruga present above the antennal insertion. Alitrunk generally smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster smooth and shining. All dorsal surfaces with abundant erect or suberect hairs. Scapes and tibiae with numerous suberect short hairs. Body reddish-brown; wings white or light-yellow.

Comments and Discussion. Pristomyrmex orbiceps occurs in Africa. It is somewhat similar, in appearance of the workers, to *P. fossulatus,* a member of the *punctatus* group, also from Africa. The workers of the two species all lack pronotal teeth or spines. But they can be separated as follows: (1) *P. orbiceps* possesses a single segment of maxillary palp, in contrast with four segments in *P. fossulatus*; (2) *P. fossulatus* has a wedge-shaped petiole node that is not seen in *P. orbiceps*; and (3) the dorsal surfaces of the head and the alitrunk are smooth in *P. orbiceps* but sculptured with scattered foveolate punctures in *P. fossulatus.*

Pristomyrmex orbiceps belongs to the

quadridens group. The absence of the pronotal teeth or spines in the workers should not impede this species from being assigned to the group. *P. africanus,* a distinct member of the *quadridens* group, sometimes also possesses only a pair of tubercles on the pronotum, like *P. orbiceps.*

Pristomyrmex orbiceps is easily recognized in the *quadridens* group. It differs from the other species of the group, except for *P. eduardi* and sometimes *P. africanus,* in the workers in lacking a pair of pronotal teeth or spines. *Pristomyrmex orbiceps* differs from *P. eduardi* and *P. africanus* in the workers as follows: The masticatory margin of the mandible possesses five teeth in *P. eduardi* but three teeth in *P. orbiceps*; the eyes contain three to four ommatidia in the longest row in *P. eduardi* and four to five ommatidia in *P. africanus* but six to nine ommatidia in *P. orbiceps*; the dorsal surfaces of the head and the alitrunk are smooth in *P. orbiceps* but sculptured with scattered foveolate punctures in *P. africanus* and with rugoreticulum in *P. eduardi*; the ventral surface of the clypeus bears a central tooth in *P. eduardi,* two prominent teeth in *P. africanus,* but a long transverse ridge in *P. orbiceps*; the dorsum of the alitrunk has only one pair of hairs in *P. orbiceps* but numerous in both *P. eduardi* and *P. africanus.*

Distribution. Ivory Coast, Ghana, Nigeria, Cameroon, Gabon, and Angola (Bolton, 1981). The following records (MCZC, ANIC) are added here: Angola: Dundo, Carrisso Park, R. Luachimo, 7.22°S, 20.50°E, gallery forest, berlesate (native collector); Dundo, R. Luachimo (Rte. Turismo), 7.025°S, 20.51°E, gallery forest, berlesate (native collector). Ivory Coast: Divo, rainforest, litter (L. Brader); Gagnoa, rainforest, litter (L. Brader). People's Rep. Congo: 25 k NW Boha, 30 k SE Lac Telle (Gary Alpert). French Equatorial Africa: Ubangi-Shari, Bas Mbomû (N. A. Weber). Ghana: E.R. Mt. Atewa, rainforest, Berlesate (R. W. Taylor); E.R. Scarp Forest, near Bosuso, rainforest, Berlesate (R. W. Taylor); E.R. Nkwanda For., near Enyiresi, rainforest, Berlesate (R. W. Taylor); Tafo, Eastern Reg., rainforest, Berlesate (R. W. Taylor).

Ecological Information. This species occurs in rainforest and has been collected in litter berlesates (also see Weber, 1952: 21).

Pristomyrmex quadridens Emery
Figures 158–161, 274

Pristomyrmex quadridens Emery, 1897: 584. Lectotype worker, New Guinea: Friedrich-Wilhelmshafen et Berlinhafen (L. Biró) (MCSN), here designated, [examined].

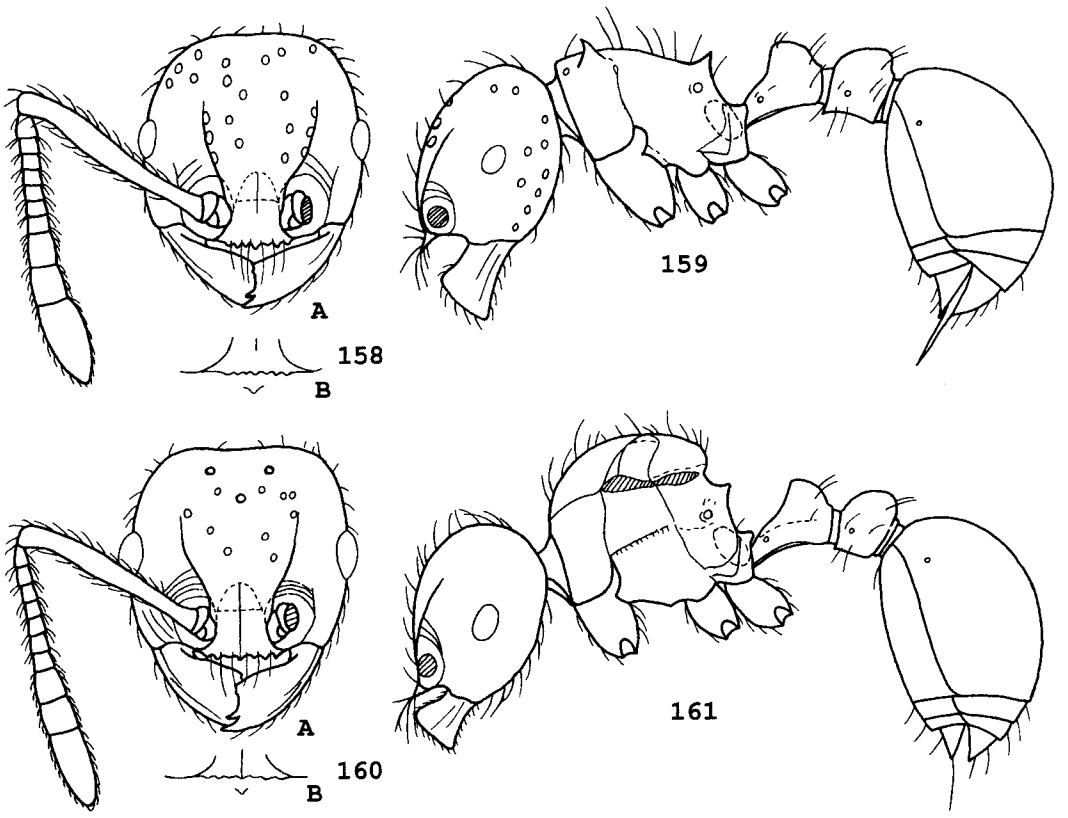
Pristomyrmex quadridens var. *aruensis* Karavaiev, 1933: 270. Holotype worker, Indonesia: Aru Is., Wammar (W. Karawajew) (UENC) [examined]. **Syn. n.**

Pristomyrmex orbiculatus Donisthorpe, 1948: 306. Syntype workers, queens and males, New Guinea: Maffin Bay, 20.vi.1944 (E. S. Ross) [syntype workers (BMNH, LACM, USNM) examined]. **Syn. n.**

Diagnosis (Worker). Pronotum and propodeum each with a pair of short spines; dorsal surfaces of alitrunk and head between the frontal carinae with scattered foveolate punctures; petiole node and postpetiole each with at least a pair of hairs; HW 0.82–1.02, HL 0.82–1.02.

Worker. TL 3.34–4.10, HL 0.82–1.02, HW 0.82–1.02, CI 96–102, SL 0.86–1.00, SI 96–105, EL 0.14–0.20, PW 0.54–0.70, AL 0.82–1.04, PPW 0.24–0.28, PPL 0.26–0.30, PPI 86–100 (n = 30).

Mandibles usually smooth and shining but sometimes with a few fine longitudinal rugae. Dentition of the masticatory margin of mandible: the strongest apical tooth + the second strongest preapical + a long diastema + two small teeth that are roughly the same size; sometimes two small basal teeth are fused, forming a broad tooth with two points. Basal margin of mandible lacking a distinct toothlike prominence. Clypeus depressed and smooth, with a median longitudinal carina, but sometimes this median carina weak or absent. Anterior clypeal margin usually with a median denticle and two to three others on each side. Ventral surface of clypeus with a toothlike prominence at the center. Palp



Figures 158–161. *Pristomyrmex quadridens* Emery. 158A: Worker head, full-face view; 158B: Showing a tooth on the center of ventral clypeus; 159: Worker, lateral view; 160A: Queen head, full-face view; 160B: Showing a tooth on the center of ventral clypeus; 161: Queen, lateral view.

formula 1,3. Frontal carinae distinct, extending to the level of the posterior margins of eyes. Antennal scrobes shallow and short. Frontal lobes weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the dorsal head, slightly surpassing the occipital margin of head. Eyes usually containing seven to eight ommatidia in the longest row. Occipital margin feebly concave. Profile of alitrunk and pedicel segments as in Figure 159. Pronotum armed with a pair of acute short spines. Propodeum with a pair of triangular teeth or short spines that are about equal in length to the pronotal armaments. Metapleural lobes rounded or with a subtriangular apex. Petiole node in profile nodiform; its anterodorsal angle high, and the dorsum sloping downward posteriorly. Postpetiole in profile rounded dorsally, in dorsal view broadening from front to back and usually longer than broad but sometimes about as long as broad. Dorsum of head between the frontal carinae with scattered foveolate punctures; intensity and number of punctures very variable: The punctures are sometimes dense and large but sometimes few, small, and shallow. Dorsum of alitrunk with scattered foveolate punctures, varying from a few to many. Petiole, postpetiole, and gaster unsculptured, smooth, and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Two pairs of hairs usually present on the dorsum of petiole node and a pair usu-

ally on the dorsum of postpetiole. First gastral tergite without erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with abundant erect to suberect short hairs. Color varying from light yellow-brown to dark-brown; in some specimens, a darker circular patch present on the dorsum of head just above the frontal area; sometimes gaster darker than head and alitrunk.

Queen. TL 3.82–4.72, HL 0.90–1.10, HW 0.94–1.11, CI 98–105, SL 0.88–1.02, SI 90–99, EL 0.23–0.28, PW 0.74–0.88, AL 1.06–1.26, PPW 0.26–0.32, PPL 0.29–0.34, PPI 88–97 (n = 7).

General shape as in Figures 160–161, with normal caste differences from the conspecific worker; pronotum unarmed. Other characters similar to worker.

Male (Fig. 274). Two male specimens, together with 12 workers and two queens, constitute a series collected in Indonesia (Seram, above Haruru, near Masohi, 50–150 m) by W. L. Brown; each of the two males was originally mounted with a worker on the same pin: TL 3.30, 3.52; HL 0.60, 0.62; HW 0.60, 0.62; CI 100, 100; SL 0.23, 0.24; SI 38, 39; HWE 0.80, 0.82; EL 0.32, 0.33; PW 0.79, 0.82; AL 1.20, 1.20; PPW 0.22, 0.22; PPL 0.25, 0.27; PPI 81, 88 (n = 2).

Head, including the eyes, distinctly broader than long. Clypeus somewhat transverse, convex, and unsculptured. Palp formula 1,3. Frontal carinae absent. Maximum diameter of the median ocellus 0.11 to 0.12. On the mesoscutum, notauli pronounced, forming a Y shape; parapsidal furrows very weak. Scuto-scutellar sulcus with 10 narrow longitudinal ridges. Propodeum tuberculate, lacking teeth or spines. Metapleural lobes somewhat rounded. Petiole node in profile low and rounded dorsally, with a fairly long anterior peduncle. Postpetiole low, in dorsal view distinctly longer than broad. Dorsum of head smooth and shining. Alitrunk smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster smooth and shining. All dorsal surfaces with abundant long hairs. Scapes and tibiae with numerous erect or suberect short hairs. Color blackish-brown; hairs reddish-brown; wings somewhat infuscated.

Comments and Discussion. This species occurs in New Guinea, some islands near New Guinea, and Pohnpei Island. One of its closely related species, *P. brevispinosus,* is distributed in Indonesia, Malaysia, Thailand, the Philippines, Taiwan, and Japan; in other words, *P. brevispinosus* occurs to the northwest of *P. quadridens* (see Fig. 162). The differences between the workers of the two species are as follows: The dorsal surfaces of the head and the alitrunk possess scattered foveolate punctures in *P. quadridens* but foveolate-reticulate sculpture or rugoreticulum in *P. brevispinosus.*

Characters separating *P. quadridens* from *P. nitidissimus* of New Guinea are presented under *P. nitidissimus.* A discussion of separating *P. quadridens* from the Asian *P. collinus* and *P. flatus* is provided under *P. flatus.* The separation of *P. quadridens* from the African *P. africanus* is given under the latter name. The three Australian species, *P. wheeleri, P. erythropygus,* and *P. quadridentatus,* differ from *P. quadridens* in the workers in having three strong teeth on the anterior clypeal margin, three teeth on the masticatory margin of the mandible, longer pronotal armaments, palp formula of 2,2, and lacking foveolate punctures on the dorsal surfaces of the head and the alitrunk.

Material Examined (MCZC, BMNH, ANIC, LAMN, USNM, NHMV, BMHH). Papua New Guinea: Gulf Prov., Ivimka Camp, Lakekamu Basin, 7.7°S, 146.8°E, 120 m el, lowland wet forest, #96-205, #96-232 (nest in rotting tree limb), #96-234 (misc. strays), #96-300 (in rotten branch on ground), #96-330 (foragers on log) (R. R. Snelling); N. Dist., Sangara (P. M. Room); N. Dist., 12 m N Popondetta (B. B. Lowery); Brown R., rainforest, lowland (B. B. Lowery); Bewani Rd. near Vanimo ca. 7 to 10 km, 240 to 380 m, rain-

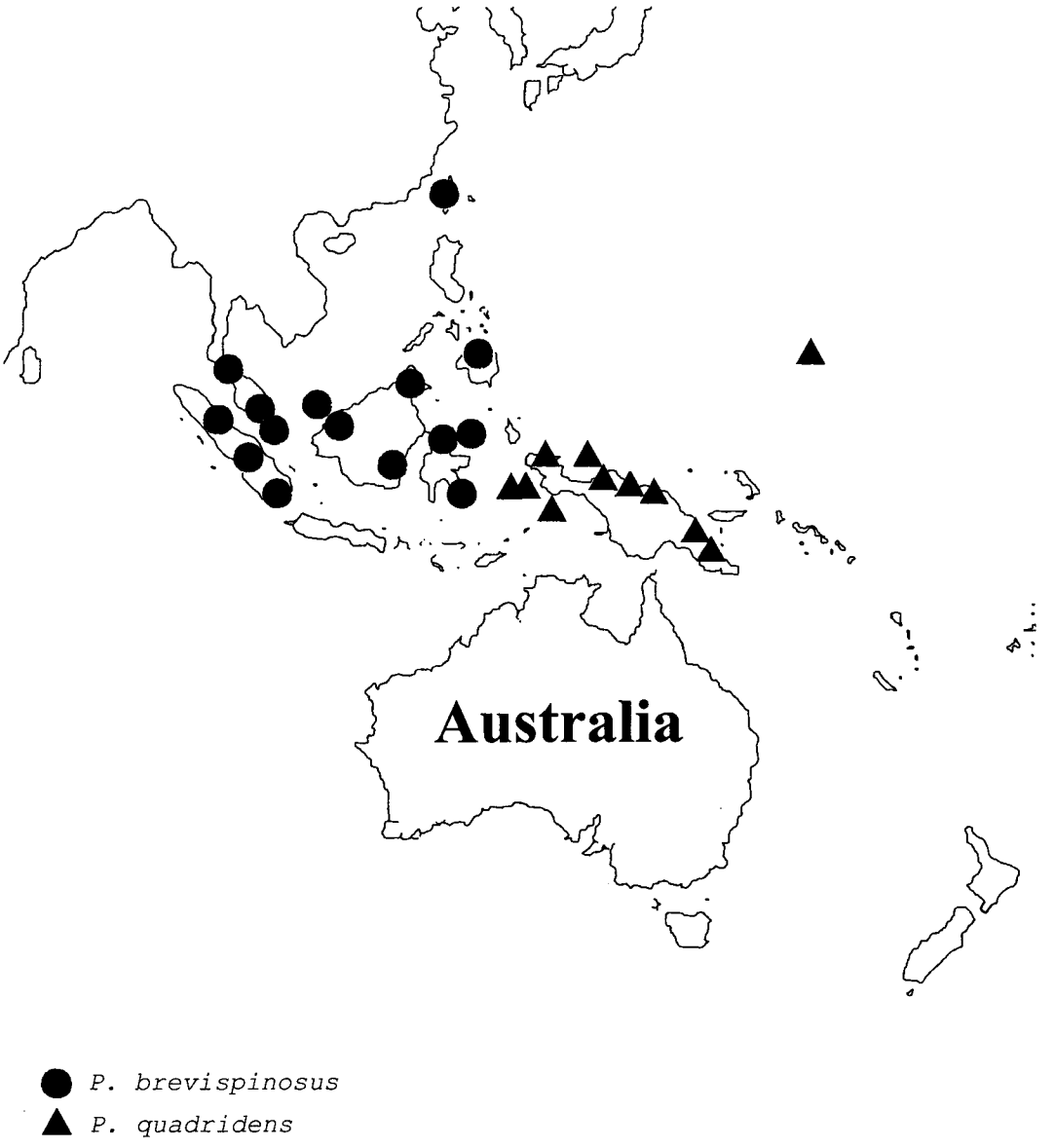


Figure 162. Distributions of *Pristomyrmex brevispinosus* and *Pristomyrmex quadridens*.

forest (W. L. Brown); ca. 12 km SE Vanimo, virgin hill, rainforest, 150 m (W. L. Brown); Nadzab, dry evergreen forest (E. O. Wilson); Huon Peninsula, Lower Busu R., lowland rainforest (E. O. Wilson); near Dobodura, Samboga R. 400 ft, rainforest (B. B. Lowery); Bulolo 2600 ft, rainforest (B. B. Lowery); 12 mi N of Popondetta, Bisicocoa Plan., 400 ft, rainforest (B. B. Lowery); Lae, Busu R. area, rainforest (B. B. Lowery); Lae, Markham R. Bridge, rainforest (B. B. Lowery); near Lae, <50 m (R. W. Taylor); ca. 16 km NW Lae, "Timber Track", ca. 220 m, rainforest, ex

rotting log (R. W. Taylor); Hayfield near Maprik ca. 150 m (R. W. Taylor); 13 km NW Lae, Bubia, lowland rainforest (E. O. Wilson); Finsch Harbor (L. Wagner); Maffin Bay (E. S. Ross); Hollandia (H. A. Levy); NW Japan I., SSE Sumberbaba, Dawai R., jungle (H. Holtmann). Indonesia: Amboina, Ambon (Mann); N. C. Seram, Manusela N.P., Wae Mual Plain (M. J. D. Brendell); Seram, above Haruru, near Masohi, 50 to 150 m, rainforest (W. L. Brown); Irian Jaya, km 12 S of Sorong, forest fragment (W. L. Brown); Irian Jaya, PT. Freeport Concession, Siewa Camp., 03.04°S, 136.38°E, 200 ft, lowland second rainforest, #98-33 and #98-48 (on rotten log), #98–63 (strays in leaf litter), #98-83 (under loose bark of log, Venom Voucher) (R. R. Snelling). Micronesia: Ponape Is., Mt. Kubersoh, 1,900 ft (P. A. Adams); Ponape Is., S. E., Tolotom, 1,700 ft (P. A. Adams); Ponape Is., Mt. Dolennankap, 1,700 to 2,000 ft (H. K. Townes); Ponape Is., near Colonia (Townes); Pohnpei, Malen, above Kepirohi Falls, 350 m (Ron Close); Pohnpei, Mall Island, in coconut husk litter (Ron Clouse); Pohnpei, Quarter Mile, upriver from Mahnd, nest in rotten tree fern stump (Ron Clouse); Pohnpei, above Kepirohi Falls, 350 m, both in rotten log and on bracket fungus (Ron Clouse).

Ecological Information. This species occurs in rainforest and has been collected in litter, in rotten branch, and under the bark of a log.

Pristomyrmex quadridentatus (André)
Figures 163–166, 265, 275

Odontomyrmex quadridentatus André, 1905: 208. Lectotype worker, designated by Taylor (1965: 43), Australia: Sydney (Duchaussoy) (MNHN) (Taylor, 1965). [Note: *Odontomyrmex quadridentatus* André was automatically transferred to *Pristomyrmex quadridentatus* (André), when Forel (1915: 53) designated *Odontomyrmex* as a subgenus of *Pristomyrmex*].

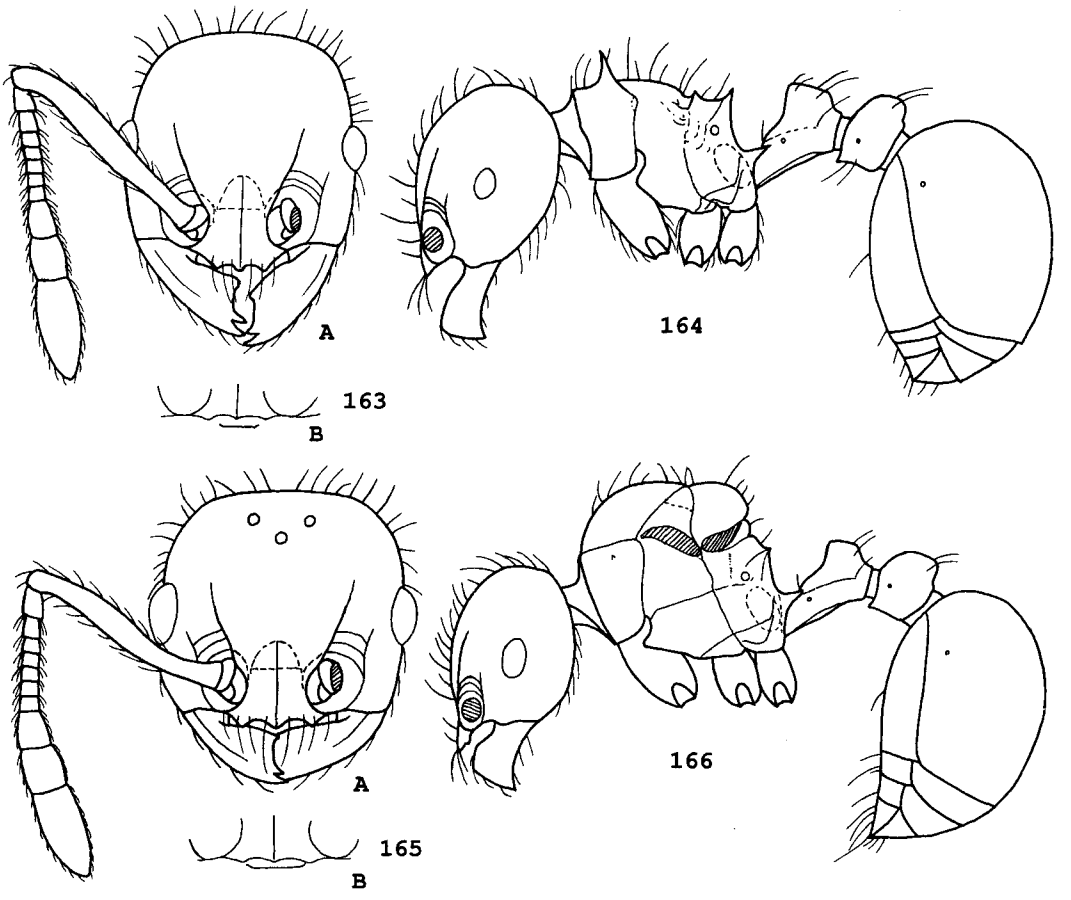
Pristomyrmex (*Odontomyrmex*) *quadridentatus* var. *queenslandensis* Forel, 1915: 53. Syntype workers, Australia: Queensland, Mt. Tambourine, 1913 (Mjöbergs) (MHNG) [examined]. [Synonymy by Taylor, 1965].

Notes: (1) Although I did not examine the lectotype of *P. quadridentatus,* I had access to some specimens that have been compared with it by R. W. Taylor. (2) A lectotype and a paralectotype of *P. quadridentatus,* designated by Taylor, belong to self-colored golden-brown form (Taylor, 1965). But the three syntypes of *P. quadridentatus* var. *queenslandensis,* seen by myself, belong to the bicolored form, with head, gaster, and appendages golden-brown to reddish-brown but alitrunk, petiole, and postpetiole dark-brown. (3) Taylor (1965) mentioned that "judging from subsequent records the Sydney type-locality may be outside the true range of this species and should be regarded with reservation as a distributional record until confirmed."

Diagnosis (Worker). Pronotal spines ca. 0.15 to 0.24, much longer and more robust than propodeal armaments (ca. 0.06–0.09); dorsal surfaces of head and alitrunk smooth and shining, but a transverse ridge present at the approximate position of metanotal groove; petiole node and postpetiole each with at least one pair of erect or suberect hairs; ventral surface of clypeus usually with a long transverse ridge.

Worker. TL 3.34–4.42, HL 0.86–1.12, HW 0.80–1.08, CI 93–101, SL 0.86–1.16, SI 97–113, EL 0.16–0.20, PW 0.52–0.67, AL 0.83–1.10, PPW 0.22–0.26, PPL 0.22–0.28, PPI 93–109 (n = 52).

Mandibles usually smooth and shining but sometimes with a few longitudinal rugae, varying from superficial to distinct. Masticatory margin of mandible with three teeth arranged as the strongest apical + the second strongest preapical + a long diastema + a truncated basal tooth. Basal margin of mandible almost straight, lacking a toothlike prominence. Clypeus with a strong median longitudinal carina. Anterior clypeal margin with three teeth: a median tooth and one on each side. Ventral surface of clypeus usually with a long transverse ridge but sometimes showing only two toothlike prominences. Palp formula 2,2. Frontal carinae usually extend-



Figures 163–166. *Pristomyrmex quadridentatus* (André). 163A: Worker head, full-face view; 163B: Showing a transverse ridge on the ventral clypeus; 164: Worker, lateral view; 165A: Queen head, full-face view; 165B: Showing a transverse ridge on the ventral clypeus; 166: Queen, lateral view.

ing to the level of the posterior margins of eyes, but sometimes they are not so. Weak scrobal impressions present lateral to the frontal carinae. Frontal lobes weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, lying on the dorsal head, slightly surpassing the occipital margin of head. Between the second and seventh funicular segments of antennae, the second is longest. Eyes usually containing seven to eight ommatidia in the longest row. Occipital carina distinct. Profile shape of alitrunk and pedicel segments as in Figure 164. Pronotal spines, ca. 0.15 to 0.24, much longer and more robust than propodeal armaments, which are a pair of teeth or short spines (ca. 0.06–0.09). Metapleural lobes usually elongate-triangular, usually longer than propodeal armaments. Petiole node in profile, with the anterodorsal angle higher than the posterodorsal; in dorsal view, crest of the node convex. Anterior and dorsal faces of the postpetiole in profile forming a single curved surface. Postpetiole in dorsal view broadening from front to back. Dorsum of head smooth and shining, except for a short carina present below the antennal scrobe, subparallel to frontal carina. Dorsum of alitrunk smooth and shining, with a distinct

transverse carina on the anterior margin of the pronotum and a transverse ridge present at the approximate position of metanotal groove. Petiole and postpetiole smooth and shining. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Petiole node and postpetiole each with bilaterally distributed hairs, as shown in Figure 164. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Body self-colored (golden-brown) or bicolored (i.e., head, gaster, and appendages golden-brown to reddish-brown but alitrunk and pedicel segments blackish-brown).

Queen. TL 3.56–5.02, HL 0.93–1.16, HW 0.90–1.12, CI 93–100, SL 0.93–1.12, SI 96–103, PW 0.68–0.82, AL 1.02–1.30, PPW 0.29–0.32, PPL 0.28–0.36, PPI 89–111 (n = 7).

General shape as in Figures 165–166, with normal caste differences from the conspecific worker; pronotum with a pair of tubercles or minute teeth or sometimes unarmed; propodeum with a pair of tubercles or minute teeth; other characters similar to worker.

Male (Figs. 265, 275). Four male specimens are examined; two of them, collected in New South Wales (New England Nat. Park, Platypus Creek, STRF) by Nicholls, were originally mounted with two and three self-colored workers, respectively; one male, collected in SE Queensland (Rathdowney, Lever's Plateau, Philp's Farm) by J. B. Williams, and one in Queensland (National Pk.), by F. A. Perkins, were originally mounted with a bicolored worker, respectively.

TL 3.63–4.14, HL 0.60–0.68, HW 0.62–0.72, CI 103–106, SL 0.22–0.26, SI 34–37, HWE 0.84–0.93, EL 0.32–0.34, PW 0.82–0.86, AL 1.22–1.36, PPW 0.24–0.28, PPL 0.26–0.30, PPI 92–100 (n = 4).

Head, including the eyes, distinctly broader than long. Clypeus convex, lacking a median longitudinal carina, but with several short rugae present on the posterior clypeal margin. Anterior clypeal margin straight. Palp formula 2,2; the second segments of maxillary and labial palps rather long. Frontal carinae absent. Maximum diameter of the median ocellus 0.08 to 0.10. On the mesoscutum, notauli absent or weakly impressed or fairly distinct; parapsidal furrows absent or superficially impressed. Scuto-scutellar sulcus with 15 to 16 low, short ridges. Propodeum lacking armaments. Metapleural lobes subtriangular. Middle and hind tibiae without any spurs. Petiole node in profile low and rounded dorsally, with a long anterior peduncle. Postpetiole low, in dorsal view usually longer than rarely as long as broad. Posterior face of postpetiole almost entirely attached to the first gastral segment. Dorsum of head smooth and shining, but frontal area usually with a median longitudinal carina. Alitrunk smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster smooth and shining. All dorsal surfaces with abundant long hairs. Scapes and tibiae with numerous erect or suberect short hairs. Color reddish-brown to blackish-brown; wings infuscated.

Comments and Discussion. Pristomyrmex quadridentatus occurs in Australia. It is closely related to *P. wheeleri*, also from Australia. The workers of the two species share the following critical characters: (1) the masticatory margin of mandible with three teeth arranged as an apical + a preapical + a long diastema + a truncated basal tooth; (2) palp formula 2,2; (3) the anterior clypeal margin with three strong teeth; (4) the clypeus with a median longitudinal carina; (5) the pronotum with a pair of fairly long spines; (6) the dorsum of alitrunk smooth and shining but with a transverse carina present at the approximate position of metanotal groove; and (7) first gastral tergite lacking erect or suberect hairs. *Pristomyrmex quadridentatus* differs from *P. wheeleri* in the workers and queens, as follows:

P. quadridentatus

Propodeum with a pair of teeth or short spines, ca. 0.06 to 0.09, much shorter than pronotal spines (worker). Propodeum tuberculate (queen)

Ventral face of clypeus with a long transverse ridge or two toothlike prominences (worker and queen)

Head relatively narrow (worker: CI 93–101, HW 0.80–1.08; queen: CI 93–100, HW 0.90–1.12)

Pronotum unarmed or with a pair of minute teeth (queen)

P. wheeleri

Propodeum with a pair of fairly long spines, ca. 0.18 to 0.28, about equal in length to or longer than pronotal spines (worker); propodeum with a pair of spines (queen)

Ventral center of clypeus usually with a short transverse carina; sometimes, this carina weak or indistinct (worker and queen)

Head relatively broad (worker: CI 103–116, HW 0.97–1.34; queen: CI 107–115, HW 1.18–1.42)

Pronotum armed with a pair of acute short spines (queen)

Characters separating *P. quadridentatus* from *P. erythropygus,* from the two African species *P. africanus* and *P. trogor,* and from the two Oriental species *P. flatus* and *P. collinus* are provided under *P. erythropygus,* under *P. africanus,* and under *P. flatus,* respectively.

Taylor observes that there are two color forms of *P. quadridentatus.* One is a uniform reddish-brown and occupies the southern portion of its geographic range. The other is bicolored (head, gaster, and appendages reddish-brown but alitrunk, petiole, and postpetiole dark-brown) and occurs in more northern localities. Taylor found no evidence of sympatry of the two forms; thus, he postulated that the bicolored form might be result of character displacement where *P. quadridentatus* co-occurs with *P. wheeleri* (Taylor, 1965, 1968). However, six specimens, collected by P. Ward in 1976, have the same records of locality (New South Wales: Whian Whian, SF, 28.39S/153.20E, rainforest, 200 m). The six specimens consists of two workers of each color form of *P. quadridentatus* and two workers of *P. wheeleri.* This collection implies that two forms of *P. quadridentatus* partly overlap in their distribution (in other words, character displacement is not the cause of the bicolored form in areas of sympatry with *P. wheeleri*). Of course, these data need to be further confirmed because they come from the labels on only a few specimens.

Taylor (1965) also proposed that the two color forms "might prove ultimately to be good biological species", although there are no other detectable morphological differences between them. This question will be clarified by further collecting: If the two forms are never found to coexist in the same colony, they represent two good species; otherwise, they belong to the same species. (Note: To date, these two forms have not been collected in the same colony.)

The larva of *P. quadridentatus* was described by Wheeler and Wheeler (1973).

Material Examined (ANIC, MCZC). Self-colored form: Australia: New South Wales: Grafton, Pt. lookout, rainforest (P. F. Darlington); New England National Park, Platypus Crk., STRF, in log (Nicholls); Dorrigo, 3,000 ft (W. Heron); Dorrigo NP, W end, Blackbutt Tr., subtropical rainforest, 790 m (A. Newton and M. Thayer); East foot hills, Barrington Tops near Cobark, rainforest, 400 ft (B. B. Lowery); Brunswick Heads, faunal reserve, RF, sea level, under bark sheath of Bangalow Palm (B. B. Lowery); Macksville, Warrell Crk. area, RF valley, 150 ft, red rotten log (B. B. Lowery); ca. 5 mi NW of Bruxner Pk. (D. H. Colless); Upr. Allyn Val. near Eccleston, rainforest, ca. 2,000 ft, ex rotten log and nocturnal strays (Taylor and Brooks); Whian Whian, SF, 28.39°S, 153.20°E, rainforest, 200 m, ca. 8 m above ground, in epiphytic fern on tree, acc. no. 1721, 17.vi.1976 (P. Ward); Coffs Harb.,

Bruxner Pk., ca. 70 m (R. W. Taylor); Royal Nat. Park, rainforest, 50 m, 34.09°S/151.01°E, ex rotten log (P. Ward). Bicolored form: Australia: Queensland: Mt. D'Aguilar Range, 2,000 ft, ex rotten log (R. W. Taylor); Stradbroke Is. (H. Hacker); Tamborine Mt. (A. M. Lea); Tamborine Mt., 1,800 ft (W. L. Brown); Tamborine Mt., Cedar Creek, rotting logs (W. L. Brown); Tamborine Mt., near Witches Falls, 27.57°S, 153.10°E (R. J. Kohout); Tamborine Mt., RF, 2,000 ft, rotten log (B. B. Lowery); 6 km SSW North Tamborine, 27°56'S/153°11'E, 500 m, #9828 (P. S. Ward); Binna Burra: 2,600 ft, rotten logs (R. W. Taylor); Lamington N.P., Coomera Gorge, ex rotten log (R. W. Taylor); Below Springbrook, Upper Tallebudgera Ck, RF, 550 m (Monteith, Thompson and Cook); Numinbah Arch, rainforest, 1,500 ft, ex rotten log (B. B. Lowery); Joalah Nat. Park, 27.55°S, 153.12°E, ca. 380 m (R. W. Taylor and R. Kohout); Rathdowney, Lever's Plateau, Philp's Farm (J. B. Williams); National Park (F. A. Perkins); Cooloola, rainforest (P. J. M. Greenslade). New South Wales: Wiangaree SF, Brindle Ck., 740 m, subtropical rainforest (A. Newton and M. Thayer); Mt. Warning, rainforest, ex rotten log (B. B. Lowery); Mt. Warning, rainforest, ca. 1,000 ft, under bark sheath of Bangalow Palm (B. B. Lowery); Nobby's Crk., 10 mi NW Murwillumbah, rainforest, ca. 1,500 ft, under bark sheath of Bangalow Palm (B. B. Lowery); Whian Whian SF, 28.39°S, 153.20°E, 200 m, acc. no. 1709, 16.vi.1976 (P. Ward); Tomewin, rainforest, 1,200 ft, on Trunk of fig, 8 ft off ground, (B. B. Lowery); Acacia Plateau (J. Armstrong); 14 km W Urbenville, Tooloom Plateau, 28.29°S/152.24°E (I. D. Naumann).

Ecological Information. This species occurs in rainforest. It forages nocturnally in the open on logs, tree trunks, and low foliage. Nests are located in rotting logs and under the bark sheaths of Bangalow palms (Taylor, 1965, 1968).

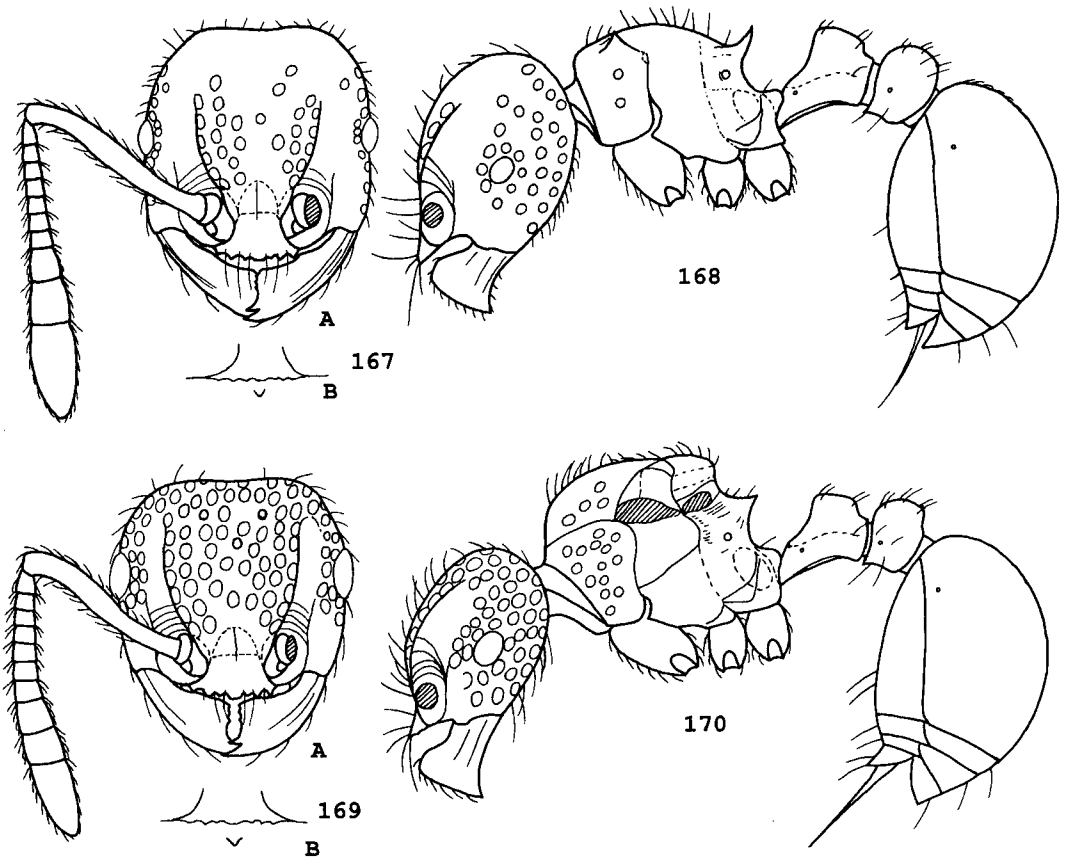
Pristomyrmex quindentatus **sp. n.**
Figures 167–170

Diagnosis (Worker). Masticatory margin of mandible with five teeth; pronotum with a pair of triangular teeth; dorsal surfaces of head and alitrunk with scattered foveolate punctures.

Holotype Worker (MCZC). TL 3.54, HL 0.86, HW 0.84, CI 98, SL 0.79, SI 94, EL 0.12, PW 0.56, AL 0.83. Paratypes, five workers and two queens (MCZC).

Worker. TL 3.10–3.54, HL 0.81–0.86, HW 0.79–0.84, CI 96–98, SL 0.76–0.80, SI 94–100, EL 0.11–0.12, PW 0.53–0.56, AL 0.78–0.86, PPW 0.22–0.23, PPL 0.21–0.22, PPI 100–105 (n = 6).

Mandibles smooth and shining, except for a few longitudinal rugae. Masticatory margin of mandible with five teeth arranged as the strongest apical + the second strongest preapical + a diastema + three small denticles of similar size (sometimes three small denticles are fused together so that they are not clearly visible; or, one of them is weak or worn down, but the length of diastema is slightly shorter than the distance covered by these three teeth). Basal margin of mandible lacking toothlike prominences. Clypeus depressed and smooth, but the median carina of the frontal area extending a little to the clypeus. Anterior clypeal margin usually with a broad, truncated median denticle and two to three others on each side. Ventral center of clypeus with a prominent tooth. Palp formula 1,3. Frontal carinae strong, extending to the level of the posterior margins of eyes. Slightly impressed scrobal areas present lateral to the frontal carinae. Frontal lobes weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, laid on the dorsal head, just surpassing the occipital margin of head. Eyes moderately sized. Occipital margin feebly concave. Pronotum with a pair of triangular teeth. Propodeum with a pair of short spines that are about two to three times the length of pronotal armaments. Metapleural lobes somewhat rounded.



Figures 167–170. *Pristomyrmex quindentatus* **sp. n.** 167A: Worker head, full-face view; 167B: Showing a tooth on the center of ventral clypeus; 168: Worker, lateral view; 169A: Queen head, full-face view; 169B: Showing a tooth on the center of ventral clypeus; 170: Queen, lateral view.

Petiole node in profile with a fairly long anterior peduncle; its anterodorsal angle is on a higher level than the posterodorsal (Fig. 168). Postpetiole in profile rounded dorsally, in dorsal view about quadrate. Dorsum of head, except for the shallow scrobes, with numerous scattered foveolate punctures. Dorsum of alitrunk possessing scattered foveolate punctures, usually with a smooth and unsculptured median strip. Petiole smooth and shining, with a weak longitudinal ruga on each side. Postpetiole and gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect short hairs. Two pairs of hairs usually present on the dorsum of petiole node, and a few pairs on the dorsum of postpetiole, as illustrated in Figure 168. First gastral tergite lacking or bearing few suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect to suberect short hairs. Color reddish-brown.

Queen. TL 3.64, 3.70; HL 0.83, 0.83; HW 0.82, 0.83; CI 99, 100; SL 0.72, 0.78; SI 88, 94; EL 0.18, 0.19; PW 0.64, 0.64; AL 0.97, 1.00; PPW 0.23, 0.23; PPL 0.22, 0.23; PPI 100, 105 (n = 2).

Generally similar to worker, except for normal caste differences. In addition, pronotum unarmed; propodeal armaments toothlike, shorter than those in the conspecific worker, and the dorsum of alitrunk

lacking an unsculptured median longitudinal strip.

Male. Unknown.

Comments. Pristomyrmex quindentatus is closely related to *P. occultus.* The two species occur in the Oriental region. Their workers share a critical character, that is, the masticatory margin of mandible with an apical tooth + a preapical tooth + a diastema + three small denticles of similar size; this dentition is not seen in all other *Pristomyrmex* species, except in *P. eduardi.* But *P. quindentatus* and *P. occultus* can be separated from *P. eduardi* in the workers in having a pair of pronotal teeth.

The worker of *P. quindentatus* differs from that of *P. occultus* as follows:

P. quindentatus

Dorsal surfaces of head and alitrunk only with scattered, shallow foveolate punctures; dorsum of alitrunk with an unsculptured median longitudinal strip

Anterior clypeal margin with a truncated median tooth

A lateral carina lacking or vestigial on each side of the petiole node

SL 0.76–0.80, SI 94–100

P. occultus

Dorsal surfaces of head and alitrunk entirely covered with coarse rugoreticulum

Median tooth on the anterior clypeal margin not truncated

Petiole node with a lateral longitudinal carina on each side

SL 0.72–0.75, SI 87–93

Pristomyrmex quindentatus may have evolved from the ancestor of *P. quadridens. Pristomyrmex quindentatus* can be separated from *P. quadridens* as follows: the masticatory margin of the mandible possesses five teeth in the workers and queens of *P. quindentatus* but at most four teeth in *P. quadridens*; in addition, the propodeum is armed with a pair of short spines in the workers of *P. quindentatus* but a pair of teeth in *P. quadridens.*

Holotype Worker. Indonesia: Seram, above Haruru, near Masohi, rainforest, 50 to 150 m, 18.iii.1981 (W. L. Brown).

Paratypes. Five workers and two queens with same data as holotype.

Additional Material Examined (MCZC). A worker collected in Indonesia (Blawan, Idjen, Dammerman, 950 m) has the following measurements: TL 3.50, HL 0.97, HW 0.95, CI 99, SL 0.84, SI 88, EL 0.14, PW 0.62, AL 0.94. It shows some variation: (1) The propodeum is armed with a pair of triangular teeth, (2) the dorsum of the head possesses dense foveolate punctures, (3) a longitudinal carina is present on each side of the petiole, and (4) three small denticles on the masticatory margin of the mandible are worn down and are not clearly visible.

Ecological Information. This species has been collected in rainforest.

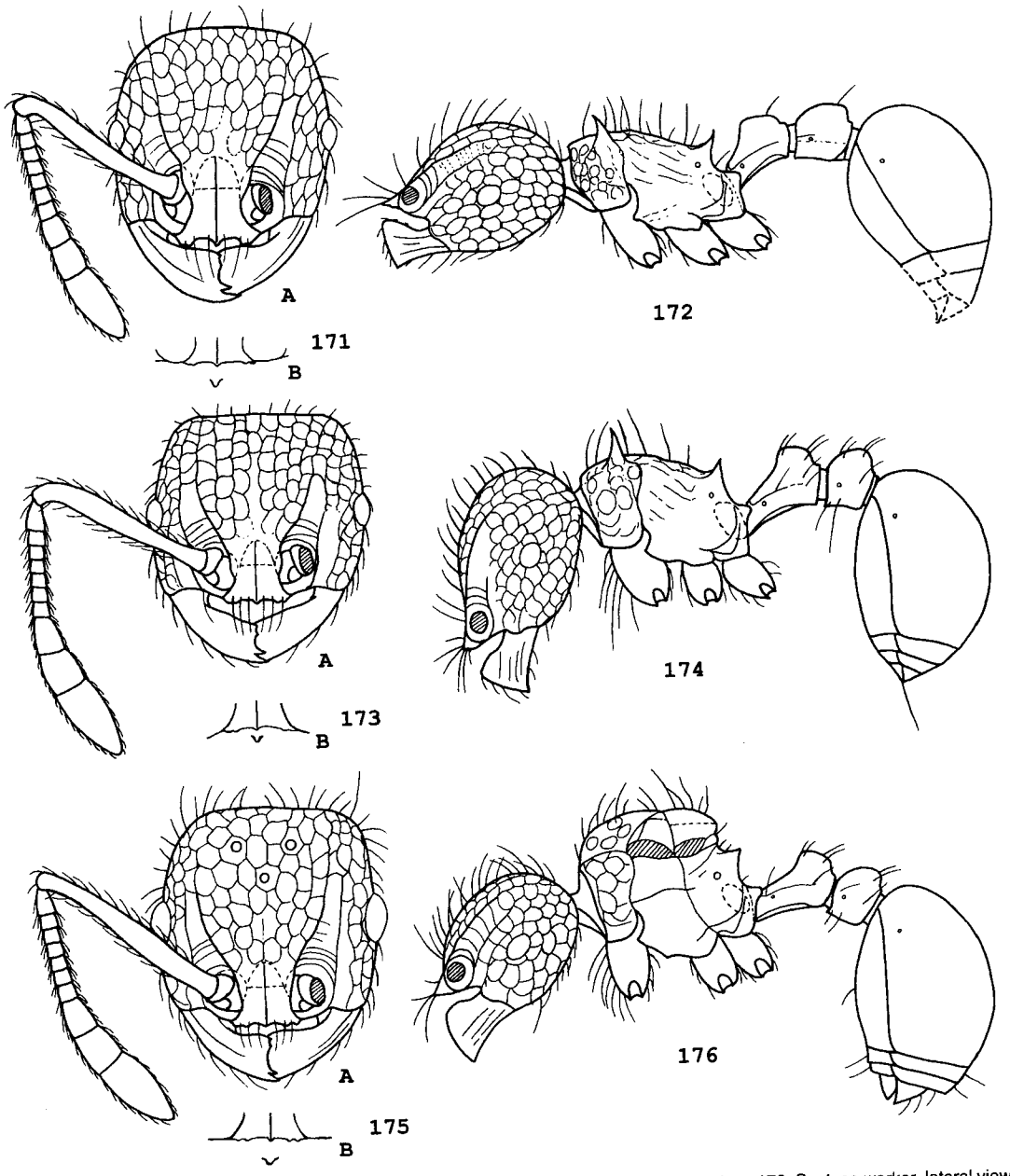
Pristomyrmex sulcatus Emery **stat. n.**
Figures 171–176, 266, 276

Pristomyrmex brevispinosus sulcatus Emery, 1895: 464. Syntype workers, queen, Burma: Carin Cheba, 500 to 1,000 m, xii.1887 (L. Fea) [syntype workers (MCSN, NHMV) examined].

Diagnosis (Worker). Ventral surface of clypeus with a strongly prominent tooth at the center; pronotum with a pair of moderately long spines (0.14–0.20), usually longer than propodeal armaments (0.07–0.13); dorsum of head with foveolate-reticulate sculpture or rugoreticulum; petiole node lacking foveolate punctures; first gastral tergite lacking erect or suberect hairs.

Worker. TL 3.98–4.74, HL 0.98–1.16, HW 0.96–1.10, CI 93–105, SL 1.02–1.15, SI 101–111, EL 0.14–0.19, PW 0.64–0.75, AL 0.98–1.18, PPW 0.26–0.30, PPL 0.26–0.32, PPI 90–100 (n = 30).

Mandibles usually with some longitudinal rugae, varying from superficial to distinct. Masticatory margin of mandible with four teeth arranged as the strongest apical + the second strongest preapical + a long diastema + two small basal teeth of similar size that are fused together. Basal margin of mandible almost straight, lacking a distinctly convex lobe or tooth. Clypeus with



Figures 171–176. *Pristomyrmex sulcatus* Emery. 171A: Syntype worker head, full-face view; 172: Syntype worker, lateral view; 173A: Non-type worker head, full-face view; 174: Non-type worker, lateral view; 175A: Queen head, full-face view; 176: Queen, lateral view; 171B, 173B and 175B: Showing that a prominent tooth is present on the ventral center of the clypeus in the syntype worker, non-type worker and queen, respectively.

a median longitudinal carina. Anterior clypeal margin with a median denticle and two to three others on each side; but sometimes two lateral denticles are fused into a larger tooth. Ventral center of clypeus with a strongly prominent tooth. Palp formula 1,3. Frontal carinae strong, extending to the level of the posterior margins of eyes, forming the dorsal margins of the shallow antennal scrobes. Frontal lobes very weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the dorsal head, slightly surpassing the occipital margin. Eyes usually containing six to seven ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figures 172 and 174. Pronotum with a pair of spines, varying in length from 0.14 (in the type series) to 0.20. Propodeum with a pair of teeth or short spines varying from 0.07 to 0.13. Metapleural lobes subtriangular or somewhat rounded. Petiole node in profile high, with a fairly long anterior peduncle; its anterodorsal angle is on a higher level than the posterodorsal. Postpetiole in profile rounded dorsally, in dorsal view broadening from front to back, about as long as or slightly longer than broad. Dorsum of head, except for the scrobal areas where rugae are somewhat weak, with course rugoreticulum or dense alveolate punctures. Similar but slightly sparse sculpture present on the dorsum of alitrunk and often on the two sides of pronotum. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Usually, two pairs of hairs present on the dorsum of petiole node and one to two pairs on the dorsum of postpetiole. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect hairs. Color reddish-brown..

Queen. TL 4.26–5.00, HL 0.98–1.10, HW 1.00–1.14, CI 102–106, SL1.01–1.12, SI 98–101, EL 0.22–0.26, PW 0.77–0.90, AL 1.16–1.30, PPW 0.28–0.32, PPL 0.29–0.32, PPI 97–100 (n = 4)

General shape as in Figures 175–176, with normal caste differences from the conspecific worker; pronotum usually unarmed but rarely with a pair of minute spines. Other characters similar to worker. The queens of *P. sulcatus* are almost indistinguishable from those of *P. brevispinosus* at present.

Male (Figs. 266, 276). One male specimen (MCZC), collected in Thailand (Nakhon Ratchasima Prov., Khao Yai Nat. Park, 750 m, hill forest) by I. Burikam and W. L. Brown, was originally mounted with a worker on the same pin; it has the following measurements: TL 3.90, HL 0.58, HW 0.61, CI 105, SL 0.22, SI 36, HWE 0.83, EL 0.33, PW 0.82, AL 1.18, PPW 0.24, PPL 0.24, PPI 100 (n = 1).

Head, including the eyes, distinctly broader than long. Clypeus convex, without a median longitudinal carina. Palp formula 1,3. Frontal carinae weak and short, just reaching the level of the posterior margins of antennal insertions. Maximum diameter of the median ocellus 0.10. On the mesonotum, notauli strongly marked, forming a Y shape; parapsidal furrows absent. Scuto-scutellar sulcus rather broad, with 10 ridges that expand at the upper end. Propodeum slightly tuberculate, lacking teeth or spines. Metapleural lobes subtriangular. Middle and hind tibiae without any spurs. Petiole node in profile low, with a fairly long anterior peduncle. Postpetiole low, in dorsal view about as long as broad. Dorsum of head generally smooth and shining but with a median longitudinal carina present on the frontal area and several short rugae on the posterior clypeal margin. Alitrunk smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster smooth and shining. All dorsal surfaces with abundant erect or suberect hairs. Scapes and legs with erect or suberect short hairs. Body reddish-brown; funicular segments of antennae white and wings slightly light-yellow. At the present, the male of *P. sulcatus* is al-

most indistinguished from the males of *P. brevispinosus* and *P. quadridens*.

Discussion and Comments. Taxonomic status of *"sulcatus"* is somewhat complicated. The syntype workers of *P. brevispinosus sulcatus* differ from those of *P. brevispinosus* by possessing a pair of fairly long pronotal spines (0.15–0.16), as compared with a pair of teeth (0.06) in the latter. However, after examining all available material, I find that the length of the pronotal armaments is continuously variable (from 0.06, as in the syntypes of *P. brevispinosus*, to 0.20, as in the specimens from Khao Yai Nat. Park, Thailand). The syntype workers of *"sulcatus"*, in fact, are intermediates between the two extreme ends (i.e., in one extreme, the pronotal teeth are slightly shorter than or about as long as the propodeal teeth; in the other extreme, the pronotal spines are two to three times as long as the propodeal armaments; see Figs. 114, 172, 174). I keep *"sulcatus"* as a valid name (i.e., raise it to the rank of species instead of assigning it as a junior synonym of *P. brevispinosus*) because more ecological work must be done before the status of *"sulcatus"* becomes clarified. With this tentative proposal, *P. sulcatus* comprises those populations with pronotal spines (ca. 0.14–0.20), distributed in Pahang (1,300–1,720 m), Malaya, and in northwest and central Thailand, Burma, Nepal, and southwest China. *Pristomyrmex brevispinosus* comprises populations with toothlike pronotal armaments (ca. 0.06–0.10), occurring in Pahang (1,250 m), Malaya, and Trang Province of South Thailand (07.55°N) and in the Philippines, Taiwan, and Japan. In other words, *P. sulcatus* may be a northerly replacement of *P. brevispinosus* along the Malay peninsula.

The separation of *P. sulcatus* from *P. costatus* is provided under *P. costatus*. The worker of *P. sulcatus* differs from that of *P. hirsutus* by its petiole node with the anterodorsal angle higher than the posterodorsal and its first gastral tergite lacking erect or suberect hairs. The worker of *P. sulcatus* differs from that of *P. modestus* by its petiole node higher than long and lacking distinct foveolate punctures. The worker of *P. sulcatus* differs from that of *P. occultus* by its masticatory margin of the mandible possessing at most four teeth and its propodeal armaments not longer than the pronotal spines. The queen of *P. sulcatus* differs from that of *P. bicolor* by possessing a strongly prominent tooth on the ventral center of the clypeus. The worker and queen of *P. sulcatus* differ from those of the Australian *P. foveolatus* and *P. thoracicus* as follows:

P. sulcatus

Pronotal spines longer than or about as long as the propodeal armaments (worker)

Propodeum with a pair of teeth (Fig. 176) (queen)

Maxillary palp with one segment (worker and queen)

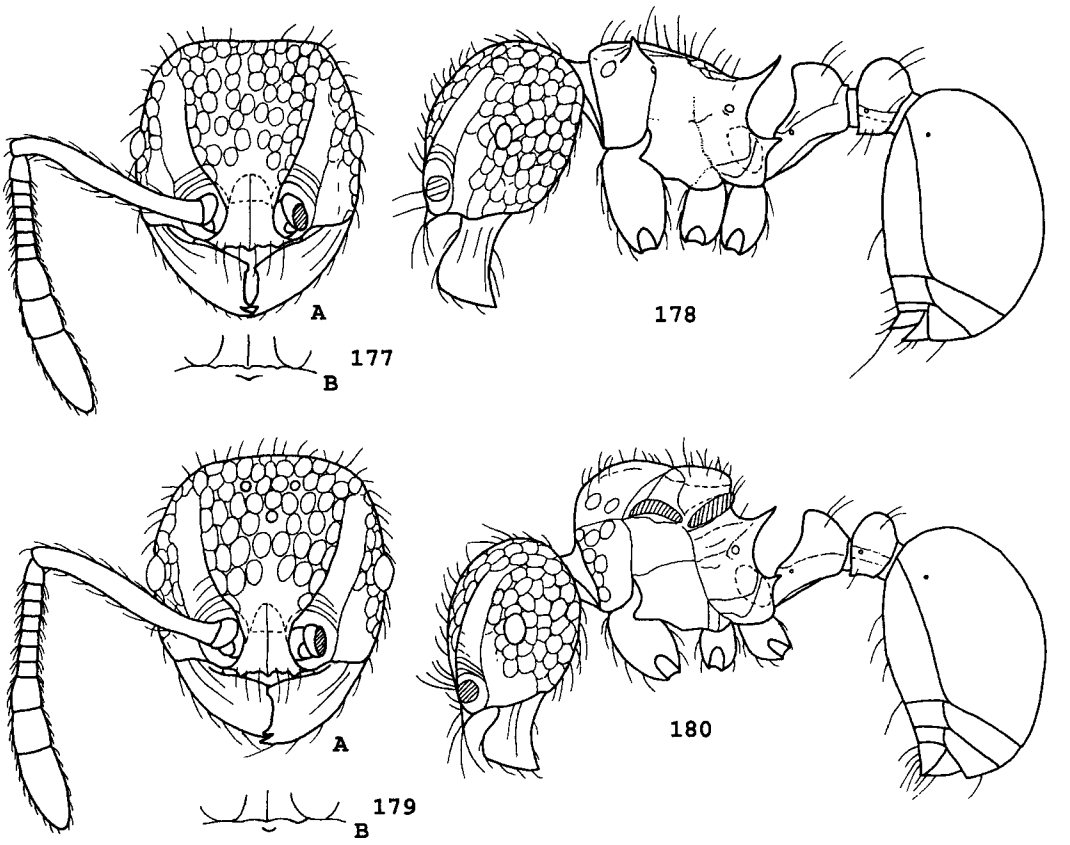
P. foveolatus* and *P. thoracicus

Pronotal spines much shorter than the propodeal spines (worker)

Propodeum with a pair of fairly long spines (Figs. 143, 180) (queen)

Maxillary palp with two segments (worker and queen)

Material Examined (ANIC, BMNH, IZAS, LACM, MCZC, MHNG, NHMV, USNM). Thailand: Nakhon Ratchasima Prov., Khao Yai Nat. Park, 700 to 750 m, hill forest, rotten wood (I. Burikam and W. L. Brown); Khao Yai Nat. Park (Löbl and Burckhardt); Chiang Mai (54 km NE Chiang Mai), Mae Nang Kaeo, 900 m (Burckhardt and Löbl); Chiang Mai Pr., Doi Suthep NP (7), near Ruesse Care, 900 to 1,000 m (Zettel); Chiang Mai Prov., Chiang Dao Wildlife Sanctuary, 19.22°N 98.97°E, 470 to 500 m elevation (Saowana Sonthichai). Nepal: Khandbari District, Arun River at Num 1,500 to 1,600 m (A. and Z. Smetana). Burma: Carin Cheba (L. Fea). China, Yunnan Prov. (?). W. Malaysia: Pahang, Cameron Highls, Gunung Jasar, 1,720 m (Löbl and Calame); Malaysia: Pahang, Cameron Highlands, Tanah Rata



Figures 177–180. *Pristomyrmex thoracicus* Taylor. 177A: Worker head, full-face view; 177B: Showing a tooth on the center of ventral clypeus; 178: Worker, lateral view; 179A: Queen head, full-face view; 179B: Showing a toothlike prominence on the center of ventral clypeus; 180: Queen, lateral view.

Umg., Gn. Jasar, 1300 m (Schuh and Lang)?: Kabu, 400 ft (Abor Exped.).

Ecological Information. This species has been collected in forests.

Pristomyrmex thoracicus Taylor
Figures 177–180

Pristomyrmex thoracicus Taylor, 1965: 41. Holotype worker, Australia: N. Queensland, Lake Eacham National Park, rainforest, 2,500 ft, 6.vi.1962 (R. W. Taylor) (MCZC) [examined].

Diagnosis (Worker). Pronotum with a pair of triangular short spines (ca. 0.06–0.08); propodeal spines long (ca. 0.19–0.24); dorsum of head, except for the antennal scrobes, with foveolate-reticulate sculpture; postpetiole unsculptured; PPI 109–121; SL 0.86–0.98 and SI 97–103.

Worker. TL 3.22–3.72, HL 0.86–0.96, HW 0.86–0.96, CI 97–101, SL 0.86–0.98, SI 97–103, EL 0.10–0.13, PW 0.54–0.60, AL 0.84–0.96, PPW 0.23–0.26, PPL 0.20–0.22, PPI 109–121 (n = 24).

Mandibles with a few longitudinal rugae. Masticatory margin of mandible with three teeth arranged as an apical + a preapical + a long diastema + a truncated basal tooth. Basal margin of mandible lacking a distinct curved lobe or tooth. Clypeus with a strong median longitudinal carina. Anterior clypeal margin with a median denticle and usually two others on

each side, but sometimes two lateral denticles are fused into a larger tooth. Ventral center of clypeus with a low, broad, tooth-like prominence. Palp formula 2,3. Frontal carinae well developed, beyond the level of the posterior margins of the eyes. Scrobal areas shallow, present lateral to the frontal carinae in full-face view. Frontal lobes almost completely absent so that the antennal articulations are entirely exposed. Antennal scapes usually slightly surpassing the occipital margin of head when lying in the antennal scrobes. Eyes with five to six ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 178. Pronotum with a pair of triangular short spines, ca. 0.06 to 0.08. Propodeal spines long, ca. 0.19 to 0.24, usually slightly upcurved at their apices. Metapleural lobe small-triangular with a rather acute apex. Petiole node in profile higher than long, with a long anterior peduncle, its anterodorsal angle forming an apex and its dorsum sloping downward posteriorly. In dorsal view, crest of petiole node strongly convex. Postpetiole in profile rounded dorsally, in dorsal view broader than long and broadening from front to back. Dorsum of head between the frontal carinae, as well as the two sides of the dorsal head, with foveolate-reticulate sculpture. Antennal scrobes rather smooth, with only a few weak rugae. Dorsum of antennal scape with a longitudinal carina. Dorsum of alitrunk with a rugoreticulum. Petiole and postpetiole smooth and shining. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Dorsal surfaces of petiole node and postpetiole each with a pair of hairs. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown.

Queen. TL 3.84–4.10, HL 0.94–0.96, HW 0.94–0.96, CI 100–100, SL 0.94–0.96, SI 98–100, EL 0.16–0.18, PW 0.70–0.72, AL 1.06–1.14, PPW 0.25–0.27, PPL 0.22–0.22, PPI 114–123 (n = 5).

General shape as in Figures 179–180, with normal caste differences from the conspecific worker; pronotum unarmed; crest of petiole node in dorsal view feebly convex; other characters similar to worker.

Male. Unknown.

Comments. Pristomyrmex thoracicus is so far known only from North Queensland, Australia. It is a sibling species of *P. foveolatus,* also from North Queensland. Their differences are given under *P. foveolatus.* Characters separating *P. thoracicus* from the Asian *P. brevispinosus,* and from the African *P. cribrarius* (a member of the *cribrarius* group) are provided under *P. foveolatus* and under *P. cribrarius,* respectively.

Material Examined (MCZC, ANIC). Australia: Queensland, Lake Eacham, rainforest, 2,500 ft, nest ex rotten log (R. W. Taylor); N.Q., Kuranda, rainforest, 1,100 ft, stray floor (R. W. Taylor); N.Q., Crawford's Lookout, Beatrice River (Darlingtons); N.Q., Malanda, rainforest, rotten log (W. L. Brown); N.Q., 3.2 km E of Lake Barrine, ca. 700 m, rainforest, ex rotten log (R. W. Taylor and J. Feehan); N.Q., Lake Barrine Nat. Pk., 760 m, 17.15°S, 148.38°E, rainforest, ex rotting log (R. W. Taylor and T. A. Weir); N.Q., Palmerston N.P., ca. 1,000 ft, rainforest, nest in soil under log (R. W. Taylor).

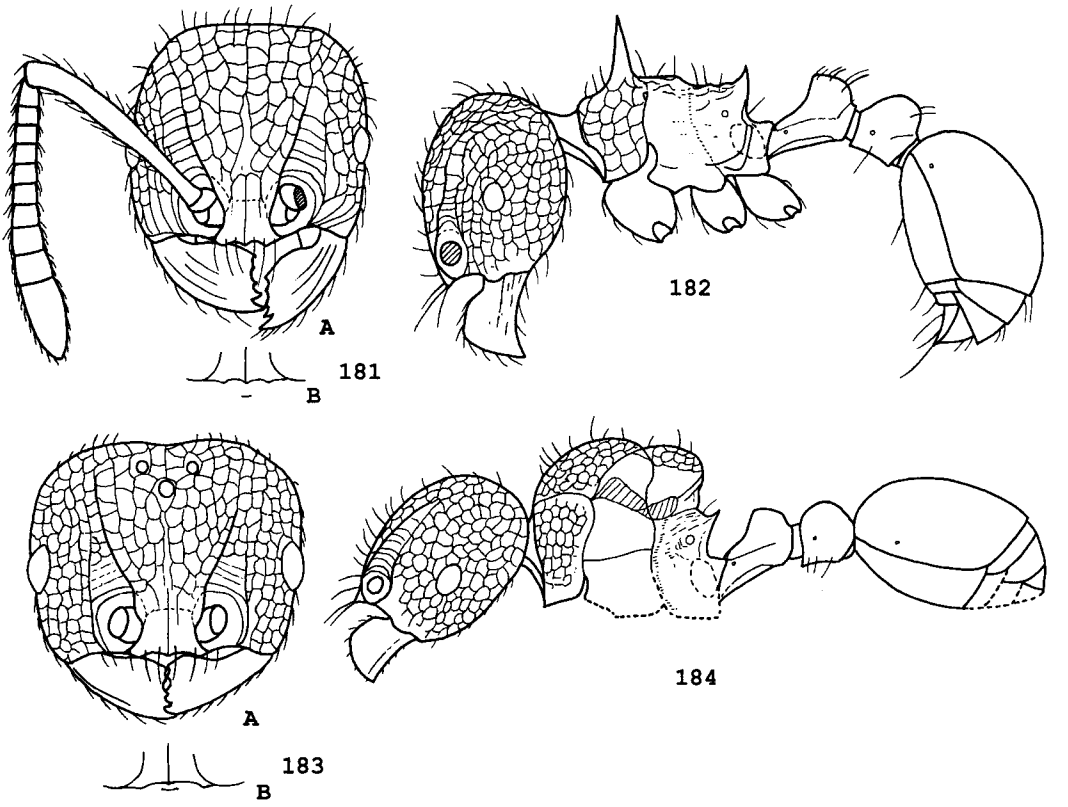
Ecological Information. This species occurs in rainforest nesting in rotting logs and in soil under logs (Taylor, 1965, 1968).

Pristomyrmex trachylissus (F. Smith) Figures 181–184

Myrmica trachylissa F. Smith, 1858: 126. Holotype queen, Borneo (A. R. Wallace) (BMNH) [examined].

Pristomyrmex trachylissus (F. Smith) Mayr, 1886: 359.

Diagnosis (Worker). Large size (HL > 1.36, HW > 1.45); masticatory margin of mandible with five teeth; pronotum with a pair of exceptionally long spines that are



Figures 181–184. *Pristomyrmex trachylissus* (F. Smith). 181A: Worker head, full-face view; 181B: Showing a short ruga on the ventral clypeus; 182: Worker, lateral view; 183A: Queen head, full-face view, antennae missing; 183B: Showing a short ruga on the ventral clypeus; 184: Queen, lateral view.

about as long as the distance between their bases.

Worker. TL 5.58–6.48, HL 1.36–1.46, HW 1.45–1.62, CI 107–114, SL 1.40–1.50, SI 90–98, EL 0.22–0.24, PW 0.92–1.02, AL 1.50–1.64, PPW 0.35–0.39, PPL 0.44–0.48, PPI 76–83 (n = 6).

Mandibles generally smooth and shining, except for a few superficial rugae. Masticatory margin of mandible with five teeth arranged as the strongest apical + the second strongest preapical + a small third tooth + a short diastema (or this diastema indistinct) + two small basal teeth. Basal margin of mandible with a central, broadly curved lobe. Clypeus with a strong median longitudinal carina. Anterior clypeal margin with a median denticle and a broad prominence on each side. Ventral surface of clypeus generally smooth and shining but sometimes with a weak, short, transverse ruga at the center. Frontal carinae strong, extending to the level of the posterior margins of the eyes. Antennal scrobes shallow, present lateral to the frontal carinae. Frontal lobes weak; thus, the antennal articulations are almost entirely exposed. Antennal scapes, laid on the dorsal head, slightly surpassing the occipital margin of head. Eyes with 10 to 11 ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 182. Pronotum armed with a pair of robust, exceptionally long spines, ca. 0.40 to 0.50, about as long as the distance between their bases. Propodeum with a pair of short spines, ca. 0.12 to 0.18, shorter than or at most about as long as the dis-

tance between the bases of two propodeal spines. Metapleural lobes each with a somewhat blunt-rounded apex. Petiole node in profile high, with a long anterior peduncle; its anterodorsal angle is on a higher level than the posterodorsal. Postpetiole in profile rounded dorsally, in dorsal view longer than broad and broadening from front to back. Dorsum of head entirely sculptured with well-developed coarse rugoreticulum. Similar sculpture present on the dorsum of alitrunk and on the two sides of pronotum, except for the space between the bases of two pronotal spines, which is rather smooth. Petiole smooth and shining but with a lateral longitudinal carina on each side. Postpetiole and gaster unsculptured, smooth, and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. A few pairs of hairs present on the dorsum of petiole node and at least a pair on the postpetiole, as shown in Figure 182. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect or suberect hairs. Color reddish-brown, but the masticatory margins and the basal margins of mandibles and the funiculi of antennae black-brown.

Queen. TL 7.55, HL 1.84, HW 2.14, CI 116, SL- (antennal scapes missing), SI-, PW 1.52, AL 2.10 (n = 1).

General shape as in Figures 183–184, with normal caste differences from the conspecific worker; pronotum unarmed; other characters similar to worker.

Male. Unknown.

Comments. Pristomyrmex trachylissus must have evolved from the ancestor of *P. bicolor.* It is extremely similar in appearance of the workers and queens to *P. bicolor.* The two species may occur sympatrically in Sarawak and in Sabah. Their workers and queens can be separated by the following characters:

P. trachylissus

Masticatory margin of mandible with five teeth; diastema indistinct or very short

Basal margin of mandible with a central, broadly curved lobe

Anterior clypeal margin with a median tooth and a broad, short prominence on each side

SI < 100 (only in worker).

P. bicolor

Masticatory margin of mandible with four teeth; a long diastema present between the preapical and the third tooth

Basal margin of mandible lacking a distinctly curved lobe

Anterior clypeal margin usually with seven denticles, but in some specimens, two or three lateral denticles fused into a broadly convex lobe

SI > 105 (only in worker).

Material Examined (BMNH, MCZC, ANIC). East Malaysia: Sarawak, 4th Div., G. Mulu Nat. Pk., RGS Expd., Long pala, lowland rainforest, on log and on rotten log (B. Bolton); North Borneo (SE), Forest Camp, 19 km N of Kalabakan 180 m (Y. Hirashima).

Ecological Information. This species occurs in rainforest and has been collected on a rotten log.

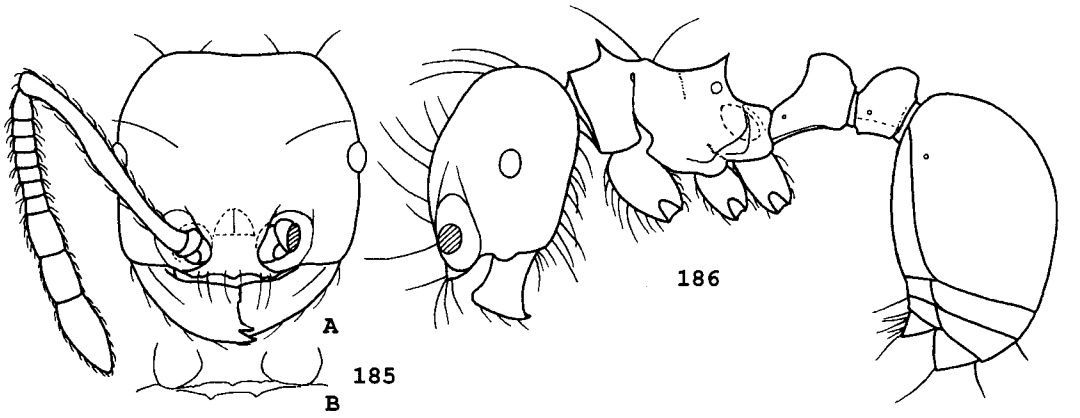
Pristomyrmex trogor Bolton
Figures 185–186

Pristomyrmex trogor Bolton, 1981: 287. Holotype worker, Zaire (B. Congo on the label): S slope of Mt. Kahuzi, 1,900 m, 5.ix.1957 (E. S. Ross and R. E. Leech) [CASC (Bolton, 1981)]; [five paratype workers (MCZC) examined].

Diagnosis (Worker). Frontal carinae absent; ventral surface of clypeus with two toothlike prominences; pronotum with a pair of short spines; dorsal surfaces of head and alitrunk smooth and shining; petiole and postpetiole lacking hairs.

Worker. TL 3.42–3.98, HL 0.88–1.00, HW 0.92–1.02, CI 102–105, SL 0.96–1.06, SI 100–104, EL 0.14–0.16, PW 0.56–0.62, AL 0.84–0.94, PPW 0.23–0.26, PPL 0.22–0.26, PPI 100–106 (n = 5).

Mandibles smooth, with only a few weak longitudinal basal rugae. Masticatory mar-



Figures 185–186. *Pristomyrmex trogor* Bolton. 185A: Worker head, full-face view; 185B: Showing two toothlike prominences on the ventral clypeus; 186: Worker, lateral view.

gin of mandible possessing the strongest apical tooth + the second strongest preapical tooth + a diastema + two small basal denticles that are often fused into a broad, short tooth. Basal margin of mandible lacking a toothlike prominence or curved lobe. Clypeus lacking a median longitudinal carina. Ventral surface of clypeus with two strongly prominent teeth. Anterior clypeal margin with a median tooth and two lateral denticles on each side; sometimes two small lateral denticles are fused into one prominence. Palp formula 2,3 (Bolton, 1981). Frontal carinae absent. Antennal scrobes absent. Frontal lobes indistinct. Antennal scapes, when lying on the dorsal head, just reaching or slightly surpassing the occipital margin of head. Eyes containing five to six ommatidia in the longest row. Promesonotum in dorsal view weakly concave. Pronotum and propodeum each with a pair of short spines (Fig. 186). Metapleural lobes rounded. In profile view, petiole node high, higher than long, with a long anterior peduncle, its anterodorsal angle higher than the posterodorsal. In dorsal view, petiole node about as broad as long. Postpetiole in profile higher than long, rounded dorsally, in dorsal view broadening from front to back. All dorsal surfaces unsculptured, smooth, and shining. Dorsum of head with some fine long hairs. Dorsal surface of alitrunk with only one to two pairs of hairs that arise from the lateral margins of the mesonotum. Petiole node, postpetiole, and first gastral tergite lacking erect or suberect hairs. A row of fine, forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some fine, appressed or decumbent, or suberect hairs. Color reddish-brown.

Queen. Unknown.

Male. One paratype male has the same data as holotype and was originally mounted together with two paratype workers on the same pin: TL 2.92, HL 0.55, HW 0.57, CI 104, SL 0.30, SI 53, HWE 0.74, EL 0.28, PW 0.82, AL 1.16 (n = 1).

Head, including the eyes, distinctly broader than long. Clypeus narrow and convex, its anterior margin rather straight. Frontal carinae absent. Maximum diameter of the median ocellus 0.10. Scapes longer than the other antennal segments, except for the apical ones. On the mesoscutum, notauli distinct, forming a Y shape; parapsidal furrows absent. Scutoscutellar sulcus with about 10 narrow short ridges. Propodeum weakly tuberculate, lacking teeth or spines. Metapleural lobes subtriangular. Middle and hind tibiae without any spurs. Waist abnormally shaped, with a huge segment formed by the fusion

of petiole and postpetiole; entire posterior face of the waist attached to first gastral segment. Dorsum of head smooth and shining, but frontal area with a median longitudinal carina; a short ruga present below each antennal socket. Alitrunk generally smooth and shining, except for those marked sutures. Petiole, postpetiole, and gaster smooth and shining. All dorsal surfaces with abundant long hairs. Scapes and tibiae with numerous erect or suberect short hairs. Color somewhat blackish-brown; wings white.

Comments. Pristomyrmex trogor is similar to another African species, *P. africanus,* in many characters of the workers, such as dentition of the masticatory margin of mandible; two teeth present on the ventral clypeus; promesonotum in dorsal view shallowly concave or flat; pronotum and propodeum each with a pair of short spines; the structure and shape of petiole, postpetiole, and metapleural lobes; as well as the distribution of hairs. But *P. trogor* is easily distinguished from *P. africanus* and from the other African species of the genus because *P. trogor* is the only species lacking frontal carinae in the workers. In addition, the dorsum of the head is smooth and shining in the workers of *P. trogor* but has foveolate punctures in *P. africanus, P. fossulatus,* and *P. cribrarius*; the pronotum possesses a pair of short spines in the workers of *P. trogor* that is not seen in *P. fossulatus* and *P. orbiceps.*

The separation of *P. trogor* from the two Asian species (*P. flatus* and *P. collinus*) and from the three Australian species (*P. wheeleri, P. erythropygus,* and *P. quadridentatus*) is given under *P. flatus* and under *P. africanus,* respectively.

Distribution. Zaire (known only from the type series).

Ecological Information. Unknown.

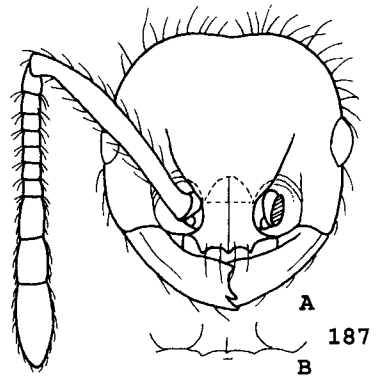
Pristomyrmex wheeleri Taylor
Figures 187–192

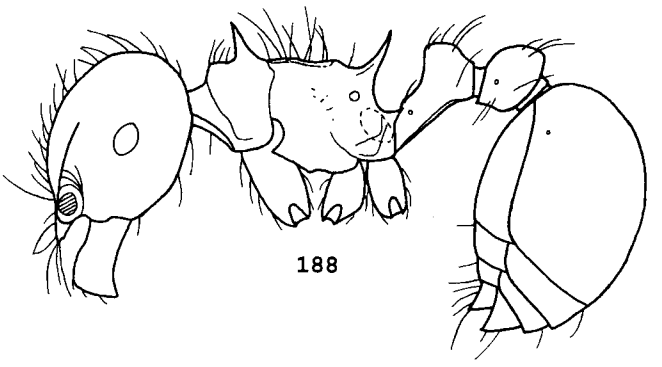
Pristomyrmex wheeleri Taylor, 1965: 48. Holotype worker, Australia: SE Queensland, ca. Binna Burra, rainforest, 2,800 to 3,000 ft, nest under stone, 21–25.v.1962 (R. W. Taylor) (MCZC) [examined].

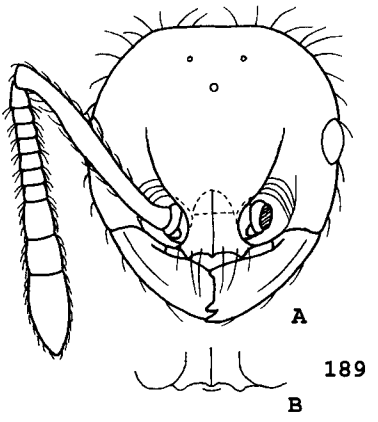
Diagnosis (Worker). Masticatory margin of mandible with three teeth; anterior clypeal margin at most with three teeth; propodeal spine length ca. 0.18 to 0.28, about equal to or slightly longer than pronotal spines; dorsum of alitrunk smooth, but with a transverse ridge present at the approximate position of metanotal groove; petiole node and postpetiole dorsally with some hairs; first gastral tergite lacking hairs.

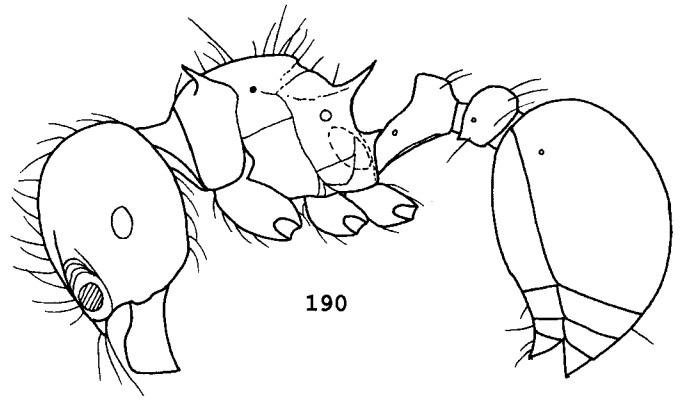
Worker. TL 3.26–4.54, HL 0.92–1.17, HW 0.97–1.34, CI 103–116, SL 0.94–1.18, SI 88–100, EL 0.17–0.24; PW 0.56–0.74, AL 0.88–1.08, PPW 0.24–0.31, PPL 0.22–0.28, PPI 104–122 (n = 40).

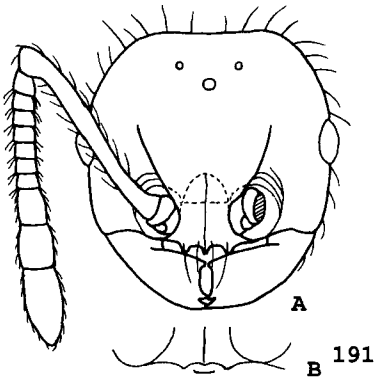
Mandibles usually smooth and shining, except for some small hair pits. Masticatory margin of mandible with three teeth arranged as an apical + a preapical + a long diastema + a somewhat truncated basal tooth. Basal margin of mandible lacking a curved lobe or tooth. Clypeus with a median longitudinal carina. Anterior clypeal margin usually with three strong teeth: a median tooth and one on each side, but sometimes the median tooth weak or vestigial. Ventral surface of clypeus usually with a short transverse carina. Palp formula 2,2. Frontal carinae not or just extending to the level of the posterior margins of the eyes. Antennal scrobes absent. Frontal lobes nearly completely absent; thus, the antennal articulations are almost entirely exposed. Antennal scapes, laid on the dorsal head, slightly surpassing the occipital margin. Eyes usually containing eight to nine ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 188. Pronotal spines varying in length, from 0.12 to 0.28. Propodeal spines (ca. 0.18–0.28) equal to or slightly longer than the pronotal spines. Metapleural lobes small, usually triangular. Petiole node in profile with a long anterior peduncle; its anterodorsal angle is on a higher level than the posterodorsal; some-

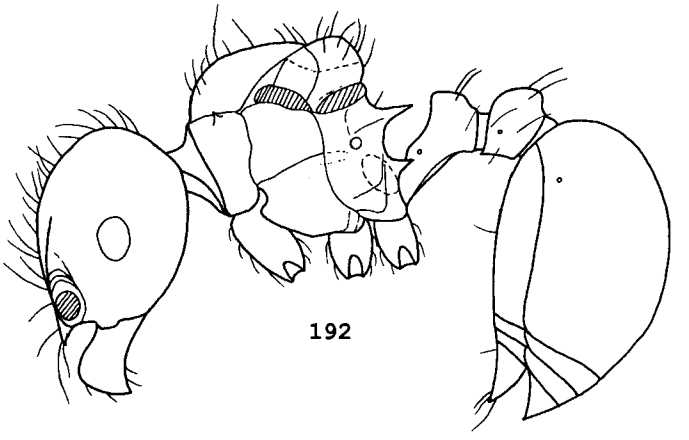












Figures 187–192. *Pristomyrmex wheeleri* Taylor. 187A: Worker head, full-face view; 187B: Showing a short ruga on the ventral clypeus; 188: Worker, lateral view; 189A: Ergatoid queen, full-face view; 189B: Showing a short ruga on the ventral clypeus; 190: Ergatoid queen, lateral view; 191A: Queen head, full-face view; 191B: Showing a short ruga on the ventral clypeus; 192: Queen, lateral view.

times posterodorsal angle indistinct, showing a single curved surface. Postpetiole in profile as in Figure 188, in dorsal view slightly broader than long and broadening from front to back. Dorsum of head smooth and shining. Dorsum of alitrunk smooth, but with a transverse ridge present at the approximate position of metanotal groove. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect long hairs. A pair of long hairs bilaterally distributed on the dorsum of petiole node and on the postpetiole, respectively; sometimes the crests of both petiole node and postpetiole with additional one to two pairs of short hairs. First gastral tergite lacking erect or suberect hairs. Usually, three pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color: head deep reddish-brown; alitrunk, pedicel segments, and gaster yellow-brown to reddish-brown.

Ergatoid Queen. TL 4.06, HL 1.08, HW 1.16, CI 107, SL 1.06, SI 91, EL 0.21, PW 0.68, AL 1.06, PSL1 0.18, PSL2 0.25, PPW 0.28, PPL 0.26, PPI 108 (n = 1. Note: This is a paratype).

General shape as in Figures 189–190. Similar to worker; color and pilosity as in worker, but head with three ocelli and promesonotum convex. Flight sclerites and wings lacking, but a black speck is present on each lateral margin of the mesonotum.

Queen. TL 4.62–5.06, HL 1.09–1.28, HW 1.18–1.42, CI 107–115, SL 1.06–1.20, SI 82–90, EL 0.22–0.28, PW 0.80–0.90, AL 1.14–1.34, PPW 0.30–0.36, PPL 0.26–0.30, PPI 107–133 (n = 5).

General shape as in Figures 191–192, with normal caste differences from the conspecific worker; a pair of acute minute spines present on the humeral angles of the pronotum; propodeal spines rather long, ca. 0.20 to 0.24; other characters similar to worker.

Male. Unknown.

Comments. Pristomyrmex wheeleri occurs in East Australia. Its two close relatives are *P. erythropygus* and *P. quadridentatus,* also from East Australia. Characters separating *P. wheeleri* from *P. erythropygus* and from *P. quadridentatus* are provided under *P. erythropygus* and under *P. quadridentatus,* respectively. The differences between *P. wheeleri* and the two Asian species (*P. flatus* and *P. collinus*) and between *P. wheeleri* and the two African species (*P. africanus* and *P. trogor*) are given under *P. flatus* and *P. africanus,* respectively.

Material Examined (ANIC, MCZC). Australia: SE Queensland: Mt. D'Aguilar Range, 2,000 ft, rainforest, ex rotten log (R. W. Taylor); Cunningham's Gap, 3,000 ft, rainforest floor, ex small wood fragment (R. W. Taylor); Cunningham's Gap, rainforest, 2,500 ft, nest under stone (B. B. Lowery); National Pk. (H. Hacker); Tamborine Mt., rotting leaves (A. M. Lea); Tamborine Mt., S side, Curris Falls, rainforest, berlesate leaf mold (T. E. Woodward); Tamborine Mt., rainforest, 2,000 ft, nest between stones (B. B. Lowery); ca. Binna Burra, rainforest, 2,600 to 3,000 ft, nest under stone (R. W. Taylor); M'Pheraon Rge, v. Binna Burra, rainforest, 2,600 to 3,600 ft (P. F. Darlington); Binna Burra, Lamington Nat. Pk., leaf and log litter (J. and N. Lawrence); Lamington Nat. Park (O'Reillys), 28.14°S, 153.08°E, rainforest, ca. 920 m, ex small fragment rotten wood (R. W. Taylor and R. Kohout); Mt. Chinghee, 12 km SE Rathdowney, 28.19°S, 152.58°E, 720 m, rainforest, stick brushing (Monteith, Yeates, and Thompson). New South Wales: Unumgar Forest (Darlingtons); Woodenbong, rainforest (Darlingtons); Tooloom Range, ca. 2,000 ft (Darlingtons); Mt. Warning, rainforest, 800 to 3,500 ft, under and between rocks/nest in red-rotten log but 2 inches below ground (B. B. Lowery); Mt. Warning, 10 mi from Murwillumbah, RF, ca. 3,000 ft, between rocks (B. B. Lowery); Whian Whian S. F., 28.39°S, 153.20°E, rainforest, 200 m, under stone, acc. no. 1699, 16.vi.1976 (P. Ward); Tomewin, rainforest,

1500 ft, under stone (B. B. Lowery); Blue Knob Mt., Nightcap Ranges, rainforest, 2,800 to 3,000 ft (B. B. Lowery); Bilambil, N of Tumbulgum, rainforest (B. B. Lowery); Hills above Tumbulgum, 800 ft, near Murwillumbah, rainforest (B. B. Lowery); Bonalbo, Sandy Crk., RF, 3000 ft, under rock (E. G. Kearney).

Ecological Information. This species occurs in rainforest, nesting in the soil, usually under or between rocks, often in a tangle of small plant roots; it probably restricts its foraging activity to the soil and leaf litter (Taylor, 1965, 1968).

An additional 11 specimens, including nine workers, a queen, and an ergatoid queen, are examined here. They show the following some differences from the above "examined material": (1) The ventral center of the clypeus possesses a toothlike prominence in these 11 specimens, but a short transverse carina in the previous "Material Examined" section; (2) in the nine workers, the juncture between the pronotum and the mesonotum bears several short longitudinal rugae, varying from superficial to rather distinct (but is smooth and shining in *P. wheeleri*); (3) in the queen, the petiole node in profile is wedge-shaped, and the propodeal spines (ca. 0.13) are shorter than those (ca. 0.20–0.24) in *P. wheeleri*; and (4) in the ergatoid queen, only one ocellus is present; PSL1 and PSL2 are not shorter than 0.08 and 0.13, respectively (in *P. wheeleri*, three ocelli are distinct; PSL1 and PSL2 are ca. 0.18 and ca. 0.25, respectively). Further collecting and studying will help determine whether these differences are significant or not.

These 11 specimens have the following measurements: Worker: TL 3.50–4.76, HL 0.90–1.05, HW 0.94–1.12, CI 104–108, SL 0.85–1.01, SI 89–93, EL 0.16–0.20, PW 0.60–0.68, AL 0.88–0.96, PSL1 0.10–0.14, PSL2 0.16–0.20, PPW 0.24–0.29, PPL 0.21–0.23, PPI 104–126 (n = 9). Queen: TL 3.84, HL 1.22, HW 1.32, CI 108, SL 1.07, SI 81, EL 0.25, PW 0.74, AL 1.18, PSL2 0.13, PPW 0.36, PPL 0.28, PPI 129 (n = 1). Ergatoid queen: TL 3.84, HL 0.96, HW 1.08, CI 113, SL 0.88, SI 81, EL 0.20, PW 0.64, AL 0.94, PSL1 0.08, PSL2 0.13, PPW 0.25, PPL 0.21, PPI 118 (n = 1).

Collecting Data for the 11 Specimens (ANIC). Australia: New South Wales, Tuckers Knob, 21 km SW Coffs. Hbr., rainforest, 760 m, ANIC Berlesate No. 201 (N. I. Mitchell); New South Wales, Bellangry, F'st, rainforest, ca. 3000 ft, iv.1958 (Darlingtons); New South Wales, Up. Allyn R., near Eccleston, 32.08°S, 151.29°E, rainforest, 400 m, acc. no. 316 (P. Ward); New South Wales, Upr. Allyn Val., near Eccleston, rainforest, ca. 2,000 ft, fallen epiphyte masses, ANIC Berlesate 45, 11–14.xii.1967 (Taylor and Brooks); New South Wales, Comboyne plat., 2 to 2,800 ft, under rocks, x.1957 (Darlingtons).

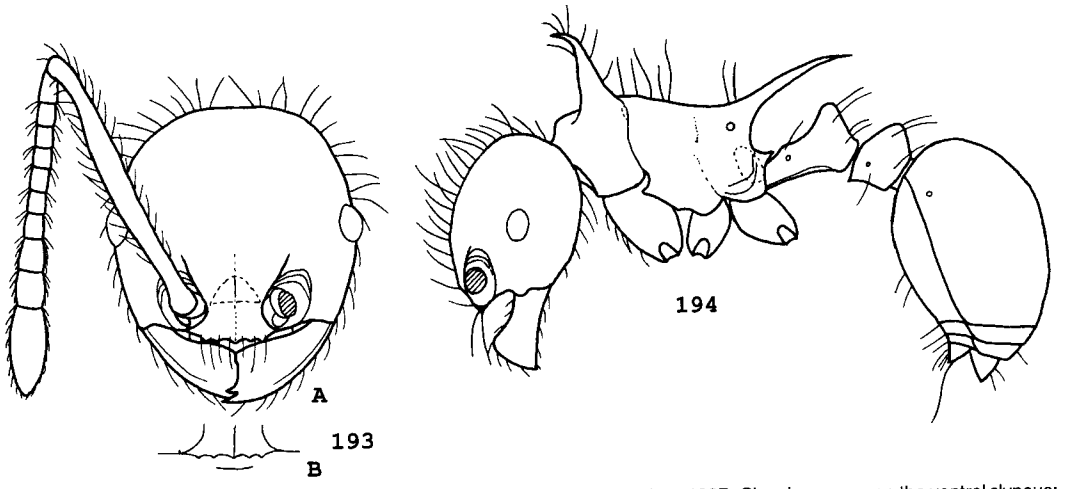
Pristomyrmex wilsoni Taylor
Figures 193–194

Pristomyrmex wilsoni Taylor, 1968: 63. Holotype worker, Australia: N. Queensland, Mt. Lewis, ca. 3,000 ft, near Julatten, rainforest, ground strays, 30–31.x.1966 (R. W. Taylor) [ANIC (Taylor, 1968)]; [one paratype worker (MCZC) examined].

Diagnosis (Worker). Pronotal spines and propodeal spines exceptionally long (ca. 0.66–0.88).

Worker. TL 4.14–4.92, HL 0.96–1.11, HW 0.96–1.12, CI 96–104, SL 1.21–1.46, SI 125–133, EL 0.19–0.22, PW 0.65–0.76, AL 1.14–1.30, PPW 0.28–0.32, PPL 0.30–0.32, PPI 93–100 (n = 13).

Mandibles usually smooth and shining but sometimes with one to two longitudinal rugae. Masticatory margin of mandible with three teeth arranged as an apical + a preapical + a long diastema + a broad, truncated basal tooth. Basal margin of mandible lacking a distinctly curved lobe or tooth. Clypeus usually with a median longitudinal carina, but sometimes this median carina is interrupted or indistinct. Anterior clypeal margin with a median denticle and two others on each side, but sometimes two lateral denticles are fused into one prominence. Ventral surface of



Figures 193–194. *Pristomyrmex wilsoni* Taylor. 193A: Worker head, full-face view; 193B: Showing a ruga on the ventral clypeus; 194: Worker, lateral view.

clypeus with a short transverse carina. Palp formula 2,3. Frontal carinae short, not beyond, or just reaching to the level of the posterior margins of eyes; sometimes frontal carinae absent. Antennal scrobes absent. Frontal lobes absent; thus, the antennal articulations are entirely exposed. Antennal scapes long, when laid on the dorsal head, surpassing the occipital margin by about one-third of their length. Eyes containing 10 to 11 ommatidia in the longest row. Profile shape of alitrunk and pedicel segments as in Figure 194. Pronotal spines exceptionally long (ca. 0.66–0.88), curved at their apices, diverging toward the outsides in dorsal view. Propodeal spines exceptionally long (ca. 0.66–0.82), as illustrated in Figure 194; in dorsal view, they are somewhat joined together at the base but are divergent posteriorly, Metapleural lobes small-triangular, each with an apex. Petiole with a fairly long anterior peduncle. Petiole node and postpetiole in profile higher than long, in dorsal view each with a somewhat conical apex. Postpetiole in dorsal view usually longer than broad, broadening from front to back. Dorsum of head usually smooth and shining, except for a few foveolate punctures present on the genae and sometimes bordering the frontal carinae. Dorsum of alitrunk unsculptured and highly polished. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect or suberect long hairs. A pair of similar long hairs bilaterally distributed on the dorsum of petiole node and on the postpetiole, respectively. First gastral tergite lacking erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown to blackish-brown.

Queen and Male. Unknown.

Comments and Discussion. Pristomyrmex wilsoni occurs only in North Queensland, Australia. It is a unique species in the genus that possesses both exceptionally long pronotal and propodeal spines and thus can be immediately recognized.

Pristomyrmex wilsoni may be derived from the common ancestor of the clade consisting of *P. curvulus* and *P. longispinus* of the Philippines. The workers of *P. wilsoni* are similar to those of *P. curvulus* and *P. longispinus* in possession of long pronotal spines and long antennal scapes and in the size and sculpture of body. *Pristomyrmex wilsoni* differs from *P. curvulus*

and *P. longispinus* in the workers as follows:

P. wilsoni

Propodeal spines exceptionally long, ca. 0.66 to 0.82; in dorsal view, they are close to each other at the base
Maxillary palp with two segments
Masticatory margin of mandible with a broad, truncated basal tooth
Petiole node and postpetiole, in dorsal view each with a somewhat conical apex
A pair of hairs present near the apex of petiole node

P. curvulus and ***P. longispinus***

Propodeal spines short to moderately long, ca. 0.12 to 0.26; in dorsal view, they are separated at the base
Maxillary palp with one segment
Masticatory margin of mandible with two small basal teeth
Petiole node and postpetiole in dorsal view each lacking a conical apex
Two or more pairs of hairs present on the dorsal surface of petiole node

An alternative is that *P. wilsoni* might evolved from the ancestor of the Australian *P. wheeleri* because of the following characters being similar: (1) masticatory margin of mandible with three teeth, (2) maxillary palp with two segments, (3) body smooth, and (4) ventral surface of clypeus with a short transverse carina. However, the workers of *P. wilsoni* obviously differ from those of *P. wheeleri* as follows:

P. wilsoni

Pronotal and propodeal spines exceptionally long (ca. 0.66–0.88)
Antennal scapes relatively long (SL 1.21–1.46; SI 125–133)
Petiole node and postpetiole in dorsal view each with a conical apex
Dorsum of alitrunk unsculptured
Labial palp with three segments

P. wheeleri

Pronotal and propodeal spines moderately long (ca. 0.12–0.28)
Antennal scapes relatively short (SL 0.94–1.18; SI 88–100)
Petiole node and postpetiole in dorsal view lacking a conical apex
A transverse ridge present at the approximate position of metanotal groove
Labial palp with two segments

Material Examined (ANIC, MCZC). Australia: N. Queensland, Mt. Lewis, 1,000 m, RF (R. W. Taylor); Queensland, Mt. Lewis, 960 m, 16.35°S, 145.17°E, rainforest, acc. no. 76.349 (R. W. Taylor and T. A. Weir); NE Queensland, 2.5 km N Mt. Lewis via Julatten, 1,040 m, RF, Pyrethrum knockdown (D. K. Yeates and G. I. Thompson); N. Queensland, 2 km SE Mt. Spurgeon via Mt. Carbine, 1,100 m, Pyrethrum tree logs (Montelth and Thompson); NE Queensland, McDowall Ra, 17 km N Daintree, 16.06°S, 145.20°E, rainforest, 520 m, sieved litter, QM Berlesate No. 684 (G. Montelth); NE Queensland, Table Mt., 10 km S of Cape Tribulation, 16.09°S, 145.26°E, rainforest, 320 m, sieved litter, QM Berlesate No. 542 (G. B. Montelth and D. Cook).

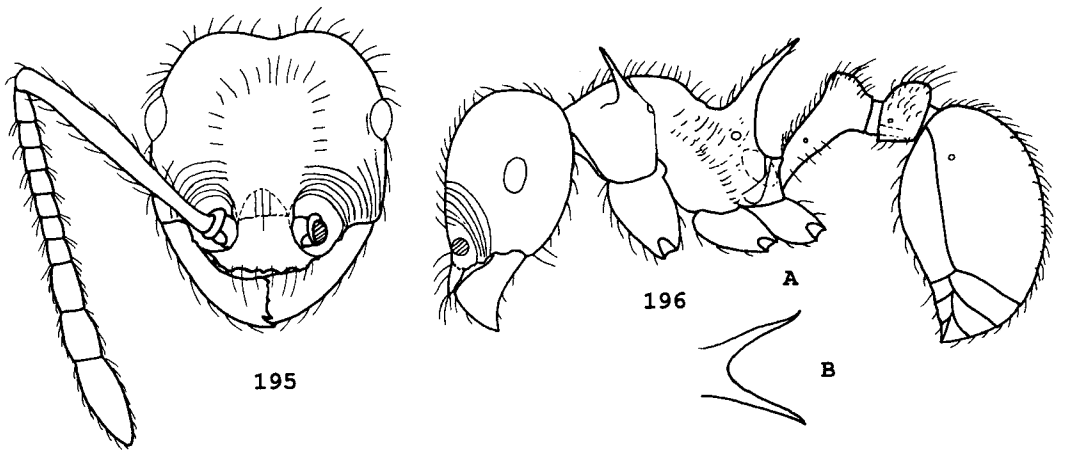
Ecological Information. Taylor (1968) reports that this species occurs in rainforest; it has been collected at an elevation of about 915 m in little berlesates and on the surfaces of rocks and logs. "Collections were made on two overcast days but not on a third, which was brightly sunny. Strays were not seen during several hours night collecting (to about four hours after sunset) at the same locality" (Taylor, 1968).

THE *TRISPINOSUS* GROUP

Worker. Medium-sized ants (HL 0.88–1.22, HW 0.82–1.16, TL 3.24–4.82) with the following combination of characters:

(1) Masticatory margin of mandibles with four teeth that have one of the following two arrangements:

a. the strongest apical + the second strongest preapical + a relatively short (first) diastema + a small denticle + a relatively long (second) di-



Figures 195–196. *Pristomyrmex bispinosus* (Donisthorpe). 195: Worker head, full-face view; 196A: Worker, lateral view; 196B: Propodeal spines, dorsal view.

astema + a small basal denticle, as in *P. bispinosus* and *P. trispinosus* (in *P. trispinosus*, sometimes the first diastema is somewhat indistinct) or

b. the apical + the preapical + a relatively long (first) diastema + a small denticle + a relatively short (second) diastema + a small basal denticle, as in *P. browni*; sometimes the second diastema is indistinct.

(2) Anterior margin of the median portion of clypeus with at least five denticles. Two ends of the anterior clypeal margin each with a developed subtriangular tooth. Lateral portions of clypeus reduced to a margin; thus, the antennal fossae reach the anterior clypeal margin.

(3) Palp formula 1,2.

(4) Frontal carinae absent.

(5) Frontal lobes almost completely absent.

(6) Antennal scrobes absent.

(7) Lamella that encircles the base of antennal scape entire.

(8) Dorsum of alitrunk with a promesonotal suture or impression.

(9) Alitrunk in profile with a convex promesonotum and a deeply concave propodeal dorsum.

(10) Pronotum with a pair of robust, short to moderately long spines.

(11) Propodeal spines long, in dorsal view joined together at the base so that they form a fork.

(12) Petiole with a long anterior peduncle that is longer than the length of the node.

(13) Foveolate punctures completely absent, but regular striations are present on the dorsal surfaces of the head and the alitrunk in *P. trispinosus* and *P. browni* and present on the genae and around the antennal sockets in *P. bispinosus*.

(14) First gastral tergite with numerous hairs.

This is a monophyletic group because it possesses many autapomorphic characters, such as characters 3, 4, 8, 9, 11, and 13. This group contains three native Mauritian species.

Pristomyrmex bispinosus (Donisthorpe) Figures 195–196

Dodous bispinosus Donisthorpe, 1949: 272. Lectotype worker, Mauritius: Le Pouce Mt., 2.xi.1948 (R. Mamet) (BMNH), here designated, [examined].

Pristomyrmex bispinosus (Donisthorpe) Brown, 1971: 3.

Diagnosis (Worker). Dorsal surfaces of head and alitrunk mostly unsculptured; mesonotum unarmed, at most weakly tuberculate; alitrunk in profile with a convex

promesonotum and a deeply concave propodeal dorsum; propodeal spines in dorsal view forming a divergent fork.

Worker. TL 4.36–4.82, HL 1.14–1.20, HW 1.08–1.16, CI 90–100, SL 1.32–1.40, SI 118–130, EL 0.22–0.24, PW 0.70–0.75, AL 1.14–1.20, PPW 0.28–0.32, PPL 0.26–0.28, PPI 107–115 (n = 11).

Mandibles smooth and shining. Masticatory margin of mandible with four teeth arranged as the strongest apical + the second strongest preapical + a relatively short diastema + a small denticle + a relatively long diastema + a small basal denticle. Basal margin of mandible lacking a tooth-like prominence. Anterior margin of the median portion of clypeus with at least five denticles, but sometimes two lateral denticles are fused into a broad, truncated lobe. Two ends of anterior clypeal margin each with a strong, subtriangular tooth. Ventral surface of clypeus usually with a transverse ruga. Clypeus usually unsculptured, but frontal area usually with three to four short carinae that often extend to the posterior clypeal margin. Palp formula 1,2. Frontal carinae absent. Antennal scrobes absent. Frontal lobes nearly completely absent so that the antennal articulations are almost entirely exposed. Antennal scapes long, when lying on the dorsal head surpassing the occipital margin by about one-fourth of their length. Eyes usually containing 11 to 12 ommatidia in the longest row. Occipital margin slightly concave. Alitrunk in profile with a convex pro-mesonotum and a deeply concave propodeal dorsum. Pronotum armed with a pair of fairly long, acute spines. Propodeum with a pair of long spines that, in dorsal view, are joined together at the base but are divergent along their length so that they form a fork (Fig. 196B). Mesonotum unarmed but sometimes with tubercles. Promesonotal suture or impression present. Metapleural lobes dentiform. Petiole in profile with a long anterior peduncle; anterodorsal angle of the node is higher than the posterodorsal. Postpetiole in profile usually with a curved anterior and dorsal surface, in dorsal view slightly broader than long. Dorsum of head mostly smooth and shining but with some regular short rugae present around the antennal fossae, on genae and sometimes around the centrical disc. Dorsum of alitrunk as well as the sides of pronotum usually smooth and shining, but the sides of the rest of alitrunk usually with some regular short rugae. Petiole unsculptured. Dorsum of postpetiole smooth and shining. Gaster unsculptured. All dorsal surfaces with numerous erect or suberect hairs. A row of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some short hairs. Color yellow-brown, but sometimes reddish-brown.

Queen and Male. Unknown.

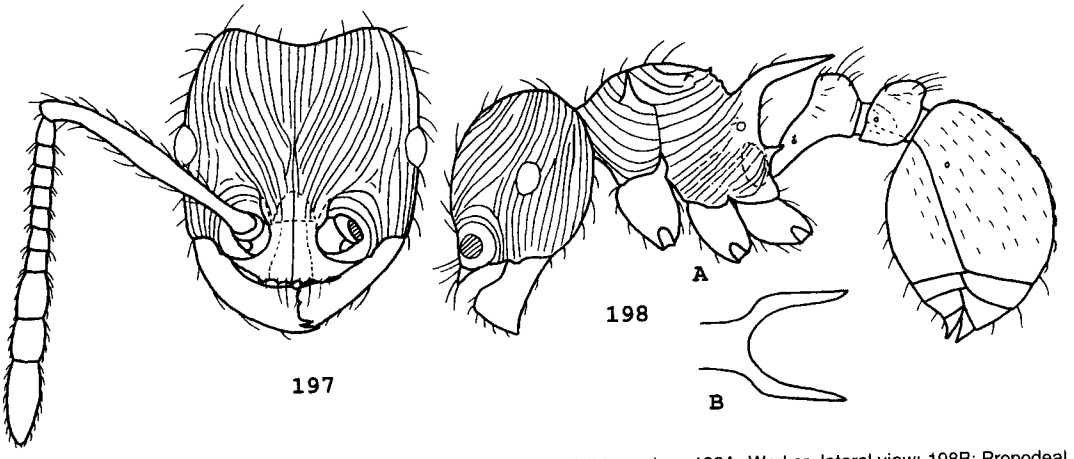
Comments. This species occurs in Mauritius. It can be easily separated from its two relatives, *P. trispinosus* and *P. browni,* in the workers, as follows: In *P. bispinosus,* the dorsal surfaces of the head and the alitrunk are smooth and shining, except for some short rugae around the antennal fossae, on the genae, and sometimes around the centrical disc of the head; but in *P. trispinosus* and *P. browni,* the dorsal surfaces of the head and the alitrunk are entirely sculptured with regular striations.

Material Examined (MCZC, ANIC, MNHN). Mauritius: Le Pouce Mt., 700 to 800 m, native forest (W. L. Brown); Le Pouce, 700 m, 20°12′S, 57°31′E, ex closed forest, on low vegetation (P. S. Ward); Le Pouce Mt. (Ray Mamet).

Ecological Information. This species occurs in a forest and has been collected on the trees and on the main path (Brown, 1971).

Pristomyrmex browni **sp. n.**
Figures 197–198

Diagnosis (Worker). Dorsal surfaces of head and alitrunk with dense regular striations; propodeal spines in dorsal view joined together at base and subparallel along their length; HW 0.82–0.90 and HL 0.88–1.01.



Figures 197–198. *Pristomyrmex browni* **sp. n.** 197: Worker head, full-face view; 198A: Worker, lateral view; 198B: Propodeal spines, dorsal view.

Holotype Worker (MCZC). TL 3.50, HL 0.92, HW 0.84, CI 91, SL 0.88, SI 105, PW 0.46, AL 0.90. Paratypes, 11 workers and one male (MCZC, ANIC, BMNH).

Worker. TL 3.42–3.78, HL 0.92–1.00, HW 0.82–0.90, CI 87–94, SL 0.86–0.97, SI 98–111, EL 0.14–0.19, PW 0.44–0.50, AL 0.84–0.96, PPW 0.26–0.28, PPL 0.22–0.24, PPI 117–127 (n = 11).

Mandibles smooth and shining. Masticatory margin of mandible with four teeth arranged as the strongest apical + the second strongest preapical + a relatively long (first) diastema + a small denticle + a relatively short (second) diastema + a small basal denticle; sometimes the second diastema indistinct. Basal margin of mandible almost straight, lacking a toothlike prominence. Anterior margin of the median portion of clypeus with at least five toothlike prominences, but sometimes two lateral denticles are fused into a broad lobe. Two ends of the anterior clypeal margin each with a strong subtriangular tooth. Ventral surface of clypeus lacking toothlike prominences. Clypeus usually with a few weak longitudinal rugae. Palp formula 1,2. Frontal carinae absent. Antennal scrobes absent. Frontal lobes nearly completely absent so that the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the dorsal head, slightly surpassing the occipital margin by about one-eighth to one-seventh of their length. Eyes moderately sized. Occipital margin medially deeply emarginate. Alitrunk in profile with a convex pro-mesonotum and a deeply concave propodeal dorsum. Pronotum with a pair of acute short spines. Mesonotum lacking spines or teeth but usually with three blunt small tubercles that are present on the posterior end and on the two sides, respectively. Propodeal spines in profile well developed, long, bent at about a right angle near the base. In dorsal view, propodeal spines somewhat laterally compressed; they are joined together at the base but subparallel along their length (Fig. 198B). Metapleural lobes small, triangular. Petiole node in profile nodiform with a long anterior peduncle; its anterodorsal angle is higher than the posterodorsal. Postpetiole in profile with a single curved anterior and dorsal surface, in dorsal view slightly broader than long and also broader than the petiole node. Dorsum of head entirely covered with regular coarse striations that consist of longitudinal rugae and a few rugae around the antennal fossae. Sides and dorsum of alitrunk sculptured with coarse circular striations evenly, but the center of

mesonotum with a few coarse longitudinal rugae. Sides of petiole and postpetiole usually with a few superficial rugae. Gaster smooth and shining. Dorsal surfaces of head, alitrunk, petiole, and postpetiole with some erect or suberect hairs. First gastral tergite with numerous recumbent hairs. A row of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous suberect short hairs. Color reddish-brown.

Queen. Unknown.

Male. One paratype male, collected in Mauritius by W. L. Brown, was originally mounted together with a worker on the same pin: TL 3.04, HL 0.58, HW 0.48, CI 83, SL 0.20, SI 42, HWE 0.76, EL 0.38, PW 0.73, AL 1.08, PPW 0.24, PPL 0.20, PPI 120 (n = 1).

Head, including the eyes, broader than long. Clypeus convex without a median longitudinal carina. Anterior clypeal margin transverse. Frontal carinae absent. Scapes only slightly longer than the first funicular segments but distinctly shorter than the rest of the funicular segments. On the mesoscutum, notauli distinct, showing a V shape; parapsidal furrows very superficial. Scuto-scutellar sulcus with six narrow ridges. Propodeum weakly tuberculate, lacking teeth or spines. Metapleural lobes triangular. Middle and hind tibiae without any spurs. Petiole node in profile with a fairly long anterior peduncle; anterior face of the node, together with the dorsal surface of the peduncle, forming a declivity. Postpetiole in profile low and rounded dorsally and in dorsal view broader than long. Dorsum of head smooth and shining, but frontal area with a median longitudinal carina. Pronotum and mesoscutum rather smooth and shining, except for those marked sutures, but mesoscutellum with some longitudinal and reticulate rugae. Petiole smooth and shining but with a longitudinal carina present on each side of the dorsal surface. Postpetiole and gaster smooth and shining. All dorsal surfaces with abundant erect or suberect hairs. Scapes and tibiae with numerous erect or suberect short hairs. Color reddish-brown; wings slightly smoky.

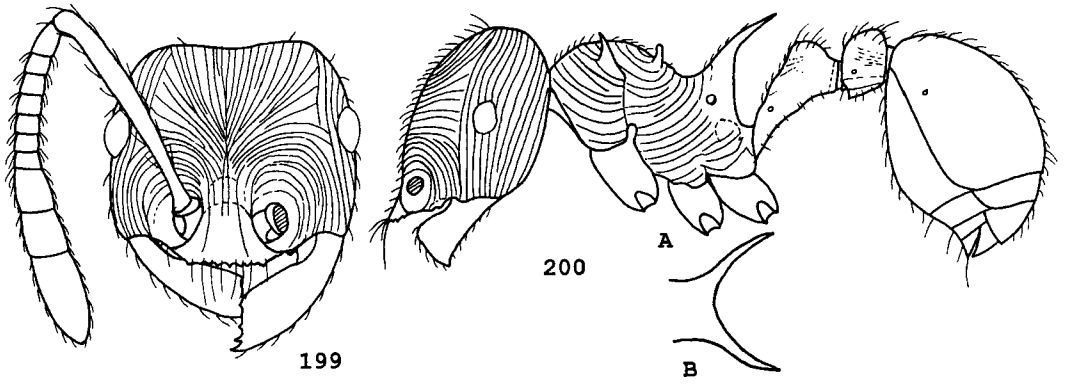
Comments. This new species occurs in Mauritius and Reunion Island. It is closely related to the Mauritian *P. bispinosus* and *P. trispinosus.* Characters separating *P. browni* from *P. bispinosus* and *P. trispinosus* are provided under *P. bispinosus* and *P. trispinosus,* respectively. The following additional characters should also be mentioned: In the workers of *P. browni,* the sculpture of the dorsal head consists mostly of longitudinal rugae, except for a few rugae around the antennal fossae; the two sides of the mesonotum each has a small tubercle. In *P. trispinosus,* many striations present on the dorsal head spread out from the center to the two sides; the mesonotum possesses a pair of strong digitlike prominences. In the type worker specimens of *P. browni,* the first gastral tergite possesses only recumbent hairs, and the occipital margin of the head in full-face view is deeply concave, which are different in *P. bispinosus* and *P. trispinosus.*

One non-type specimen shows the following variations: (1) The first gastral tergite possesses some erect or suberect hairs, (2) the occipital margin of the head in full-face view is feebly concave, (3) the sides of the mesonotum lack any tubercles, (4) the two small basal denticles on the masticatory margin of the mandible are indistinct, (5) the dorsum of the petiole peduncle in profile is obviously curved, and (6) the rugae are very superficial on the clypeus and on the sides of the petiole. This specimen has the following measurements: TL 3.24, HL 0.88, HW 0.84, CI 95, SL 0.80, SI 95, EL 0.14, PW 0.40, AL 0.77.

Holotype Worker. Mauritius: Le Pouce Mt., 700 to 800 m, native forest, 1.iv.1969 (W. L. Brown).

Paratypes. Mauritius: Le Pouce Mt., 700 to 800 m, native forest, 4.iii.1977 (W. L. Brown).

Additional Non-Type Worker Examined. Indian Ocean, Reunion I., Mare Longue,



Figures 199–200. *Pristomyrmex trispinosus* (Donisthorpe). 199: Worker head, full-face view; 200A: Worker, lateral view; 200B: Propodeal spines, dorsal view.

near St. Philippe, primitive forest, 580 m, 15.i.1975 (D. Schauenberg) (MCZC).

Ecological Information. This species occurs in native forest.

Pristomyrmex trispinosus (Donisthorpe) Figures 199–200

Dodous trispinosus Donisthorpe, 1946: 145. Syntype workers and males, Mauritius: Cocotte Mt., 27.xii.1941 and 6.ii.1943 (R. Mamet) (BMNH, LACM, MCZC) [examined].

Pristomyrmex trispinosus (Donisthorpe) Brown, 1971: 3.

Diagnosis (Worker). Pronotum, mesonotum, and propodeum each with a pair of strong prominences; dorsal surfaces of head and alitrunk with dense regular striations; propodeal spines in dorsal view divergent; HW and HL > 1.10.

Worker. TL 4.50–4.68, HL 1.16–1.22, HW 1.11–1.18, CI 91–97, SL 1.33–1.44, SI 117–122, EL 0.20–0.24, PW 0.66–0.70, AL 1.16–1.26, PPW 0.27–0.30, PPL 0.24–0.26, PPI 108–115 (n = 6).

Mandibles smooth and shining. Masticatory margin of mandible with four teeth arranged as the strongest apical + the second strongest preapical + a short diastema (sometimes, this diastema is not distinct) + a small denticle + a long diastema + a small basal denticle. Basal margin of mandible lacking a toothlike prominence. Anterior margin of the median portion of clypeus with at least five denticles, but sometimes two lateral denticles are fused into a broad lobe. Two ends of the anterior clypeal margin each with a developed prominence. Ventral surface of clypeus lacking toothlike prominences. Clypeus usually with a few longitudinal rugae. Palp formula 1,2. Frontal carinae absent. Antennal scrobes absent. Frontal lobes absent so that the antennal articulations are completely exposed. Antennal scapes long, when lying on the dorsal head surpassing the occipital margin by one-fourth to one-third of their length. Eyes usually containing 11 to 12 ommatidia in the longest row. Occipital margin in full-face view slightly concave. Alitrunk in profile with a convex pro-mesonotum and a deeply concave propodeal dorsum. Pronotum armed with a pair of moderately long acute spines. Mesonotum with a pair of thick, blunt, digitlike short prominences. Propodeum with a pair of developed long spines that, in dorsal view, are joined together at the base but divergent along their length so that they form a fork (Fig. 200B). Metapleural lobes dentiform. Petiole node in profile nodiform with a long anterior peduncle. Postpetiole in profile rounded anterodorsally but usually with a distinct posterodorsal angle; in dorsal view, postpetiole slightly broader than long. Entire dorsum

of head with regular coarse striations: many striations spread out from the center to the two sides and to the occipital margin; some are around the antennal fossae, the rest are some longitudinal rugae present on the sides of the head. Sides and the dorsum of alitrunk with numerous evenly distributed, circular coarse striations. Center of mesonotum with a few coarse short rugae. Petiole and postpetiole rather smooth and shining, but sometimes their sides with a few superficial short rugae. Gaster unsculptured. All dorsal surfaces with numerous erect or suberect hairs. Scapes and tibiae with numerous erect or suberect short hairs. A row of forward-projecting hairs present near the anterior clypeal margin. Color yellow-brown, but sometimes reddish-brown.

Queen. Unknown.

Male. One syntype male (BMNH), together with a number of syntype workers, constitutes a series (see Donisthorpe, 1946): TL 4.46, HL 0.72, HW 0.70, CI 97, SL 0.20, SI 29, EL 0.22, PW 0.90, AL 1.42 [n = 1].

Head, including the eyes, broader than long. Clypeus somewhat transverse, convex in middle. On the mesoscutum, notauli indistinct. Scuto-scutellar sulcus wide, separated into small cells by narrow ridges. Propodeum weakly tuberculate, lacking teeth or spines. Metapleural lobes subtriangular. Petiole node in profile low with a fairly long anterior peduncle. Postpetiole in profile rounded dorsally. Dorsum of head smooth and shining. Mesoscutum smooth and shining, but mesoscutellum with some rugae and a few foveolate punctures. Petiole node rather smooth. Postpetiole and gaster unsculptured, smooth, and shining. All dorsal surfaces with abundant erect or suberect long hairs. Scapes and tibiae with numerous erect or suberect short hairs. Color reddish-brown; wings somewhat dusky.

Comments. Pristomyrmex trispinosus is known only from Mauritius. It differs from *P. bispinosus* in the workers in having regular coarse striations on the entire dorsal surfaces of the head and the alitrunk and a pair of strong, digitlike prominences on the mesonotum. The workers of *P. trispinosus* and *P. bispinosus* are separable from those of *P. browni* by the following characters:

P. trispinosus and ***P. bispinosus***

Propodeal spines in dorsal view divergent, not laterally compressed; in profile rather straight

A relatively short diastema present between the preapical and the third tooth on the masticatory margin of the mandible

Larger species with HW > 1.08, HL > 1.14, SL > 1.32, PW > 0.68, TL > 4.36

P. browni

Propodeal spines in dorsal view subparallel, somewhat laterally compressed; in profile, bent at about a right-angle near the base

A relatively long diastema present between the preapical and the third tooth on the masticatory margin of the mandible

Smaller species with HW 0.82–0.90, HL 0.88–1.01, SL 0.80–0.97, PW 0.40–0.50, TL 3.24–3.78

Material Examined (MCZC). Mauritius: Cocotte Mt. (R. Mamet).

Ecological Information. A nest of *P. trispinosus* was found under a flat stone, and about 30 to 40 workers, two males, larvae, and pupae were collected; this species, when disturbed, simulates death (Donisthorpe, 1946).

THE *LEVIGATUS* GROUP

Worker. This group shows the following combination of characters:

(1) Usually small-sized species: HW: 0.60–0.96 in 11 species, 0.98–1.26 in one species (*P. lucidus*). HL: 0.60–0.90 in 11 species, 0.92–1.16 in *P. lucidus*. TL: 2.20–3.49 in 11 species, 3.71–4.84 in *P. lucidus*.

(2) Masticatory margin of mandible with four teeth arranged as the strongest apical + the second strongest preapical +

the smallest third + an acute basal tooth that is larger than the third tooth but smaller than the apical and preapical teeth; masticatory margin lacking a distinct diastema.

(3) A tooth that is short and broad or prominent, present about midway on the basal margin of mandible.

(4) Lateral portions of clypeus in front of antennal insertions reduced to a narrow margin.

(5) Lamella that encircles the base of antennal scape entire.

(6) Anterior clypeal margin with at most three denticles (i.e., a median denticle and one on each side), but sometimes the median tooth is indistinct so that only two denticles are seen on the margin.

(7) Ventral surface of clypeus smooth or bearing a weak transverse ruga but lacking toothlike prominences.

(8) Palp formula 1,3 in 10 species examined.

(9) Frontal carinae extending to the level of the posterior margins of eyes.

(10) Well-developed scrobes absent.

(11) Dorsum of alitrunk in profile more or less arched, in dorsal view without any sutures.

(12) Pronotum usually unarmed but with a pair of small teeth in one species (*P. minusculus*).

(13) Petiole node in profile high, higher than the length of the node, usually with a distinct anterior face, but in *P. inermis*, the anterior face of the petiole node is inseparable from the dorsal surface of the peduncle.

(14) Dorsal surfaces of head and alitrunk smooth or with scattered foveolate punctures or with foveolate-reticulate sculpture.

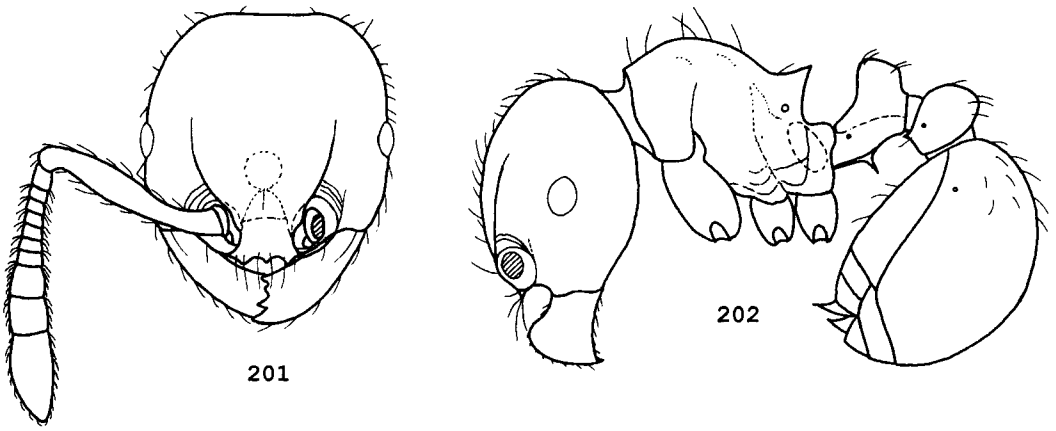
This is a monophyletic group, containing 12 species. They are endemic in the Oriental region, except for one species (*P. minusculus*) entering in North Queensland, Australia. Further, most of the species of this group occur in Papua New Guinea and some nearby islands.

Obviously, this group, together with the *profundus* group, constitutes a monophyletic lineage because the workers and queens of the two groups possess a synapomorphy, that is, the masticatory margin of the mandible with four teeth (the strongest apical + the second strongest preapical + the smallest third + an acute basal tooth) but lacking a diastema. The workers of the group are easily distinguished from those of the *profundus* group by lacking well-developed antennal scrobes and possessing (1) two to three teeth on the anterior clypeal margin, (2) a more or less arched dorsum of the alitrunk, and (3) a tooth present about midway on the basal margin of the mandible but not adjacent to the basal tooth of the masticatory margin.

The dentition of the masticatory margin of the mandible in the workers and queens of the *levigatus* group is a critical character separating the *levigatus* group from other five (i.e., *cribrarius, punctatus, quadridens, trispinosus,* and *umbripennis*) groups.

In the workers and queens of the *levigatus* group, foveolate punctures show continuous variation on the dorsum of the head between the frontal carinae. I treat this case as follows: (1) *P. levigatus* almost completely lacks distinct foveolate punctures on the dorsum of the head between the frontal carinae; (2) *P. simplex* assembles those populations with some scattered foveolate punctures, but spaces between foveolae are usually smooth; and (3) *P. coggii* shows foveolate-reticulate sculpture; some populations, only with foveolate-reticulate sculpture behind the eyes, are considered intermediate forms and also grouped into *P. coggii*. In fact, this similar continuous variation also occurs in the other two (i.e., *quadridens* and *umbripennis*) groups.

An ergatoid queen caste has been found in *P. mandibularis* of the group. This caste is also present in the *punctatus* and *quadridens* groups. Pronotal armaments, widely occurring in the *cribrarius, quadridens,* and *trispinosus* groups, appear in the



Figures 201–202. *Pristomyrmex acerosus* **sp. n.** 201: Worker head, full-face view; 202: Worker, lateral view.

workers of one species (*P. minusculus*) of the *levigatus* group. These facts indicate that ergatoid queens and pronotal armaments have arisen several times in *Pristomyrmex*, respectively.

Pristomyrmex acerosus sp. n.
Figures 201–202

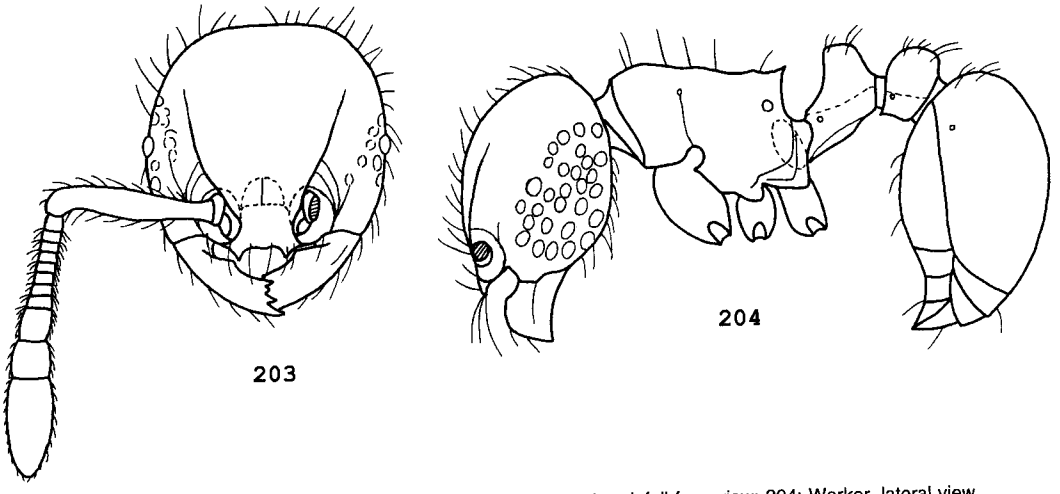
Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; subpetiole with a pinlike long process.

Holotype Worker (BMHH). TL 2.80, HL 0.76, HW 0.75, CI 99, SL 0.66, SI 88, EL 0.12, PW 0.48, AL 0.76, PPW 0.22, PPL 0.17, PPI 129.

Mandibles smooth and shining. A broad-based short tooth present about midway on the basal margin of the mandible. Clypeus depressed, unsculptured, its anterior margin with three denticles: a median tooth and one on each side. Frontal carinae just extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes weakly expanded basally. Eyes moderately sized. Occipital margin feebly concave in full-face view. Dorsum of alitrunk in profile convex. Pronotum unarmed. Propodeum with a pair of subtriangular short spines. Metapleural lobes rounded. Petiole node in profile high, with the anterodorsal angle higher than the posterodorsal, its anterior face subparallel to the posterior one, anterior peduncle of the node about as long as the node. Subpetiole with a semitranslucent pinlike long process. Postpetiole with a rounded dorsum. In dorsal view, petiole node subrounded; postpetiole broader than long, somewhat transrectangular. Dorsal surfaces of head and alitrunk smooth and shining, except for some small, shallow hair pits. Petiole, postpetiole, and gaster unsculptured, smooth, and shining. Dorsal surface of head with numerous erect to suberect hairs. Dorsum of alitrunk with sparse hairs. Two pairs of hairs present on the dorsum of petiole node. A few on the dorsum of postpetiole and on the first gastral tergite, respectively. Three pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some suberect short hairs. Color lightly yellow-brown.

Queen and Male. Unknown.

Comments and Discussion. This is the only species in the genus that has so far been found to have a semitranslucent, pinlike, long process on the ventral surface of the petiole. However, further collecting is required. If this long process is present in other specimens, this holotype represents a good species; otherwise, this holotype



Figures 203–204. *Pristomyrmex boltoni* **sp. n.** 203: Worker head, full-face view; 204: Worker, lateral view.

would be an aberrant specimen, and *P. acerosus* would become a junior synonym of *P. levigatus*.

Holotype Worker. New Hebrides: Malekoula I. (N), Vao Isl, 0 to 20 m, 7.ix.1979 (W.C. Gagne, G. M. Nishida, and G. A. Samuelson).

Ecological Information. Unknown.

Pristomyrmex boltoni sp. n.

Figures 203–204

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; eyes very small, with two to three ommatidia in the longest row; dorsal surfaces of head between frontal carinae and alitrunk smooth and shining.

Holotype Worker (LAMN). TL 2.48, HL 0.66, HW 0.66, CI 100, SL 0.52, SI 79, EL 0.08, PW 0.42, AL 0.62, PPW 0.18, PPL 0.16, PPI 113. Paratypes, two workers (LAMN, MCZC).

Worker. TL 2.40, 2.40; HL 0.65, 0.66; HW 0.66, 0.66; CI 100, 102; SL 0.55, 0.55; SI 83, 83; EL 0.08, 0.08; PW 0.44, 0.44; AL 0.60, 0.61; PPW 0.18, 0.18; PPL 0.16, 0.16; PPI 113, 113 (n = 2).

Mandibles smooth and shining but with few longitudinal rugae in the paratypes. A broad-based short tooth present about midway on the basal margin of the mandible. Frontal area concave with a median carina. Clypeus flat, unsculptured, smooth, and shining, its anterior margin with two lateral teeth, but in the two paratypes, an additional weak median tooth present. Frontal carinae distinct, extending to the level of the posterior margins of eyes. Scrobal impressions shallow, present lateral to the frontal carinae in full-face view. Frontal lobes weak so that the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the head, close to the occipital margin. Eyes very small, with two to three ommatidia in the longest row. Pronotum unarmed. Propodeum with a pair of triangular teeth. Metapleural lobes rounded. Petiole node in profile high with the anterodorsal angle higher than the posterodorsal, its anterior peduncle about as long as the node. Postpetiole in profile higher than long with a rounded dorsum. In dorsal view, petiole node subrounded, about as broad as long; postpetiole broader than long. Dorsum of head between the frontal carinae smooth and shining but with some foveolate punctures present around the eyes. Dorsum of

alitrunk smooth and shining. Petiole and postpetiole smooth and shining. Gaster unsculptured. Dorsal surfaces of head and alitrunk with numerous erect or suberect hairs. Two pairs of hairs present on the dorsum of petiole node, three pairs on the dorsum of postpetiole, and a few on the base of the first gastral tergite. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect or suberect short hairs. Color reddish-brown.

Queen and Male. Unknown.

Comments. Pristomyrmex boltoni is a sibling species of *P. longus* and *P. coggii*. The three species are all from New Guinea. Their workers possess very small eyes. *Pristomyrmex boltoni* differs from *P. longus* and *P. coggii* as follows: The dorsum of the petiole node in dorsal view is slightly broader than long or about as broad as long in the workers of *P. boltoni*, but long-oval and distinctly longer than broad in *P. longus*. The dorsal surfaces of the head between the frontal carinae and the alitrunk are smooth in the workers of *P. boltoni* but are covered with numerous foveolate punctures in *P. coggii*.

The workers of *P. boltoni* are also similar in appearance to those of *P. levigatus*, but they can be separated by the following characters:

P. boltoni

Eyes smaller, with the maximum diameter 0.08, containing two to three ommatidia in the longest row

P. levigatus

Eyes larger, with the maximum diameter 0.12 to 0.16 (rarely 0.10), containing five to seven ommatidia in the longest row

Holotype Worker. New Guinea: Gulf Prov., Ivimka Camp, Lakekamu Basin, 7.73°S, 146.76°E, 120 m, #96-235, lowland wet forest, ex sifted leaf litter, 28.x.1996 (R. R. Snelling).

Paratypes. Two workers, New Guinea: Gulf Prov., Ivimka Camp, Lakekamu Basin, 7.7°S, 146.8°E, 140 m elevation, #96-280, lowland wet forest, ex sifted leaf litter, 6.xi.1996 (R. R. Snelling).

A non-type specimen (ANIC), collected in New Guinea (Brown R., lowland RF, under log) by B. B. Lowery, has the following measurements: HW 0.66, HL 0.66, SL 0.56, EL 0.08, PW 0.44, AL 0.60.

Ecological Information. This species occurs in lowland forest and has been collected in litter samples.

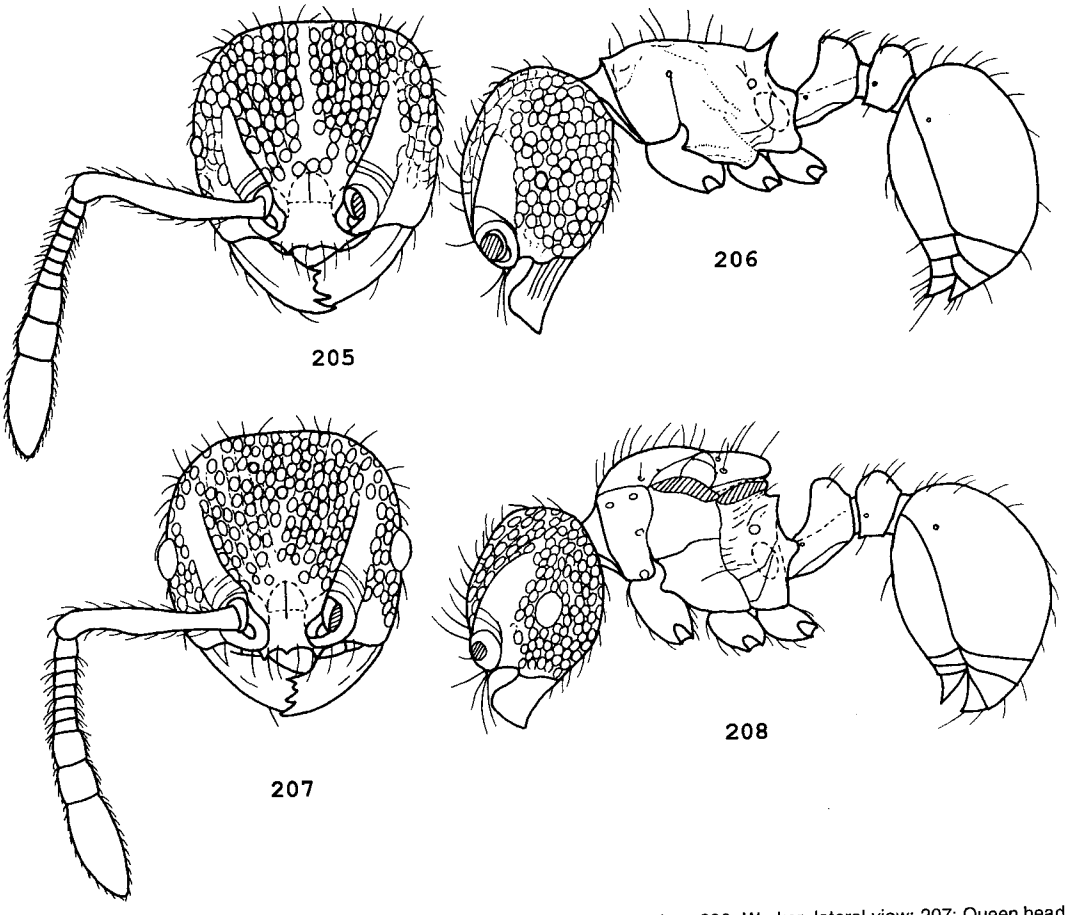
Pristomyrmex coggii Emery
Figures 205–208

Pristomyrmex coggii Emery, 1897: 584. Lectotype worker, New Guinea: Montes Hansemanni et Berlinhafen (Biró) (MCSN), here designated, [examined].

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; eyes with two to four ommatidia in the longest row; dorsal surface of head, except for the scrobal areas, with foveolate-reticulate sculpture; dorsum of petiole node in dorsal view about as long as broad or slightly broader than long; first gastral tergite with only a few hairs.

Worker. TL 2.20–2.86, HL 0.60–0.74, HW 0.60–0.76, CI 98–104, SL 0.48–0.64, SI 74–86, EL 0.05–0.09, PW 0.40–0.48, AL 0.60–0.77, PPW 0.16–0.20, PPL 0.12–0.17, PPI 118–133 (n = 20).

Mandibles usually smooth and shining but sometimes with a few superficial longitudinal rugae. A broad and short or strongly prominent tooth present about midway on the basal margin of mandible. Clypeus flat, its anterior margin sometimes with three denticles: a median denticle and one on each side, but sometimes the median denticle absent or weak so that only two teeth are present there. Frontal area concave, with a median carina that usually extends to the clypeus. Ventral center of clypeus lacking any rugae or prominences. Palp formula 1,3. Frontal carinae distinct, extending to the level of the posterior margins of eyes. Scrobal impressions smooth and shallow, present lateral



Figures 205–208. *Pristomyrmex coggii* Emery. 205: Worker head, full-face view; 206: Worker, lateral view; 207: Queen head, full-face view; 208: Queen, lateral view.

to the frontal carinae. Frontal lobes weakly expanded so that the antennal articulations are almost completely exposed. Eyes small, usually with two to three, rarely four, ommatidia in the longest row. Occipital margin straight or feebly concave in full-face view. Pronotum unarmed. Propodeum with a pair of triangular short spines. Metapleural lobes rounded. Petiole node in profile high, with the anterodorsal angle higher than the posterodorsal, its anterior peduncle about as long as the node. In dorsal view, dorsum of petiole node subrounded, about as long as broad, or transoval, slightly broader than long. Subpetiole with a narrow, long, semitranslucent lamella. Postpetiole in profile rounded dorsally, in dorsal view somewhat transverse-rectangular and broader than long. Dorsum of head, except for the scrobal areas, with dense foveolate punctures that form foveolate-reticulate sculpture; sometimes the punctures are almost aligned so that it seems that the several longitudinal rugae appear between the frontal carinae. Dorsum of alitrunk with sparse foveolate punctures. Petiole, postpetiole, and gaster unsculptured, smooth, and shining. Dorsal surfaces of head and alitrunk with numerous erect to suberect hairs. Dorsal surfaces of petiole node and postpetiole usually with two pairs of hairs, respectively. A few

hairs present on the base of the first gastral tergite. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect to suberect short hairs. Color reddish-brown.

Queen. TL 2.94–3.16, HL 0.72–0.78, HW 0.72–0.82, CI 100–105, SL 0.56–0.66, SI 77–83, EL 0.15–0.17, PW 0.55–0.64, AL 0.78–0.96, PPW 0.21–0.24, PPL 0.17–0.18, PPI 122–133 (n = 3).

Generally similar to worker, except for normal caste differences. In addition, foveolate punctures shallow on the mesonotum, propodeal armaments slightly shorter than those in conspecific worker.

Male. Unknown.

Comments and Discussion. Pristomyrmex coggii is closely related to *P. boltoni* and *P. longus.* The three species occur in New Guinea. Characters separating *P. coggii* from *P. boltoni* are provided under the latter name. *Pristomyrmex coggii* differs from *P. longus* because the dorsum of the petiole node in dorsal view is about as long as broad or broader than long in the workers of *P. coggii* but longer than broad in *P. longus.*

Pristomyrmex coggii differs from *P. obesus* of Solomon Islands as follows: The workers of *P. coggii* possess only a few hairs on the first gastral tergite and have smaller eyes containing two to three, rarely four, ommatidia in the longest row. But in the workers of *P. obesus,* the entire first gastral tergite is evenly covered with erect or suberect hairs, and the eyes contain five to seven (rarely four) ommatidia in the longest row. *Pristomyrmex coggii* differ from *P. simplex* of New Guinea and the Philippines because the dorsum of the head between the frontal carinae bears foveolate-reticulate sculpture in the workers of *P. coggii* but only scattered foveolate punctures in *P. simplex;* in addition, the eyes usually contain five ommatidia in the longest row in the workers of *P. simplex* but usually two to three in *P. coggii.*

It must be pointed out that the material I have examined may resolve into two species with further study. Additional collecting will help clarify the situation.

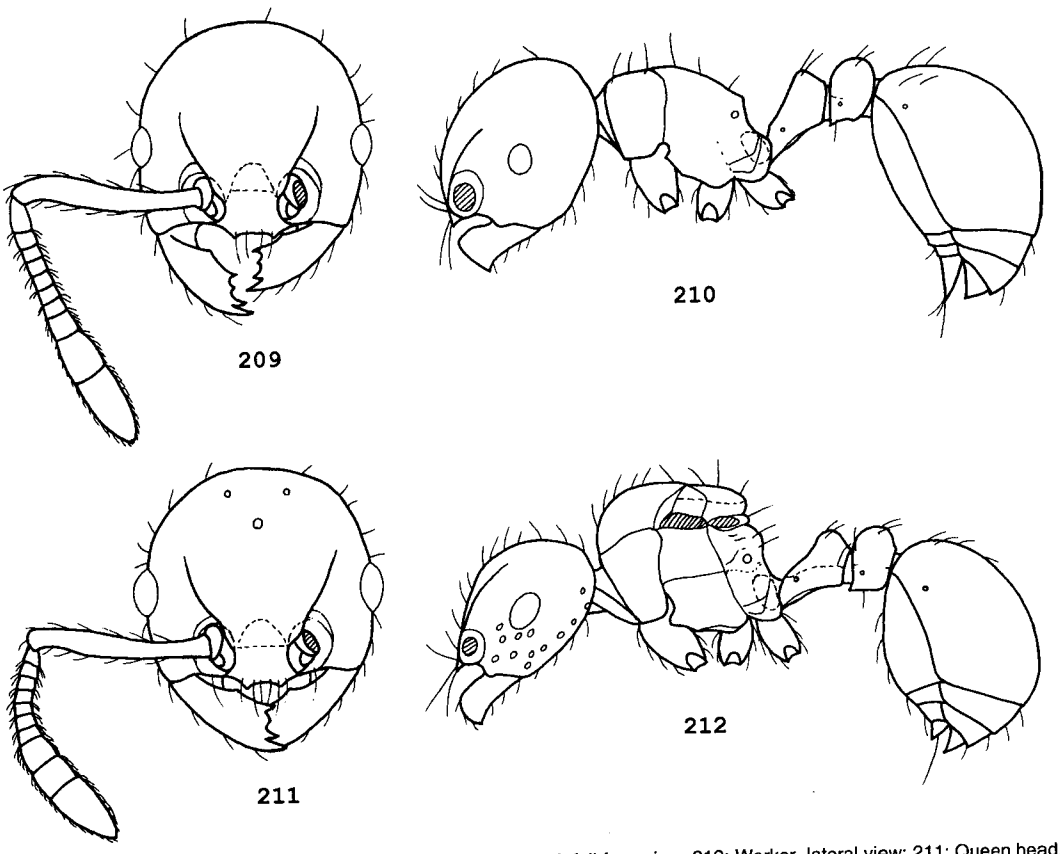
Material Examined (MCZC, ANIC, LAMN, BMNH, NHMV). Papua New Guinea: Gulf Prov., Ivimka Camp, Lakekamu Basin, lowland wet forest, #96-291 (7.73°S, 146.76°E, 120 m, ex sifted leaf litter), #96-350 (7.7°S, 146.8°E, 400 m elevation, sifted leaf litter and debris from rotten log) (R. R. Snelling); W. Highlands, Baiyer R., 4,000 ft (S. Peck); Rinona (R. Vane-Wright); New Guinea (Biró); Nadzab, dry evergreen forest (E. O. Wilson); Huon Pen., lower Busu R., lowland rainforest (E. O. Wilson); Wau, Kilolo Creek (J. Balogh); Lae, rainforest, leaf mold (T. E. Woodward); Lae, Busu R., lowland rainforest, in rotten wood on ground (B. B. Lowery); NW Lae, "Timber Track" ca. 16 km, rainforest, ca. 220 m, berlesate (R. W. Taylor); near Popondetta, <50 m (R. W. Taylor); 8 km S of Kokoda, 800 m, rainforest (R. W. Taylor).

Ecological Information. This species occurs in rainforest and has been collected in litter samples and in rotten wood on the ground.

Note: I have examined additional 25 specimens, including 19 workers and 6 queens. In these workers, the eyes are slightly larger than those in *P. coggii;* they contain four to five ommatidia in the longest row. Further collecting and studying are needed.

These 25 specimens have the following measurements: Worker: TL 2.76–3.00, HL 0.73–0.80, HW 0.73–0.82, CI 100–106, SL 0.58–0.64, SI 74–82, EL 0.09–0.10, PW 0.48–0.52, AL 0.68–0.82 (n = 19). Queen: TL 2.92–3.34, HL 0.72–0.80, HW 0.72–0.82, CI 100–103, SL 0.56–0.62, SI 73–82, EL 0.15–0.17, PW 0.55–0.62, AL 0.80–0.92 (n = 6).

Collecting Data for the 25 Specimens (MCZC, ANIC, BMNH). New Guinea: Morobe Dist., Bulolo (B. B. Lowery); Bulolo, rainforest, 3,500 ft (B. B. Lowery); NE New Guinea, 6 km NE of Wau, Bulolo R. valley, rainforest, 1,100 m, berlesate, leaf mold (R. W. Taylor); Wau, Bishop Mu-



Figures 209–212. *Pristomyrmex inermis* **sp. n.** 209: Worker head, full-face view; 210: Worker, lateral view; 211: Queen head, full-face view; 212: Queen, lateral view.

seum Station, 1,200 m, rainforest, rotten log (R. W. Taylor); Wau, 4,000 ft, forest litter (S. Peck); N. Wau, on Bulolo Rd., 650 m (S. Peck); Wau, Kunai Creek, rainforest, ca. 1,400 m, berlesate (R. W. Taylor); Tapini, 1,000 to 1,200 m, rainforest, rotten log (R. W. Taylor).

Pristomyrmex inermis sp. n.
Figures 209–212

Diagnosis (Worker). Propodeum lacking a pair of teeth or spines.

Holotype Worker (LAMN). TL 2.86, HL 0.72, HW 0.70, CI 97, SL 0.64, SI 91, EL 0.14, PW 0.50, AL 0.72. Paratypes, 17 workers and three queens (ANIC, LACM, MCZC, BMNH).

Worker. TL 2.65–3.36, HL 0.70–0.84, HW 0.69–0.84, CI 96–103, SL 0.62–0.76, SI 83–92, EL 0.12–0.16, PW 0.46–0.58, AL 0.63–0.80, PPW 0.23–0.27, PPL 0.17–0.21, PPI 128–142 (n = 18).

Mandibles smooth and shining but sometimes with a few superficial small punctures. Masticatory margin of mandible with four teeth arranged as the strongest apical + the second strongest preapical + the smallest third + a basal tooth; a distinct diastema lacking. A broad-based triangular short tooth present about midway on the basal margin of mandible. Frontal area concave. Clypeus flat, smooth, and shining, its anterior margin with three denticles: a weak median tooth

and one on each side, but sometimes the median tooth indistinct or lacking so that only two teeth are present there. Ventral surface of clypeus lacking any distinct rugae or teeth. Palp formula 1,3. Frontal carinae just extending to the level of the posterior margins of the eyes. Antennal scrobes absent. Frontal lobes very weak. Eyes moderately sized. Occipital margin feebly convex in full face view. Dorsum of alitrunk in profile arched. Pronotum unarmed. Propodeum lacking a pair of teeth or spines but usually with a pair of blunt small tubercles. Metapleural lobes small, usually bluntly rounded, but sometimes toothlike. Petiole node in profile wedge-shaped, usually with a blunt triangular apex; sometimes the apex somewhat bluntly rounded. Subpetiole with a narrow rim. Postpetiole in profile slightly higher than the petiole node, with a convex dorsum. In dorsal view, petiole node and postpetiole broader than long. Cephalic dorsum between the frontal carinae highly polished but usually with a few foveolate punctures bordering frontal carinae. A few foveolate punctures present on the genae and many on the ventral surface of the head. Dorsum of alitrunk, petiole, and postpetiole smooth and shining. Gaster unsculptured. Dorsal surfaces of head, alitrunk, petiole, and postpetiole with sparse erect to suberect hairs. A few hairs present on the first gastral tergite. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some suberect hairs. Color varying from light yellow-brown to blackish-brown, gaster usually darker than alitrunk; sometimes alitrunk lighter than head and gaster so that the specimens show a bicolored form.

Queen. TL 3.23–3.52, HL 0.80–0.81, HW 0.76–0.85, CI 95–106, SL 0.66–0.74, SI 87–92, EL 0.18–0.20, PW 0.64–0.72, AL 0.86–0.94, PPW 0.26–0.30, PPL 0.18–0.24, PPI 125–144 (n = 3).

General shape as in Figures 211–212; except for normal caste differences, other characters similar to worker.

Male. Unknown.

Comments. This species can be easily recognized because it lacks a pair of propodeal teeth or spines in the workers, which is unique within *Pristomyrmex.* In addition, in the *levigatus* group, *P. inermis* has a characteristic shape of the petiole node in the workers and queens: wedge-like in profile view with an apex. This character has originated independently at least twice in the genus because it is also seen in *P. fossulatus* and *P. punctatus* of the *punctatus* group.

Holotype Worker. Indonesia: Irian Jaya, PT. Freeport Concession, Siewa Camp., 03.04°S 136.38°E, 200 ft, lowland secondary rainforest, #98-71 (stray foragers in leaf litter), 12.iv.1998 (R. R. Snelling).

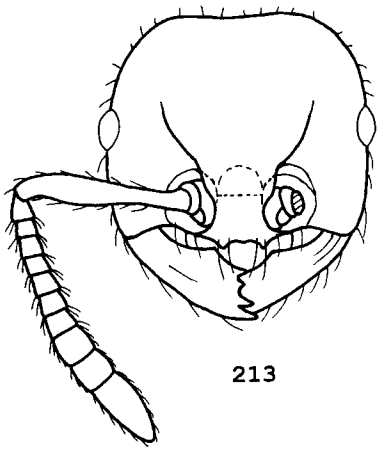
Paratypes. One queen with same data as holotype; one queen with same data as holotype but date 7.iv.1998, and number #98-48 (stray on log); two workers with same data as holotype but date 7.iv.1998 and number #98-44 (ex sifted leaf litter); three workers, Papua New Guinea: Bulolo, 2,300 ft, rainforest, 19.xii.1967 (B. B. Lowery); three workers, Papua New Guinea: Bulolo, 2,300 ft, rainforest, 27.xii.1967 (B. B. Lowery); three workers, Papua New Guinea: Bulolo, 2,600 ft, rainforest, 25.xii.1970 (B. B. Lowery); one worker, Papua New Guinea: Bulolo, 2,800 ft, rainforest, 1.i.1971 (B. B. Lowery); three workers, Papua New Guinea: Bulolo, 3,000 ft, rainforest, 5.i.1971 (B. B. Lowery); one queen, New Guinea: Bulolo (Morobe Dist), 8.i.1971 (B. B. Lowery); two workers, New Guinea: near Vanimo, rainforest, ca. 50 m, ex rotting log, 10–11.vii.1972 (R.W.T.).

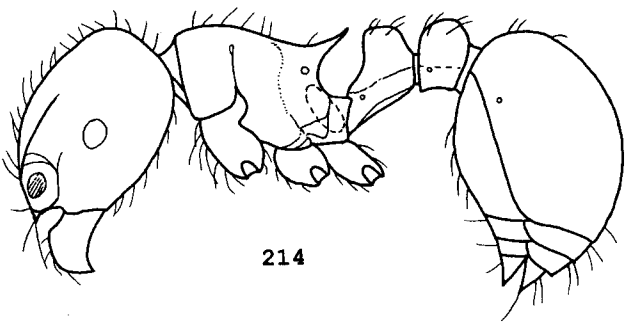
Ecological Information. This species occurs in rainforest and has been collected in litter samples and on logs.

***Pristomyrmex largus* sp. n.**

Figures 213–214

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest;





Figures 213–214. *Pristomyrmex largus* **sp. n.** 213: Worker head, full-face view; 214: Worker, lateral view.

HW and HL ≥ 0.90; petiole node in profile with the anterodorsal angle higher than the posterodorsal.

Holotype Worker (ANIC). TL 3.38, HL 0.90, HW 0.96, CI 107, SL 0.78, SI 81, EL 0.14, PW 0.61, AL 0.92, PPW 0.24, PPL 0.20, PPI 120. Paratypes, 34 workers and one queen (MCZC, R. Clouse's personal collection).

Worker. TL 3.40, HL 0.90, HW 0.90, CI 100, SL 0.81, SI 90, EL 0.14, PW 0.60, AL 0.90, PPW 0.25, PPL 0.20, PPI 125 (*n* = 1).

Mandibles smooth and shining. A broad-based triangular short tooth present about midway on the basal margin of the mandible. Clypeus flat, unsculptured, smooth, and shining; its anterior margin with three denticles: a weak median tooth and one prominent lateral tooth on each side, sometimes the median tooth indistinct. Ventral surface of clypeus unsculptured and smooth. Palp formula 1,3. Frontal carinae just extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes weakly expanded. Eyes moderately sized. Occipital margin straight or feebly concave in full-face view. Pronotum unarmed. Propodeum with a pair of long spines that are about 1.5 times the distance between their bases. Metapleural lobes subtriangular. Dorsum of alitrunk in dorsal view rather flat. Petiole node in profile high, with the anterodorsal angle higher than the posterodorsal, its anterior face sometimes subparallel to the posterior one; anterior peduncle of the node about as long as the node, and subpetiole with a narrow semitranslucent rim. In dorsal view, petiole node transoval. Postpetiole in profile higher than long, rounded dorsally, in dorsal view broader than long and somewhat transrectangular. Both dorsal and ventral surfaces of head smooth and shining but with few small, shallow punctures present on the genae. Dorsum of alitrunk smooth and shining. Petiole and postpetiole smooth and shining, except for a lateral longitudinal carina on each side that separates the tergite from the sternite. Gaster unsculptured. Dorsal surfaces of head and alitrunk with some erect to suberect short hairs. Petiole node and postpetiole each with two pairs of hairs as illustrated in Figure 214. A few hairs present near the base of the first gastral tergite. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with abundant erect to suberect short hairs. Color yellow-brown to reddish-brown.

Queen. TL 3.94, HL 0.94, HW 0.95, CI 101, SL 0.80, SI 84, EL 0.22, PW 0.74,

AL 1.01, PPW 0.30, PPL 0.23, PPI 130 (n = 1).

Generally similar to worker, except for normal caste differences; in addition, propodeum with a pair of short spines, shorter than those in the conspecific worker, first gaster tergite with numerous hairs.

Male. Unknown.

Comments. Pristomyrmex largus is the second largest species in the *levigatus* group after *P. lucidus. Pristomyrmex largus* must have evolved from the ancestor of *P. levigatus. Pristomyrmex largus* can be separated from *P. levigatus* by the following characters in the workers:

P. largus

Larger species with HW ≥ 0.90, and HL ≥ 0.90

Propodeal spines relatively long, longer than the distance between their bases

Ventral surface of head smooth, with only a few small hair pits

P. levigatus

Smaller species with HW < 0.80, and HL < 0.80

Propodeal armaments relatively short, shorter than or about as long as the distance between their bases

Ventral surface of head with numerous foveolate punctures

Holotype Worker. Ponape I., Mt. Tolenkiup; vi-ix.50 (P. A. Adams).

Paratypes. One worker, Micronesia: Pohnpei I., Hilltop campsite near Mt. Nanalaud, 400 m, on an old ivory nut, 3.v.1995 (Ron Clouse); 33 workers and one queen, Pohnpei I., Nahnal aud cave, around camp (#155–158, under dead leaves, on ground; #161, under rotting leaves; #167, under dead leaves; #178–180, leaves, under rotten), 24.iii.2000 (Ron Clouse).

Ecological Information. All paratypes of this species have been collected in high-elevation rainforest, under the rain-soaked leaf litter, and inside a rotten ivory nut on the forest floor (R. Clouse, personal communication).

Note: I do not illustrate the queen of this species because this caste, together with 33 workers, collected by Mr. Ronald Clouse, reached me after my manuscript was completed.

Pristomyrmex levigatus Emery
Figures 215–218, 277, 281

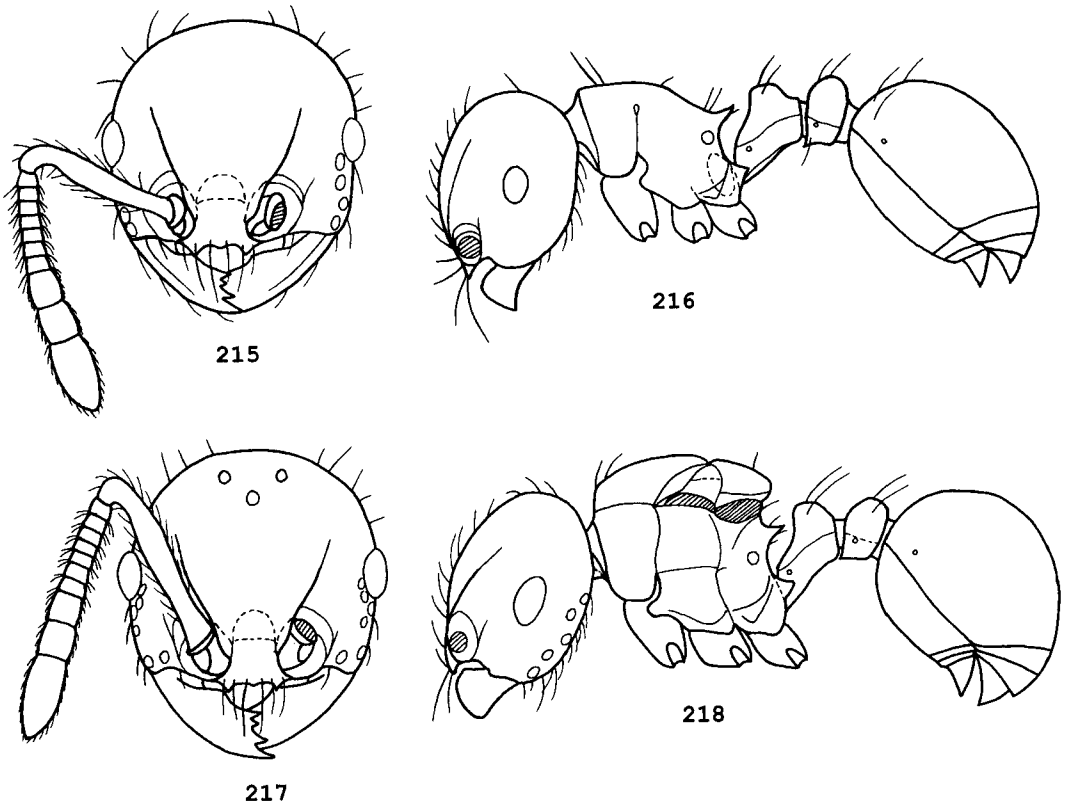
Pristomyrmex levigatus Emery, 1897: 583. Lectotype worker, New Guinea: near Friedrich-Wilhelmshafen et Berlinhafen (Biró) (MCSN), here designated, [examined].

Pristomyrmex mendanai Mann, 1919: 341. Two syntype workers, Solomon Is.: Santa Cruz Is., Graciosa Bay, 19.v.–24.xi.1916 (W. M. Mann) (MCZC, USNM) [examined]. **Syn. n.**

Note: The lectotype of *P. levigatus* shows some fine differences from the two syntypes of *P. mendanai.* In the former, the metapleural lobes are subtriangular; the dorsum of the alitrunk is rather flat, with two sides somewhat margined; the propodeum is armed with a pair of short spines that are not subtriangular but somewhat incurved at their apices. In the latter, the metapleural lobes are rounded; the dorsum of the alitrunk is convex, and its sides are not distinctly margined; the propodeal armaments are subtriangular, not distinctly incurved at their apices. However, the presence of some intermediate forms suggests that they belong to the same species for the present.

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; HW 0.62–0.78, HL 0.64–0.78; eyes with five to eight ommatidia in the longest row; pronotum unarmed; propodeum with a pair of teeth or short spines; petiole with a lateral longitudinal carina on each side; subpetiole lacking a pinlike long process; dorsal surfaces of head and alitrunk smooth and shining.

Worker. TL 2.36–2.96, HL 0.64–0.78, HW 0.62–0.78, CI 96–106, SL 0.50–0.65, SI 78–89, EL 0.12–0.16 (very rarely 0.10), PW 0.41–0.52, AL 0.54–0.75, PPW 0.20–0.22, PPL 0.14–0.18, PPI 122–143 (n = 30).



Figures 215–218. *Pristomyrmex levigatus* Emery. 215: Worker head, full-face view; 216: Worker, lateral view; 217: Queen head, full-face view; 218: Queen, lateral view.

Mandibles usually smooth and shining but with a few fine longitudinal rugae in some specimens. A broad-based triangular short tooth present about midway on the basal margin of the mandible. Frontal area concave, usually unsculptured, but sometimes with a weak median carina. Clypeus flat, unsculptured, smooth, and shining; its anterior margin with a median denticle and two lateral teeth, but sometimes the median tooth is weak or absent. Ventral surface of clypeus lacking any rugae or toothlike prominences. Palp formula 1,3. Frontal carinae distinct, extending to the level of the posterior margins of eyes. Scrobal impressions shallow, present lateral to the frontal carinae. Frontal lobes weak so that the antennal articulations are almost entirely exposed. Antennal scapes, when lying on the head, close to the occipital margin. Eyes moderately sized, with five to eight ommatidia in the longest row. Dorsum of alitrunk in dorsal view flat in the lectotype but convex in some specimens. Pronotum unarmed or at most with blunt tubercles, lacking teeth or spines. Propodeum with a pair of triangular teeth or short spines that are slender, slightly incurved at their apices in the lectotype. Metapleural lobes subtriangular or rounded. Petiole node in profile nodiform with the anterodorsal angle higher than the posterodorsal; its anterior peduncle about as long as the node. Subpetiole with a narrow long flange. In dorsal view, the dorsum of petiole node transoval and broader than long. Postpetiole in profile higher than long, with a rounded dorsum, in dorsal view

somewhat transverse-rectangular and broader than long. Dorsum of head smooth and shining but sometimes with a few foveolate punctures bordering the frontal carinae; sometimes a few foveolate punctures present on the genae and around the eyes. Dorsum of alitrunk unsculptured, smooth, and shining. Petiole and postpetiole smooth and shining, each with a longitudinal carina on each side that separates the tergite from the sternite. Gaster unsculptured. Dorsum of head with numerous erect to suberect hairs. Dorsum of alitrunk with some erect or suberect hairs. Dorsal surfaces of petiole node and postpetiole usually with one to two pairs and one to three pairs of hairs, respectively. A few hairs present at the base of the first gastral tergite. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with erect to suberect short hairs. Color golden-brown or reddish-brown.

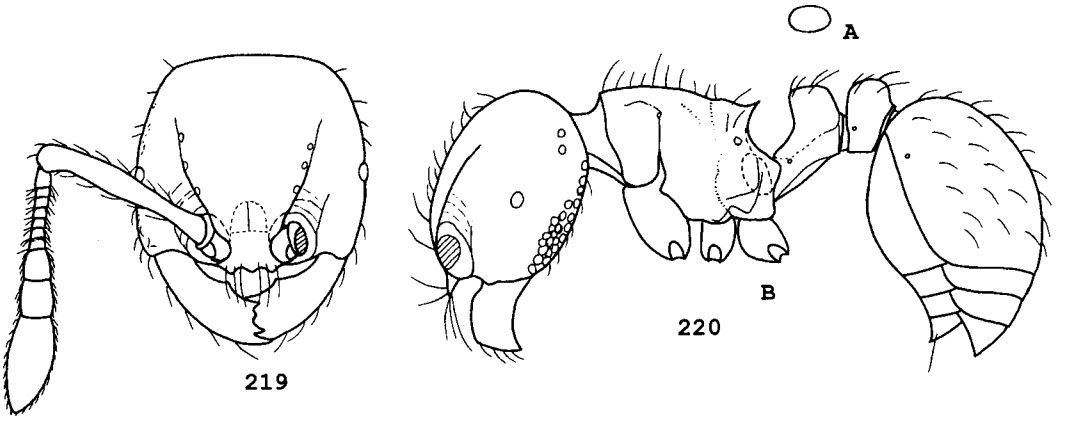
Queen. TL 2.92–3.34, HL 0.74–0.75, HW 0.76–0.81, CI 101–108, SL 0.60–0.65, SI 79–83, EL 0.18–0.19, PW 0.54–0.66, AL 0.80–0.92, PPW 0.23–0.26, PPL 0.18–0.20, PPI 128–133 (n = 5).

Generally similar to worker, except for normal caste differences. Propodeal armaments tuberculate or denticulate, slightly shorter than those in the conspecific worker.

Male (Figs. 277, 281). Two male specimens, together with 13 workers and two queens, collected in New Guinea (Nadzab, #1083) by E. O. Wilson, constitute a series; each of the two males was originally mounted together with a worker or with a worker and a queen on the same pin: TL 2.48, 2.54; HL 0.50, 0.51; HW 0.53, 0.53; CI 105, 106; SL 0.16, 0.18; SI 30, 34; HWE 0.63, 0.64; EL 0.23, 0.25; PW 0.60, 0.63; AL 0.82, 0.84; PPW 0.18, 0.19; PPL 0.15, 0.16; PPI 119, 120 (n = 2).

Head, including the eyes, broader than long. Clypeus lacking a median longitudinal carina; anterior clypeal margin rather straight. Frontal carinae reaching the level of the posterior margins of antennal insertions. Mesoscutum lacking distinct notauli and parapsidal furrows. Scuto-scutellar sulcus with nine narrow longitudinal ridges. Propodeum weakly tuberculate, lacking teeth or spines. Metapleural lobes with a blunt or somewhat rounded apex. Middle and hind tibiae without any spurs. Petiole node in profile low, nodiform, having an anterior face and a long anterior peduncle. Postpetiole in profile low and rounded dorsally, in dorsal view subrectangular and broader than long. Dorsum of head smooth and shining, but frontal area with a median longitudinal carina. Dorsal alitrunk generally smooth and shining, except for those marked sutures. Dorsal surfaces of petiole and postpetiole smooth and shining. Gaster unsculptured. All dorsal surfaces with abundant rather long hairs. Legs and scapes with numerous erect or suberect short hairs. Color blackish-brown. Wings infuscated.

Comments and Discussion. Pristomyrmex levigatus occurs in New Guinea, Nama Is., Solomon Is., New Georgia, and New Britain Is. It appears to be a basal species within the *levigatus* group. Many species, such as *P. acerosus, P. boltoni, P. inermis, P. largus, P. lucidus, P. mandibularis, P. minusculus, P. obesus,* and *P. simplex,* may have evolved from a *P. levigatus*–like ancestor. The workers of these species are separable from those of *P. levigatus* as follows: *P. levigatus* differs from both *P. simplex* and *P. obesus* by lacking foveolate punctures on the dorsal surfaces of the alitrunk and the head between the frontal carinae. In *P. levigatus,* the eyes are larger, usually containing five to eight ommatidia in the longest row but two to three in *P. boltoni. Pristomyrmex levigatus* is smaller (HW < 0.80, HL < 0.80) than *P. largus* and *P. lucidus* (HW > 0.90, HL > 0. 90). *Pristomyrmex minusculus* bears a pair of pronotal teeth that are not seen in *P. levigatus.* A pair of propodeal teeth or short spines are present in *P. levigatus,* but absent in *P. inermis. Pristomyrmex levigatus* possesses a longitudinal ruga on each side of the petiole node that is not seen in *P.*



Figures 219–220. *Pristomyrmex longus* **sp. n.** 219: Worker head, full-face view; 220A: Showing the dorsum of the petiole node of the worker, in dorsal view, is long-oval and longer than broad; 220B: Worker, lateral view.

mandibularis. Finally, the subpetiole of *P. levigatus* does not have a pinlike long process that is distinct in *P. acerosus*.

Material Examined (ANIC, BMNH, LAMN, MCZC). New Guinea: Nadzab, #1083, dry evergreen forest (E. O. Wilson); Gogol Val. ca. 24 km W. Madang, ca. 50 m, rainforest, rotten wood, ex small fragment (R. W. Taylor); Bulolo, rainforest, 2,300 ft (B. B. Lowery); Yawasora near Wewak, ca. 50 m, rainforest, berlesate (R. W. Taylor); Gulf Prov., Ivimka Camp, Lakekamu Basin, 7.73°S, 146.76°E, 110 m, #96-345 (R. R. Snelling); Port Moresby, Brown River (J. Baloph); N.D. Papua, Sangara (G. Baker); (P. M. Room). Nama Is. near Truk (R. W. L. Potts). Solomon Is.: New Georgia (E. S. Brown). New Britain Is. (L. Weatherill).

Ecological Information. This species occurs in rainforest and has been collected in a litter sample.

Pristomyrmex longus sp. n.
Figures 219–220

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; eyes small, with only two to three ommatidia in the longest row; dorsum of petiole node in dorsal view long-oval and longer than broad; first gastral tergite with numerous hairs.

Holotype Worker (MCZC). TL 2.51, HL 0.67, HW 0.66, CI 99, SL 0.55, SI 83, EL 0.07, PW 0.44, AL 0.66. Paratypes, 14 workers (MCZC, ANIC, BMNH).

Worker. TL 2.22–2.68, HL 0.63–0.70, HW 0.62–0.70, CI 95–100, SL 0.52–0.56, SI 80–87, EL 0.05–0.10, PW 0.40–0.46, AL 0.60–0.70, PPW 0.17–0.18, PPL 0.16–0.16, PPI 104–113 (n = 15).

Mandibles usually smooth and shining. A broad-based short tooth present about midway on the basal margin of the mandible. Clypeus flat, its anterior margin with a median tooth and two lateral teeth; sometimes the median tooth is weak. Frontal area concave, with a median carina that usually extends to the clypeus. Ventral surface of clypeus smooth, lacking any rugae or prominences. Palp formula 1,3. Frontal carinae distinct, extending to the level of the posterior margins of eyes. Scrobal impressions shallow, smooth, present lateral to the frontal carinae. Frontal lobes weakly expanded. Antennal scapes, when lying on the head, close to the occipital margin. Eyes very small, consisting of 4 to 10 ommatidia, with only two to three ommatidia in the longest row. Occipital margin straight or feebly concave in full-face view. Profile of alitrunk and ped-

icel segments as in Figure 220B. Pronotum unarmed. Propodeum with a pair of triangular teeth. Metapleural lobes rounded. Petiole node in profile high with the anterodorsal angle higher than the posterodorsal, its anterior face subparallel to the posterior one; anterior peduncle of the node about as long as or slightly shorter than the node; subpetiole with a narrow semitranslucent lamella. In dorsal view, dorsum of petiole node long-oval and distinctly longer than broad. Postpetiole in profile rounded dorsally, in dorsal view slightly broader than long or about as long as broad. Dorsum of head between the frontal carinae mostly smooth but usually with some sparse, small, and shallow punctures. Some foveolate punctures present on the genae and around the occipital corners of head. Dorsum of alitrunk, petiole, postpetiole, and gaster usually unsculptured, smooth, and shining. Dorsal surfaces of head, alitrunk, and gaster with numerous erect to suberect hairs. Two pairs of hairs usually present on the dorsal surfaces of petiole node and postpetiole, respectively, as illustrated in Figure 220B. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect to suberect short hairs. Color yellow-brown to reddish-brown.

Queen and Male. Unknown.

Comments. The workers of *P. longus* are quickly recognizable by the following: In the *levigatus* group, only three species, *P. boltoni, P. coggii,* and *P. longus,* possess small eyes. Only two species, *P. longus* and *P. obesus,* have numerous hairs evenly distributed on the entire first gastral tergite. But in only one species (*P. longus*) is the dorsum of the petiole node in dorsal view long-oval and longer than broad; in the other members of the *levigatus* group, the dorsum of petiole node is subrounded or transverse-oval (i.e., about as long as broad or broader than long).

Holotype Worker. New Guinea: Huon Pen., Lower Busu R., lowl. rainfor., 5.v.1955, #957 (E. O. Wilson).

Paratypes. Eight workers with same data as holotype; one worker, New Guinea: Huon Pen., Lower Busu R., lowland rainforest, 6.v.1955, #978 (E. O. Wilson); five workers, New Guinea: 13 km NW Lae, Bubia, lowland rainforest, 26.iii.1955, #688 (E. O. Wilson).

Ecological Information. This species has been collected in lowland rainforest.

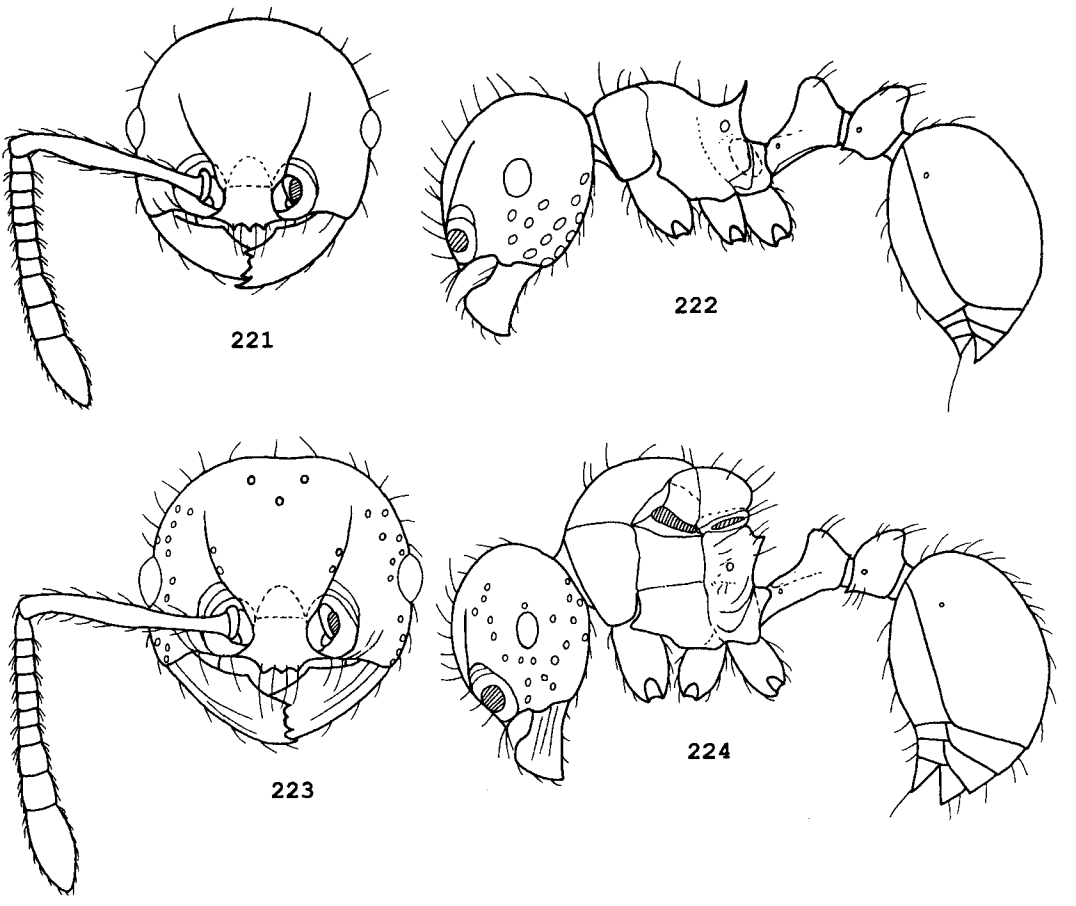
Pristomyrmex lucidus Emery
Figures 221–224

Pristomyrmex lucidus Emery, 1897: 584. Holotype worker, New Guinea: Berlinhafen (Biró) (MCSN) [examined].

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; HW 0.98–1.26, HL 0.92–1.16; postpetiole in dorsal view longer than broad or as long as broad, in profile with an arched anterior face and a steeply sloping posterior face; petiole node in profile with a single evenly rounded blunt apex.

Worker. TL 3.71–4.84, HL 0.92–1.16, HW 0.98–1.26, CI 104–111, SL 0.90–1.16, SI 89–98, EL 0.16–0.20, PW 0.62–0.79, AL 0.90–1.28, PPW 0.24–0.28, PPL 0.26–0.31, PPI 84–100 (n = 55).

Mandibles smooth and shining but sometimes with a few longitudinal rugae superficial or distinct. A broad-based short tooth present about midway on the basal margin of the mandible. Clypeus with a short median longitudinal carina that usually does not reach to the anterior clypeal margin; sometimes this carina indistinct; sometimes a few additional short rugae present. Anterior clypeal margin with a median tooth and two lateral teeth; sometimes the median tooth is smaller than the others. Ventral surface of clypeus lacking any rugae or teeth. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes slightly expanded basally. Eyes containing 7 to 10 ommatidia in the longest row. Profile of alitrunk and pedicel segments as in Figure 222. Pron-



Figures 221–224. *Pristomyrmex lucidus* Emery. 221: Worker head, full-face view; 222: Worker, lateral view; 223: Queen head, full-face view; 224: Queen, lateral view.

otum at most with a pair of blunt tubercles, lacking teeth or spines. Propodeum with a pair of armaments, varying from broadly based minute teeth to moderately long acute spines. Metapleural lobes triangular or each with a blunt-rounded apex. Petiole node in profile high, with a single evenly blunt-rounded apex and a long anterior peduncle. Postpetiole in profile high (slightly higher than petiole), with an arched anterior face and a steeply sloping posterior face, its apex pointing posterior-upwardly. In dorsal view, postpetiole broadening from front to back, mostly longer than broad, rarely about as long as broad. Cephalic dorsum between the frontal carinae highly polished but usually with a few foveolate punctures bordering the frontal carinae. Sometimes a few foveolate punctures present on the genae and many on the ventral surface of the head. Dorsum of alitrunk, petiole, and postpetiole unsculptured and highly polished. Gaster smooth and shining. Dorsal surfaces of head and alitrunk with sparse erect to suberect moderately long hairs. A pair of hairs present on the dorsum of petiole node and one to two pairs on the dorsum of postpetiole. First gastral tergite with a few hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous

suberect to erect short hairs. Body uniform yellow-brown or blackish-brown or bicolored (i.e., alitrunk and pedicel segments lighter than head and gaster).

Queen. TL 5.12, 5.22; HL 1.13, 1.14; HW 1.22, 1.27; CI 108, 111; SL 1.06, 1.13; SI 87, 89; EL 0.26, 0.28; PW 0.96, 1.00; AL 1.40, 1.42; PPW 0.31, 0.36; PPL 0.32, 0.38; PPI 95, 97 (n = 2).

Generally similar to worker, except for normal caste differences. In addition, propodeal armaments usually shorter than those in the conspecific worker; first gastral tergite sometimes with numerous erect or suberect hairs.

Male. Unknown.

Comments. The workers of *P. lucidus* can be easily recognized by the following characters: (1) The postpetiole, in profile view, shows an arched anterior face and a steeply sloping posterior face, with the apex pointing posterior-upwardly. This shape is unique in the *levigatus* group. Furthermore, the postpetiole in dorsal view is longer than or as long as broad. In the other 11 species of the group, the postpetiole, in dorsal view, is distinctly broader than long. (2) The petiole node in profile view bears a single evenly blunt-rounded apex that is not seen in the other 11 species of the *levigatus* group. (3) *P. lucidus* has the largest head width (HW) in the *levigatus* group: In the 55 specimens measured, HW is 1.00 to 1.26 but 0.98 in only one individual. In the other species of the *levigatus* group, HW is less than 0.90, except in one species, *P. largus,* in which, HW falls into the range 0.90 to 0.96.

Material Examined (ANIC, MCZC, LAMN, USNM, CASC, BMNH). Papua New Guinea: Tapini, 1,000 to 1,200 m, rainforest, acc. 2249 (rtw. wood fragment), acc. 2252 and 2262 (nest in soil under log) (R. W. Taylor); near Vanimo, rainforest, ca. 50 m (ex rotting log) (R. W. Taylor); Yawasora near Wewak, <50 m, rainforest, ex rotting wood piece (R. W. Taylor); 6 km NE of Wau, Bulolo R. Valley, rainforest 1,100 m, under bark of rotten log (R. W. Taylor); 8 km S of Kokoda, rainforest, 800 m, vial 4-36 (ground strays) and vial 37-191 (ex rotting wood piece) (R. W. Taylor); Wau, Bishop Museum Station, 1,200 m, ex soil under rotten branch (R. W. Taylor); 9 mi on Lae, side of Mumeng, 3,500 ft, rainforest (B. B. Lowery); Bulolo, 4,000 ft, rainforest (B. B. Lowery); Bulolo Gorge, 2,800 ft, rainforest (B. B. Lowery); along Kokoda Rd., 400 to 1,000 ft, rainforest (B. B. Lowery); 2 mi N Kokoda, ca. 1,000 ft, rainforest (B. B. Lowery); Wau Gorge, 3,000 ft, rainforest (B. B. Lowery); Wau, 4,000 ft, rainforest (B. B. Lowery); ca. 12 km SE Vanimo, 150 m Virgin hill rainforest (W. L. Brown); Wau N on Bulolo Rd. B-278, 650 m (S. Peck); Bewani Rd., near Vanimo km 2 quarry, 40 m, lowland rainforest (W. L. Brown); Maffin Bay (E. S. Ross). Indonesia: Irian Jaya, PT. Freeport Concession, Wapoga Camp., 03.14°S, 136.57°E, 3,450 ft, #98-230 (Montane primary rainforest, ex rotten stick in litter) (R. R. Snelling).

Ecological Information. This species occurs in rainforest and has been collected in soil under a log, under the bark of a rotten log, in litter samples, and on the ground.

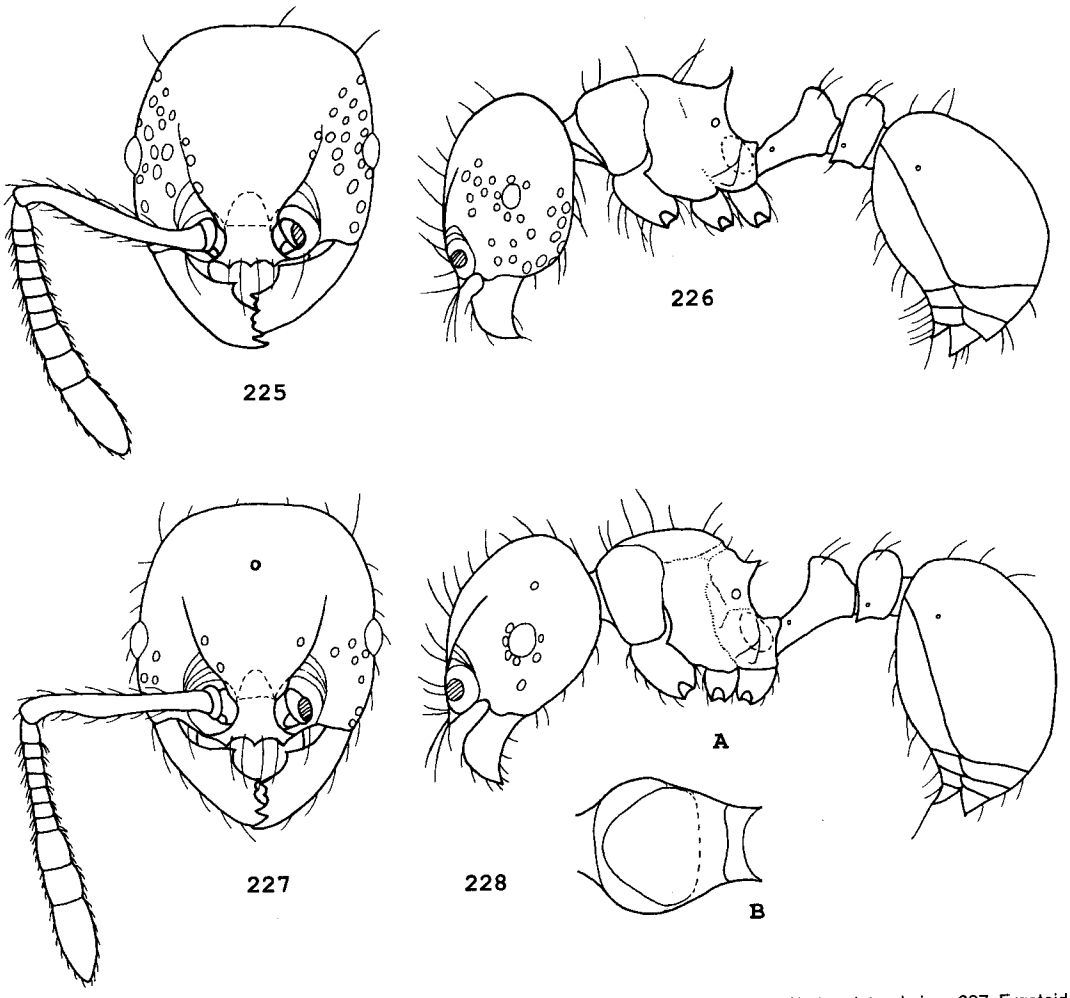
Pristomyrmex mandibularis Mann
Figures 225–228

Pristomyrmex mandibularis Mann, 1921: 444. Syntype workers, Fiji Is.: Viti Levu, Nadarivatu, 1915–1916 (W. M. Mann) (AMNH, LACM, MCZC, USNH) [examined].

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; a strongly prominent tooth present about midway on the basal margin of mandible; petiole lacking a lateral longitudinal carina on each side; dorsum of head between frontal carinae usually smooth and shining.

Worker. TL 2.68–3.49, HL 0.74–0.84, HW 0.76–0.88, CI 95–107, SL 0.61–0.74, SI 80–93, EL 0.11–0.14, PW 0.48–0.60, AL 0.68–0.90, PPW 0.20–0.25, PPL 0.16–0.19, PPI 121–133 (n = 33).

Mandibles usually smooth and shining.



Figures 225–228. *Pristomyrmex mandibularis* Mann. 225: Worker head, full-face view; 226: Worker, lateral view; 227: Ergatoid queen head, full-face view; 228A: Ergatoid queen, lateral view; 228B: Dorsum of the ergatoid queen alitrunk, dorsal view.

A prominent tooth present about midway on the basal margin of mandible. Clypeus flat and unsculptured. Anterior clypeal margin with a median tooth and two lateral teeth; the median tooth, in size, similar to or smaller than the others. Ventral surface of clypeus usually with a weak transverse ruga. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of the eyes. Antennal scrobes absent. Frontal lobes slightly expanded. Eyes moderately sized. Occipital margin straight or feebly concave in full-face view. Pronotum unarmed. Propodeum with a pair of short to moderately long spines. Metapleural lobes triangular. Petiole node in profile high, higher than long, with the anterodorsal angle being an apex and the dorsum posteriorly rounding into the posterior surface, its anterior peduncle slightly longer than or about as long as the node. Postpetiole in profile high, about two times as high as long, rounded dorsally. In dorsal view, postpetiole transrectangular. Dorsum of head between the frontal carinae usually smooth and shining

but sometimes with a few small and shallow punctures. Sometimes a few foveolate punctures bordering the frontal carinae, present on the genae and around the eyes. Dorsum of alitrunk smooth and shining. Petiole and postpetiole smooth and shining, each lacking a lateral longitudinal carina on each side. Gaster unsculptured. Dorsal surface of head with numerous erect to suberect long hairs. Some of similar hairs present on the dorsum of alitrunk, a pair on the petiole, one to two pairs on the postpetiole, and a few on the first gastral tergite. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect to suberect hairs. Color reddish-brown to blackish-brown.

Ergatoid Queen. TL 3.32, 3.40; HL 0.84, 0.84; HW 0.82, 0.82; CI 98, 98; SL 0.66, 0.73; SI 80, 89; EL 0.14, 0.15; PW 0.54, 0.56; AL 0.78, 0.82; PPW 0.23, 0.24; PPL 0.19, 0.21; PPI 114, 121 (n = 2).

Generally similar to worker, color and pilosity as in the worker, but the head with one ocellus, alitrunk in dorsal view with a pro-mesonotal suture, mesonotum more convex, and propodeal armaments shorter than in the conspecific worker.

Queen and Male. Unknown.

Comments. Pristomyrmex mandibularis is endemic in Fiji and is the only *Pristomyrmex* species so far occurring there. It possesses an ergatoid queen caste, which is not seen in the other species of the *levigatus* group; furthermore, its ergatoid queen has only one ocellus.

Pristomyrmex mandibularis is closely related to *P. levigatus* and *P. largus*, also from the Oriental region. The differences between the workers of *P. mandibularis* and those of *P. levigatus* and *P. largus* are as follows:

P. mandibularis

Petiole and postpetiole each lacking a lateral longitudinal carina on each side

Basal margin of mandible with a strongly prominent tooth

Anterior clypeal margin usually with a distinct median tooth

P. levigatus* and *P. largus

Petiole and postpetiole each with a longitudinal carina on each side that separates the tergite from the sternite

Basal margin of mandible with a broad-based short tooth

A median tooth, on the anterior clypeal margin, usually lacking or very weak

Material Examined (ANIC, MCZC, USNM, BMNH, MHNG). Fiji: Nausori Highlands, #424 (rotting stick in litter) (W. L. and D. E. Brown); Viti, Nadarivatu, rainforest, acc. 83 (berlesate, leaf mold) and acc. 66.51 (forest floor, colony in small crevice, rotting branch fragment) (R. W. Taylor); Nadarivatu (W. M. Mann); Lasema (W. M. Mann); Viti, Levu, Nadarivatu Reserve, 17.34′S, 177.57′E, Rainforest 800 m, Q. M. Berlesate No. 775, sieved litter (G. Monteith); Kadavu, 2 km SE Vunisea, 19.04′S, 178.10′E, rainforest 20 m, Q. M. Berlesate No. 770, sieved litter (G. Monteith).

Ecological Information. This species occurs in rainforest and has been collected in litter berlesates; it nests beneath stones in small colonies (Mann, 1921).

Pristomyrmex minusculus sp. n.

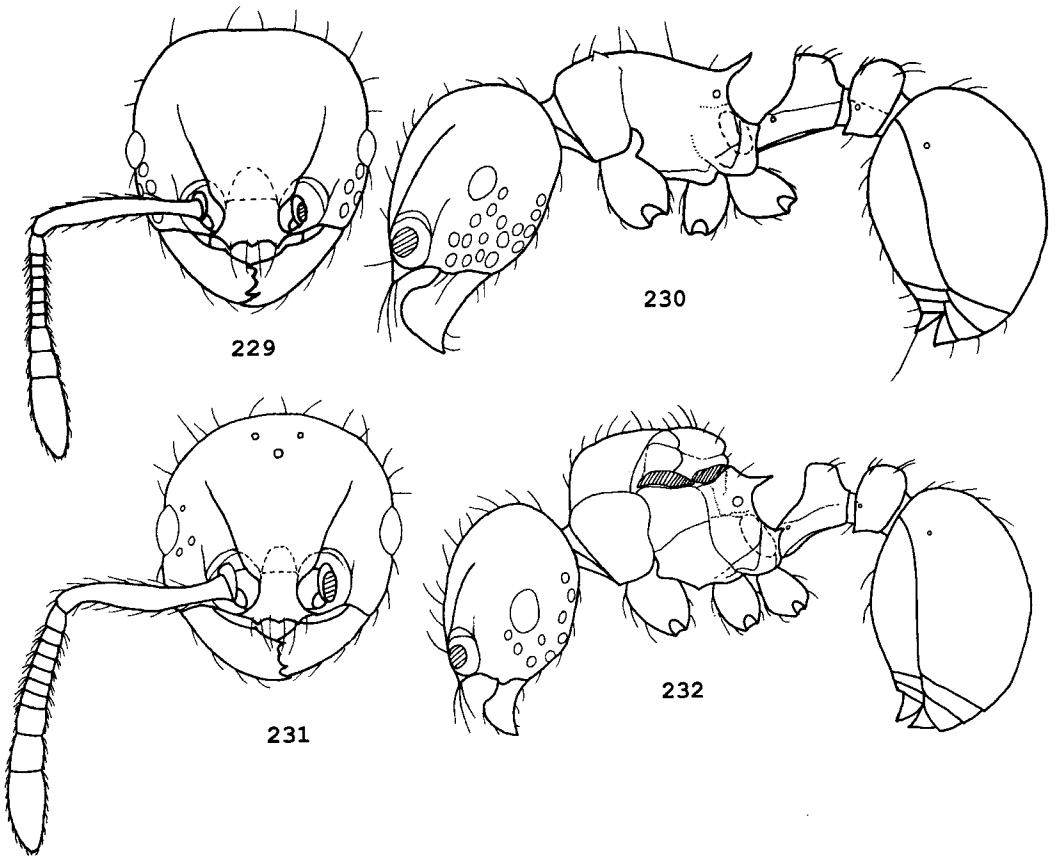
Figures 229–232

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; pronotum with a pair of teeth.

Holotype Worker (MCZC). TL 3.02, HL 0.76, HW 0.80, CI 105, SL 0.66, SI 83, EL 0.14, PW 0.52, AL 0.78. Paratypes, 16 workers and one queen (MCZC, ANIC, BMNH, NACA).

Worker. TL 2.52–3.02, HL 0.66–0.78, HW 0.66–0.80, CI 99–106, SL 0.54–0.66, SI 77–84, EL 0.10–0.14, PW 0.45–0.52, AL 0.59–0.74, PPW 0.20–0.24, PPL 0.14–0.19, PPI 126–143 (n = 16).

Mandibles usually smooth and shining but sometimes with a few small shallow



Figures 229–232. *Pristomyrmex minusculus* **sp. n.** 229: Worker head, full-face view; 230: Worker, lateral view; 231: Queen head, full-face view; 232: Queen, lateral view.

punctures. A broad-based short tooth present about midway on the basal margin of the mandible. Clypeus unsculptured. Anterior clypeal margin with a median tooth and two lateral teeth, but the median tooth often smaller than the others, sometimes the median tooth indistinct. Ventral surface of clypeus with a weak transverse ruga. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of the eyes. Scrobal areas shallow, short, present lateral to the frontal carinae in full-face view. Frontal lobes weakly expanded. Eyes moderately sized. Occipital margin feebly concave. Alitrunk in dorsal view more or less flat. Pronotum with a pair of acute small teeth; in some small specimens, this pair of teeth are very weak but visible, and in dorsal view they become a pair of sharp points on the two sides of the pronotum. Propodeum armed with a pair of spines, varying in length and shape, straight to slightly upcurved along their length. Metapleural lobes subtriangular, but rarely with a rounded apex. Petiole node in profile high with the anterodorsal angle higher than the posterodorsal, its anterior surface usually subparallel to the posterior one, its anterior peduncle about as long as the node. Subpetiole with a narrow rim. Postpetiole in profile high, rounded dorsally. Petiole node and postpetiole in dorsal view broader than long. Dorsum of head between the frontal ca-

rinae smooth and shining but sometimes with a few foveolate punctures bordering the frontal carinae, present on the genae and around the eyes. Dorsum of alitrunk smooth and shining. Petiole and postpetiole each with a lateral longitudinal ruga on each side that separates the tergite from the sternite. Gaster unsculptured. Dorsal surfaces of head and alitrunk with sparse erect to suberect hairs. Dorsal surfaces of petiole node and postpetiole each usually with two pairs of hairs and first gastral tergite with a few hairs, as in Figure 230. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color yellow-brown to reddish-brown; appendages lighter.

Queen. TL 3.08, HL 0.72, HW 0.74, CI 103, SL 0.60, SI 81, EL 0.17, PW 0.60, AL 0.82, PPW 0.24, PPL 0.18, PPI 133 (n = 1).

Generally similar to worker, except for normal caste differences. In addition, pronotal armaments absent; propodeum with a pair of teeth or short spines that are shorter than those in the conspecific worker.

Male. Unknown.

Comments. This species has a wide distribution in the Oriental region. It is also dispersed to North Queensland, Australia. *Pristomyrmex minusculus* must be derived from a *P. levigatus*–like ancestor. It is indistinguishable, in the queen, from *P. levigatus* at present. The workers of *P. minusculus* have almost same appearance as those of *P. levigatus,* except for a derived character—the pronotum with a pair of small teeth. In the *levigatus* group, this critical character is possessed only by the workers of *P. minusculus,* thus making them easily recognizable.

Holotype Worker. Palau Is: Peleliu I., east coast, 26.i.1948 (H. S. Dybas).

Paratypes. Nine workers and one queen with same data as holotype; one worker, Wallis Is.: NukuTapu I., 28.iii.1965 to 1.iv.1965 (G. Hunt). Two workers, Indonesia: Seram, above Haruru, near Masohi, 50 to 150 m, 18.iii.1981 (W. L. Brown); one worker, Indonesia: Irian Jaya, 12 km S of Sorong, forest fragment, 1.v.1981 (W. L. Brown); two workers, Tonga Is.: Falehau, Niuatoputapu, moss + lichen, from coconut tree trunks, 1.ix.1971 (W. and G. Rogers); two workers, YapGroup, vii–viii.50. (R. J. Goss).

The following additional (non-type) specimens have a pair of very weak pronotal prominences. They have the following measurements: Worker: HW 0.60–0.72, HL 0.62–0.72, CI 97–103, SL 0.52–0.60, SI 77–87, EL 0.10–0.12, PW 0.42–0.48, AL 0.57–0.73, PPW 0.19–0.21, PPL 0.14–0.16, PPI 125–150 (n = 12). Queen: HW 0.76, 0.76; HL 0.76, 0.76; CI 100, 100; SL 0.62, 0.62; SI 82, 82; EL 0.18, 0.18; PW 0.62, 0.62; AL 0.82, 0.88; PPW 0.24, 0.24; PPL 0.17, 0.17; PPI 141, 141 (n = 2).

Collecting Data for These Non-Type Specimens (ANIC, USNM, BMNH). Papua New Guinea: Kiunga (J. Balogh); Bisianumu near Sogeri, rainforest, 500 m (E. O. Wilson); Maffin Bay (E. S. Ross). Micronesia: Pohnpei, Agric. and Trade School, in leaf litter (in Ylang-Ylang grove) and in rotting coconut tree (Ron Clouse). Australia: N. Queensland, Cape York, Lockerbie (G. B. Monteith); N.Q., Iron Ra. rainforest, berlesate (R. W. Taylor and J. Feehan).

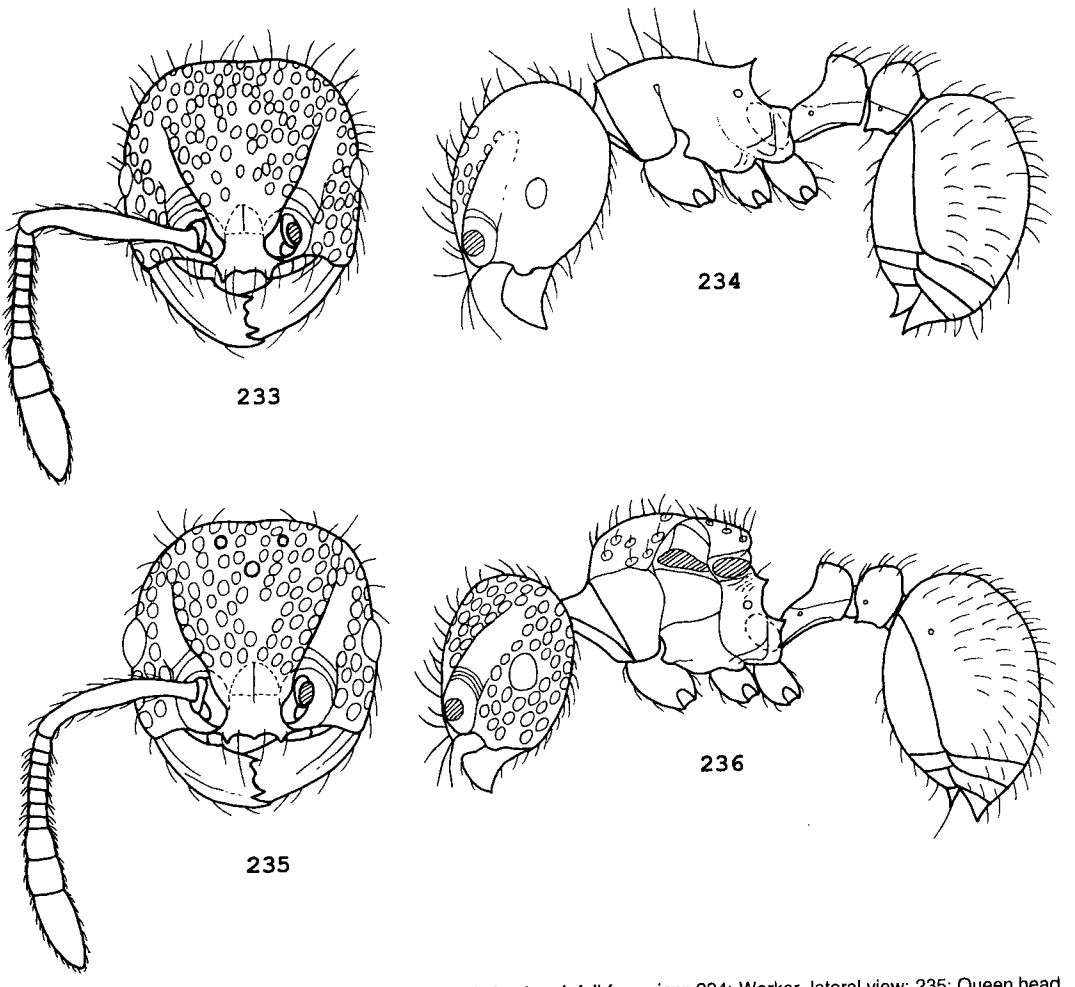
Ecological Information. This species occurs in rainforest and has been collected in litter samples, and in a rotting tree.

Pristomyrmex obesus Mann
Figures 233–236, 267, 278

Pristomyrmex obesus Mann, 1919: 339. Syntype workers, queen and male, Solomon Is.: Ysabel, Fulakora; Malaita, Auki; Three Sisters, Malapaina; 19.v.–24.xi.1916 (W. M. Mann) (MCZC, USNM, AMNH) [examined].

Pristomyrmex pegasus Mann, 1919: 338. Holotype worker, Solomon Is.: Santa Cruze: Graciosa Bay, 19.v.–24.xi.1916 (W. M. Mann) (USNM) [examined]. **Syn. n.**

Pristomyrmex obesus subsp. *melanoticus* Mann, 1919: 340. Syntype workers, Solomon Is.: San Cristoval, Pamua; Wai-ai; 19.v.–4.xi.1916 (W. M. Mann) (MCZC, USNM) [examined]. **Syn. n.**



Figures 233–236. *Pristomyrmex obesus* Mann. 233: Worker head, full-face view; 234: Worker, lateral view; 235: Queen head, full-face view; 236: Queen, lateral view.

Note: *Pristomyrmex pegasus* and *P. obesus* were described as two new species in Mann's (1919) paper, on pages 338 and 339, respectively (i.e., *P. pegasus* appeared before *P. obesus*; see also the previous citation). However, when proposing that these two names are synonymic, I choose *P. obesus* instead of *P. pegasus* as a valid specific name for the following two reasons: (1) Mann (1919) mentioned the presence of the elevated sides of the mesothorax, and the absence of a median tooth on the anterior clypeal margin are characteristic of *P. pegasus*. However, "the elevated sides of the mesothorax" are not shown in the unique holotype of *P. pegasus*, and "the absence of the median tooth on anterior border of clypeus" is actually an individual variation. (2) *P. obesus* possesses about a dozen syntypes, including a female and a male, but *P. pegasus* has only a single type specimen (i.e., holotype). If the holotype of *P. pegasus* is lost or destroyed in the future, it would be very inconvenient to those people who want to see it. Thus, *P. obesus* is selected as a valid name here.

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and pos-

sessing four teeth, of which the third tooth, counting from the apex, smallest; eyes containing four to seven ommatidia in the longest row; dorsum of head, except for the scrobes, usually with dense foveolate punctures; entire first gastral tergite evenly covered with numerous erect or suberect hairs.

Worker. TL 2.24–3.22, HL 0.63–0.86, HW 0.61–0.86, CI 94–104, SL 0.52–0.75, SI 79–88, EL 0.09–0.14, PW 0.41–0.55, AL 0.58–0.88, PPW 0.18–0.24, PPL 0.16–0.20, PPI 105–125 (n = 90).

Mandibles usually smooth and shining but sometimes with a few superficial short rugae or a few hair pits. A broad-based triangular short tooth present about midway on the basal margin of the mandible. Clypeus flat, smooth, but the median carina of frontal area usually extending to the clypeus. Anterior clypeal margin with a median denticle and two lateral teeth, but the median denticle often smaller than the others; sometimes the median denticle lacking; thus, only two teeth are present there. Ventral surface of clypeus lacking toothlike prominences or rugae. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of eyes. Scrobal impressions broad, shallow, present lateral to the frontal carinae. Frontal lobes slightly expanded. Eyes moderately sized, usually containing five to seven (rarely four) ommatidia in the longest row. Profile of alitrunk and pedicel segments as in Figure 234. Pronotum unarmed. Propodeum with a pair of triangular short spines. Metapleural lobes rounded. Dorsum of alitrunk in dorsal view usually with a longitudinal impression or furrow at middle, but sometimes this longitudinal impression indistinct. Petiole node in profile high with the anterodorsal angle higher than the posterodorsal, its anterior peduncle nearly as long as the node. Subpetiole with a narrow semitranslucent lamella. Postpetiole in profile rounded dorsally. In dorsal view, dorsum of petiole node subrounded, about as long as broad; postpetiole somewhat transversally rectangular and slightly broader than long. Dorsum of head, except for the scrobes, usually with dense foveolate punctures. Dorsum of alitrunk with scattered foveolate punctures. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect to suberect long hairs. Two pairs of hairs usually present on the dorsum of petiole node and two to three pairs usually on the dorsum of postpetiole. Entire first gastral tergite covered with numerous, evenly distributed erect or suberect hairs. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect to suberect short hairs. Color reddish-brown.

Queen. TL 2.69–3.40, HL 0.69–0.82, HW 0.67–0.85, CI 97–104, SL 0.54–0.68, SI 78–85, EL 0.15–0.19, PW 0.54–0.64, AL 0.76–0.94, PPW 0.20–0.26, PPL 0.18–0.22, PPI 111–122 (n = 15).

Generally similar to worker, except for caste differences. In addition, foveolate punctures shallow on the mesonotum; propodeal armaments slightly shorter than those in the conspecific workers; dorsum of alitrunk lacking a longitudinal furrow.

Male (Figs. 267, 278). A syntype male, together with about a dozen workers and a queen, collected in Fulakora, Solomen I., by W. M. Mann on 19.v.–24.xi.1916, constitutes a series. A second male specimen, together with five workers, collected in Guadalcanal, Solomen I., by P. Greenslade, constitutes another series. Each of the two males was originally mounted with two or three workers, respectively, on the same pin. TL 2.92; HL 0.52, 0.53; HW 0.53, 0.54; CI 102, 102; SL 0.20, 0.22; SI 38, 41; HWE 0.66, 0.68; EL 0.25, 0.26; PW 0.58, 0.60; AL 0.90, 0.92; PPW 0.18; PPL 0.18; PPI 100 (n = 2).

Head, including the eyes, broader than long. Clypeus convex, without a median longitudinal carina. Anterior clypeal margin transverse. Frontal carinae weak or indistinct. On the mesoscutum, notauli distinct, forming a Y shape; parapsidal furrows absent. Scuto-scutellar sulcus rather

broad, with five narrow longitudinal ridges. Propodeum weakly tuberculate, lacking teeth and spines. Metapleural lobes somewhat rounded. Petiole node in profile low, rounded dorsally. Postpetiole in profile low, rounded dorsally, in dorsal view subquadrate. Dorsum of head unsculptured and shining, except for a median longitudinal carina present on the frontal area. Dorsal surface of alitrunk smooth and shining but with well-marked sutures. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head, alitrunk and gaster with abundant long hairs. Legs with numerous hairs. Body blackish-brown; wings infuscated.

Comments. Pristomyrmex obesus occurs on Solomon Is. It is similar in the workers to *P. simplex* of New Guinea but can be separated from the latter by possessing numerous erect or suberect hairs evenly distributed on the entire first gaster tergite. In the *levigatus* group, this character is present only in two species, *P. obesus* and *P. longus*; in the other species, the first gastral tergite has a few or no hairs. In addition, foveolate punctures on the dorsal head are denser in the workers of *P. obesus* than in *P. simplex*.

Material Examined (ANIC, MCZC, BMHH, USNM, BMNH). Solomon Is.: Ysabel, Fulakora (W. M. Mann); Guadalcanal, Mt. Austen (P. Greenslade); Guadalcanal, Kukum (P. Greenslade); Guadalcanal, Gold Ridge, 2,000 ft (P. Greenslade); Guadalcanal, Mt. Jonapau, 2,600 to 3,500 ft (P. Greenslade); Guadalcanal, Nalimbiu R. (P. Greenslade); Guadalcanal, Balesuna R. (P. Greenslade); Guadalcanal, Visale (P. Greenslade); Guadalcanal, Umasani R., 1,000-ft ridge, leaf litter (P. N. Lawtence); San Cristoval, Warahito R., 275 ft (P. Greenslade); San Cristoval, forest, 250 ft (P. Greenslade); Malaita, Small Malaita (P. Greenslade); Malaita, Dala (P. Greenslade); New Georgia, Kolombangara, Hunda (P. Greenslade); New Georgia, Kolombangara, S. Kusi (P. Greenslade); New Georgia, Kolombangara, N of Kuzi, 500 ft, forest litter (P.N.L.); New Georgia, Vella Lavella, Bara koma (P. Greenslade); New Georgia, Vangunu I. (P. Greenslade); Choiseul, Wagina I. (P. Greenslade); Russell Is., Luavic (P. Greenslade); Nggela (P. Greenslade); Isabel, Buala (P. Greenslade); Vanikord (P. Greenslade); Bougainville I., Panguna, 600 to 800 m (J. L. Gressitt).

Ecological Information. This species has been collected in forest litter. Mann (1919) found a colony composed of less than a dozen workers, a dealated queen, and one male under a stone.

Pristomyrmex simplex sp. n.

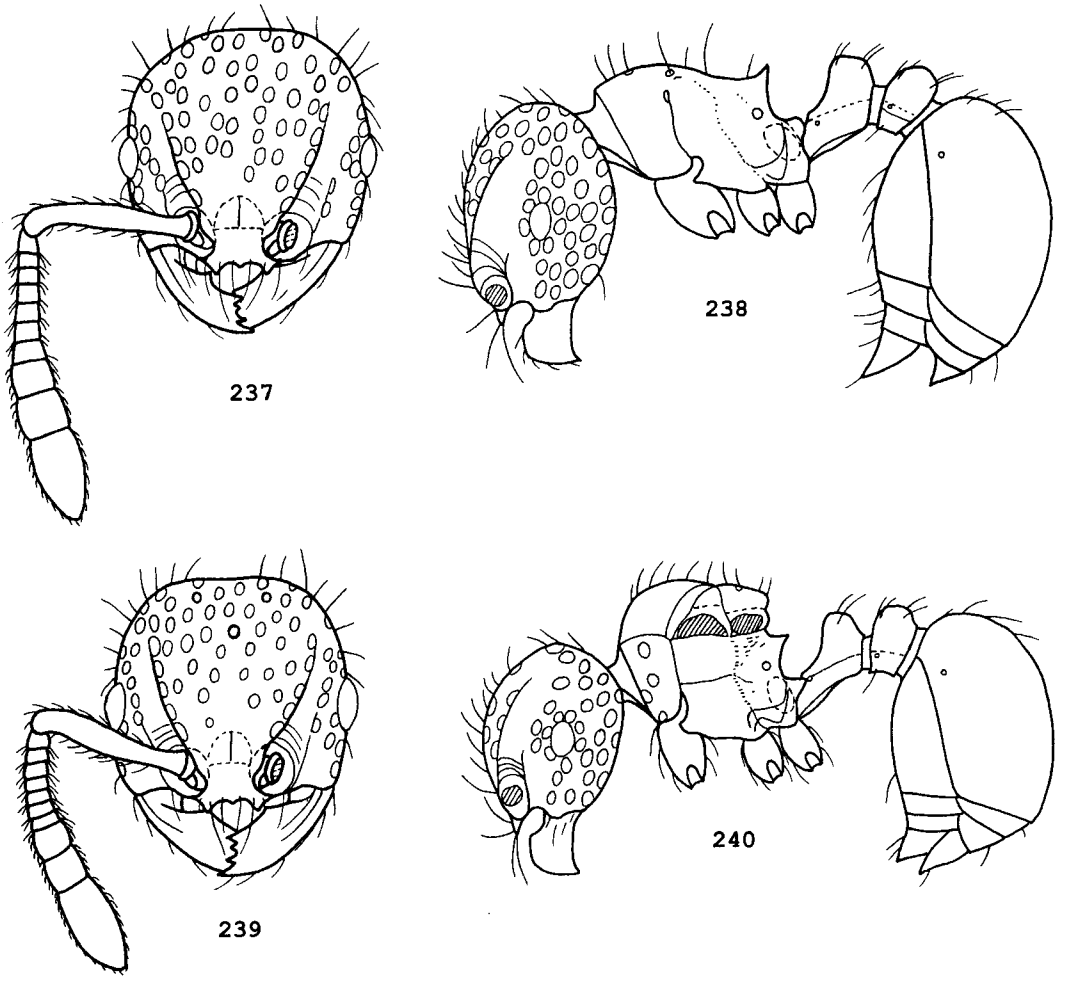
Figures 237–240

Diagnosis (Worker). Masticatory margin of mandible lacking a diastema and possessing four teeth, of which the third tooth, counting from the apex, smallest; dorsal surfaces of alitrunk and head between the frontal carinae with scattered foveolate punctures; eyes usually containing five (rarely four) ommatidia in the longest row; a few hairs present on the first gastral tergite.

Holotype Worker (ANIC). TL 2.48, HL 0.66, HW 0.69, CI 105, SL 0.52, SI 75, EL 0.12, PW 0.46, AL 0.58. Paratypes, six workers and three queens (MCZC, ANIC, BMNH).

Worker. TL 2.42–2.64, HL 0.65–0.68, HW 0.66–0.70, CI 100–105, SL 0.52–0.54, SI 74–79, EL 0.09–0.12, PW 0.44–0.46, AL 0.58–0.66, PPW 0.18–0.20, PPL 0.14–0.16, PPI 119–129 (n = 6).

Mandibles usually smooth and shining but sometimes with a few small shallow hair pits and a few superficial short rugae. A broad-based triangular short tooth present about midway on the basal margin of the mandible. Clypeus flat, smooth, and shining, usually unsculptured but sometimes the median carina of the frontal area extending to the clypeus. Anterior clypeal margin with a median denticle and two lateral teeth; the median denticle is often smaller than the others; sometimes the median denticle is absent so that the only two teeth are present there. Ventral sur-



Figures 237–240. *Pristomyrmex simplex* **sp. n.** 237: Worker head, full-face view; 238: Worker, lateral view; 239: Queen head, full-face view; 240: Queen, lateral view.

face of clypeus lacking rugae or toothlike prominences. Palp formula 1,3. Frontal carinae distinct, extending to the level of the posterior margins of eyes. Scrobal areas slightly concave, present lateral to the frontal carinae. Frontal lobes weakly expanded. Eyes moderately sized, about 0.14 to 0.17 × HW, usually containing five (sometimes four) ommatidia in the longest row. Occipital margin feebly concave in full-face view. Profile of alitrunk and pedicel segments as in Figure 238. Pronotum unarmed. Propodeum with a pair of triangular teeth. Metapleural lobes rounded. Petiole node in profile high with the anterodorsal angle higher than the posterodorsal, its anterior peduncle about as long as the node. Subpetiole with a narrow rim. Postpetiole in profile rounded dorsally. In dorsal view, dorsum of petiole node transoval and dorsum of postpetiole somewhat transversely rectangular. Dorsum of head between the frontal carinae with scattered foveolate punctures, varying from a few feeble punctures to numerous distinct ones; spaces between foveolae often

smooth. Dorsum of alitrunk with a few to some scattered foveolate punctures. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with numerous erect to suberect hairs. Two pairs of hairs usually present on the dorsal surfaces of petiole node and postpetiole, respectively, and a few near the base of the first gastral tergite. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect to suberect short hairs. Color reddish-brown.

Queen. TL 2.51–2.84, HL 0.66–0.70, HW 0.66–0.71, CI 100–101, SL 0.51–0.58, SI 76–82, EL 0.14–0.16, PW 0.50–0.55, AL 0.66–0.81, PPW 0.19–0.21, PPL 0.15–0.18, PPI 114–133 (n = 3).

Generally similar to worker, except for caste differences. In addition, mesoscutum rather smooth and shining, but mesoscutellum with a few foveolate punctures; propodeal armaments slightly shorter than those in the conspecific worker.

Male. Unknown.

Comments. This species occurs in New Guinea. It is closely related to *P. levigatus* and *P. obesus.* It is separable from *P. levigatus* by possessing some foveolate punctures on the dorsum of the alitrunk in the workers and on the dorsal head between the frontal carinae in the workers and queens. It differs from *P. obesus* because the workers of *P. simplex* have only a few hairs on the first gastral tergite. *Pristomyrmex simplex* differs from *P. coggii* by the following characters: The eyes usually contain five (sometimes four) ommatidia in the longest row in the workers of *P. simplex* but two to three ommatidia in *P. coggii*; the dorsum of the head has foveolate-reticulate sculpture in the workers and queens of *P. coggii* but scattered foveolate punctures in *P. simplex.*

Holotype. Papua: 8 km S of Kokoda, 800 m, rainforest, ANIC Berleasate, No. 382, 1.vi.1972 (R. W. Taylor).

Paratypes. One worker with same data as holotype; two workers, Papua: Karema, Brown R., lowl. rainfor., 8–11.iii.1955 (E. O. Wilson); three workers and one queen, Papua New Guinea: Port Moresby, Brown River, 2.x.1969 (J. Balogh); one queen, Papua: N. Dist., 27.xii.1971 (P. M. Room); one queen, Papua: N. Dist., Debelou, 23.vi.1973 (P. M. Room).

Non-Type Material Examined. A worker (NHMV), collected in the Philippines (Luzon, Lagunas, Mt. Banahaw above Kinabuhayan, 600–700 m) by J. Kodada and B. Rigova, has the following measurements: TL 2.98, HL 0.84, HW 0.84, CI 100, SL 0.70, SI 83, EL 0.10, PW 0.54, AL 0.74. A second worker (LAMN), collected in New Guinea (Gulf Prov., Ivimka Camp, Lakekamu Basin, 7.73°S, 146.76°E, 120 m, #96-291, lowland wet forest, ex sifted leaf litter) by R. R. Snelling, bears a few small, feeble, shallow punctures on the dorsal alitrunk; this specimen possesses TL 2.48, HL 0.68, HW 0.69, CI 101, SL 0.58, SI 84, EL 0.09, PW 0.45, AL 0.62.

Ecological Information. This species occurs in rainforest and has been collected in litter samples.

THE *PROFUNDUS* GROUP

Worker. Small sized, with the following combination of characters.

(1) Masticatory margin of mandible lacking a diastema and possessing four teeth (i.e., the strongest apical + the second strongest preapical + the smallest third + an acute basal tooth); basal margin of mandible with a strongly prominent tooth that is adjacent to the basal tooth of the masticatory margin; as a result, five teeth are set close together.

(2) Lateral portions of clypeus in front of antennal fossae reduced to margins.

(3) Antennal scrobes broad, deep, and extending close to the occipital corners.

(4) Base of antennal scape lacking a circling lamella.

(5) Mesonotum much higher than propodeal dorsum so that the dorsum of alitrunk in profile is not continuously arched.

(6) Metapleural lobes vestigial and indistinct.

The *profundus* group is closely related

to the *levigatus* group. The form of dentition of the masticatory margin of the mandible is a critical character shared by the workers and queens of the two groups. Possessing so many autapomorphic characters, including that a tooth on the basal margin of the mandible is adjacent to the basal tooth of the masticatory margin, as well as the previously mentioned characters 3 to 6, the *profundus* group is easily separable from the *levigatus* group and all other *Pristomyrmex* species groups.

This group contains only a single species, *P. profundus* of Malaysia.

Pristomyrmex profundus sp. n.

Figures 241–244

Diagnosis (Worker). See characters 1 and 5 under the *profundus* group.

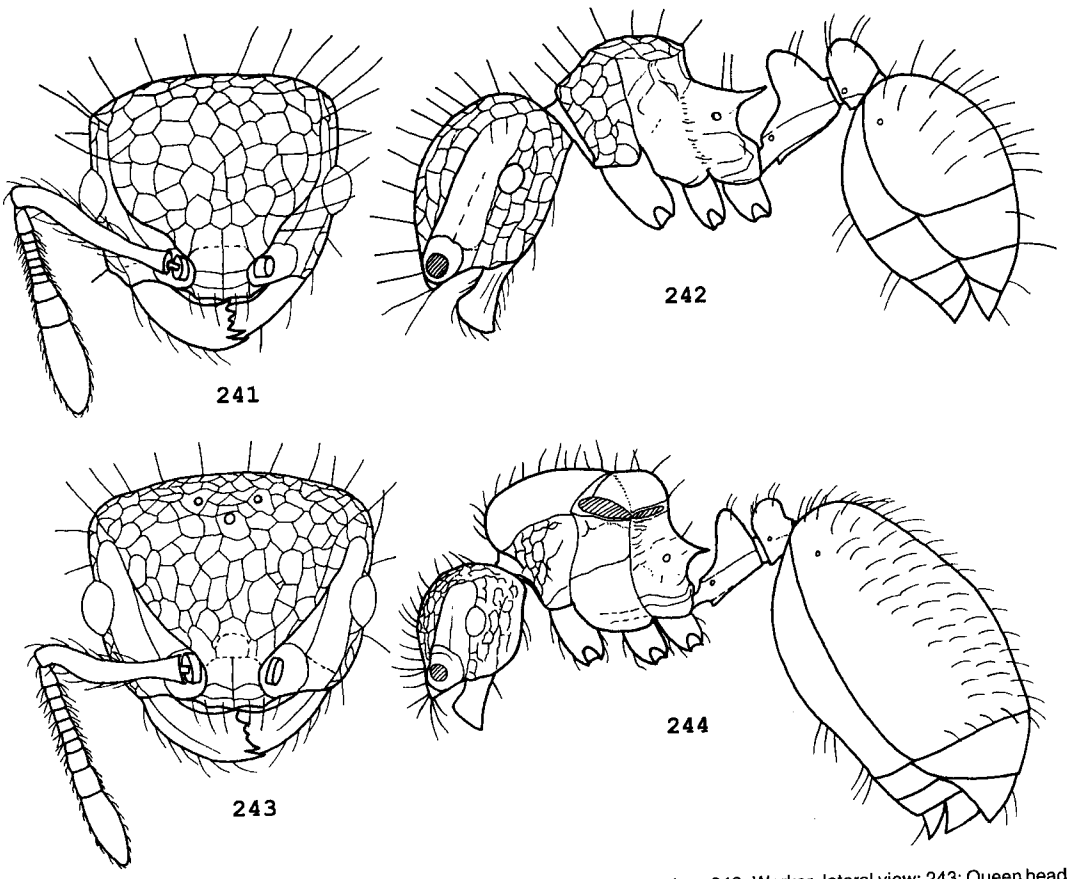
Holotype Worker (BMNH). TL 2.86, HL 0.64, HW 0.74, CI 119, SL 0.44, SI 59, EL 0.13, PW 0.52, AL 0.68, PPW 0.24, PPL 0.16, PPI 150. Paratypes, 19 workers and three queens (BMNH, MCZC, MHNG, ANIC, LAMN).

Worker. TL 1.74–2.86, HL 0.46–0.66, HW 0.46–0.74, CI 96–119, SL 0.36–0.44, SI 59–79, EL 0.09–0.14, PW 0.34–0.52, AL 0.44–0.68, PPW 0.15–0.24, PPL 0.11–0.16, PPI 123–164 (n = 20).

Mandibles usually smooth and shining but sometimes with a few weak, short, basal rugae. Clypeus not depressed, usually with a median longitudinal carina and two transverse carinae. Anterior clypeal margin lacking any distinct denticles. Ventral surface of clypeus lacking any toothlike prominences but usually with a weak transverse ruga. Palp formula undissected. Frontal carinae divergent, extending beyond the level of the posterior margins of eyes and close to the occipital margin. Frontal lobes completely absent. Antennal scrobes deep, wide, present between the frontal carinae and the eyes for the reception of the scapes and funiculi of antennae. Antennal scapes, when lying in the scrobes, close to the occipital margin of head. Eyes containing five to eight ommatidia in the longest row. In full-face view, head widest near the occipital corners; occipital margin rather straight. Dorsum of alitrunk in profile not continuously arched, with the mesonotum much higher than the propodeal dorsum (i.e., a vertical cliff present between the mesonotum and the propodeal dorsum). Pro-mesonotum forming a single convex. Sometimes the mesonotum higher than the pronotum; thus, in dorsal view, a pro-mesonotal impression is seen. Pronotum unarmed. Propodeum with a pair of moderately long spines. Metapleural lobes vestigial and indistinct. In profile view, petiole node high, ca. 0.21 to 0.29, much higher than long and also higher than postpetiole, with a single evenly blunt-rounded apex and a long anterior peduncle. Subpetiole with a narrow lamella. Postpetiole in profile high, ca. 0.15 to 0.23, distinctly higher than long, with a rounded dorsum. In dorsal view, postpetiole transoval and much broader than long. Dorsum of head, except for the antennal scrobes, fully covered with rugoreticulum. Similar sculpture present on the pro-mesonotum. Propodeal dorsum with a few longitudinal rugae. Petiole smooth and shining, usually with a longitudinal carina on each side. Postpetiole and gaster smooth and shining. Dorsal surfaces of head, alitrunk, and gaster with numerous erect, thick, long hairs; sometimes some hairs somewhat clavate. A pair of hairs present on the dorsum of petiole node and usually two pairs on the dorsum of postpetiole. A few pairs of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with some erect or suberect moderately long hairs. Color light yellow to yellow brown.

Queen. TL 3.48–3.92, HL 0.62–0.63, HW 0.76–0.77, CI 123–124, SL 0.44–0.46, SI 57–61, EL 0.15–0.16, PW 0.66–0.70, AL 0.92–0.98, PPW 0.28–0.29, PPL 0.18–0.20, PPI 140–161 (n = 3).

General shape as in Figures 243–244, with normal caste differences from the conspecific worker; mesonotum unsculptured, smooth, and shining; anterior end of mesoscutum medially slightly concave. Other characters similar to worker.



Figures 241–244. *Pristomyrmex profundus* **sp. n.** 241: Worker head, full-face view; 242: Worker, lateral view; 243: Queen head, full-face view; 244: Queen, lateral view.

Male. Unknown.

Comments. This is a distinct species because many characters possessed by its workers and queens are unique in the genus. In the entire *Pristomyrmex* fauna, three species (*P. profundus, P. divisus,* and *P. pulcher*) do not possess any denticles on the anterior clypeal margin, but the latter two species belong to the *punctatus* group.

Holotype Worker. Malaysia: Sabah, Poring Hot Springs, 500 m, 7.v.1987 (Burckhardt and Löbl).

Paratypes. Seventeen workers and three queens with same data as holotype; two workers with same data as holotype but date 6.v.1987.

Ecological Information. Unknown.

THE *UMBRIPENNIS* GROUP

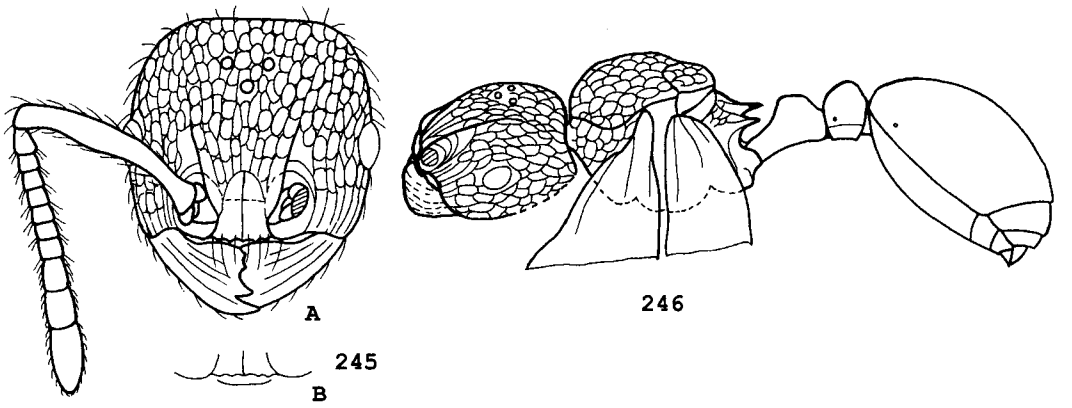
Worker. Medium to large sized (HL 1.04–1.68, HW 1.02–1.74, TL 4.10–7.06) with the following combination of characters.

(1) Masticatory margin of mandibles with four teeth arranged as the strongest apical + the second strongest preapical + two broad-based short teeth of similar size; diastema lacking or indistinct.

(2) Basal margin of mandible with a central, broad-based, prominent lobe.

(3) Lateral portions of clypeus in front of antennal fossae reduced to a margin.

(4) Anterior margin of the median portion of clypeus usually with five to seven



Figures 245–246. *Pristomyrmex fuscipennis* (F. Smith). 245A: Queen head, full-face view; 245B: Showing a transverse carina on the ventral clypeus; 246: Queen, lateral view.

denticles; lateral portions of anterior clypeal margin in front of antennal fossae with a few weak blunt denticles.

(5) Ventral surface of clypeus with a transverse ridge.

(6) Frontal lobes present, partly covering the condylar bulbs of holding antennal scapes.

(7) Frontal carinae extending to the level of the posterior margins of eyes.

(8) Lamella that encircles the base of antennal scape usually with a broad and deep notch on the center of the dorsal surface.

(9) Palp formula 1,3.

(10) Eyes small; EL is about 0.040 to 0.064 × HW in *P. picteti* and *P. pollux* and 0.069 to 0.108 × HW in *P. umbripennis*.

(11) Alitrunk in profile, not including propodeal spines, with a regularly arched dorsum, in dorsal view without any sutures.

(12) Pronotum unarmed.

(13) Metapleural lobes bluntly rounded.

(14) Petiole node in profile longer than high, with a long anterior peduncle; its anterodorsal angle is on approximately the same level as the posterodorsal.

(15) Foveolate punctures or foveolate-reticulate sculpture present on the dorsal surfaces of the head and the alitrunk.

This is a monophyletic group, containing five valid species. It is easily recognizable by possessing characters 1, 2, 5, 8, and 14. This group is endemic in the Oriental region and restricted to the Philippines, Malaya, Singapore, Brunei, Sabah, Borneo, Indonesia, and Papua New Guinea.

The males of the *umbripennis* group are easily distinguished from the other known *Pristomyrmex* males by possessing the following characters: (1) medium to large size; (2) palp formula 1,3; (3) propodeum with a pair of broad-based, robust spines (Figs. 256, 279, 280); and (4) the sides of petiole with some longitudinal or reticulate rugae (Figs. 256, 279, 280).

Pristomyrmex fuscipennis (F. Smith)
Figures 245–246

Myrmica fuscipennis F. Smith, 1861: 46. Holotype queen, Indonesia: Celebes, Tondano (A. R. Wallace) (OXUM) [examined].

? *Pristomyrmex fuscipennis* (F. Smith) Emery, 1901: 567.

Pristomyrmex fuscipennis (F. Smith) Donisthorpe, 1932: 468.

Queen. TL 6.92, HL 1.62, HW 1.64, CI 101, SL 1.46, SI 89, EL 0.32, PW 1.32, AL 1.98 (n = 1).

Comments and Discussion. This species, described from a single queen, obviously belongs to the *umbripennis* group by possessing the following characters: (1) masticatory margin of mandible with four

teeth (an apical + a preapical + two broad-based short teeth of similar size), lacking a distinct diastema; (2) basal margin of mandible with a central, broad-based, prominent lobe; (3) frontal lobes partially covering the condylar bulbs of holding antennal scapes; (4) lamella that encircles the base of antennal scape with a broad and deep notch on the center of the dorsal surface; (5) a coarse transverse carina present on the ventral surface of clypeus; and (6) anterodorsal angle of petiole node in profile on approximately the same level as the posterodorsal.

This queen differs from the queens of *P. picteti, P. pollux,* and *P. umbripennis* as follows: In *P. fuscipennis,* the dorsum of the head possesses foveolate-reticulate sculpture; many foveolate punctures between the frontal carinae are almost aligned so that it seems that several longitudinal rugae are present there. These longitudinal rugae are indistinct or absent in *P. picteti, P. pollux,* and *P. umbripennis.* In *P. picteti* and *P. umbripennis,* the dorsum of the head possesses scattered foveolate punctures. In addition, in *P. fuscipennis,* the antennal scapes lack longitudinal carinae along their dorsal margins, a median longitudinal carina runs through the entire clypeus and frontal area, and only five teeth are present on the anterior margin of the median portion of the clypeus, which are different from those in *P. pollux.*

Pristomyrmex fuscipennis may be a sibling species of *P. picteti* because the queen of *P. fuscipennis* is very similar to that of *P. picteti,* except for possessing foveolate-reticulate sculpture and longitudinal rugae on the dorsal head. In addition, I have examined several workers that may belong to *P. fuscipennis.* The cephalic sculpture of these workers is similar to that of the queen of *P. fuscipennis,* but the other characters of the workers are identical with those of the workers of *P. picteti.*

Finally, I feel that *P. fuscipennis* may represent an incipient species. Further collecting and ecological investigations are needed.

Ecological Information. Unknown.

Pristomyrmex picteti Emery
Figures 247–250, 268, 279

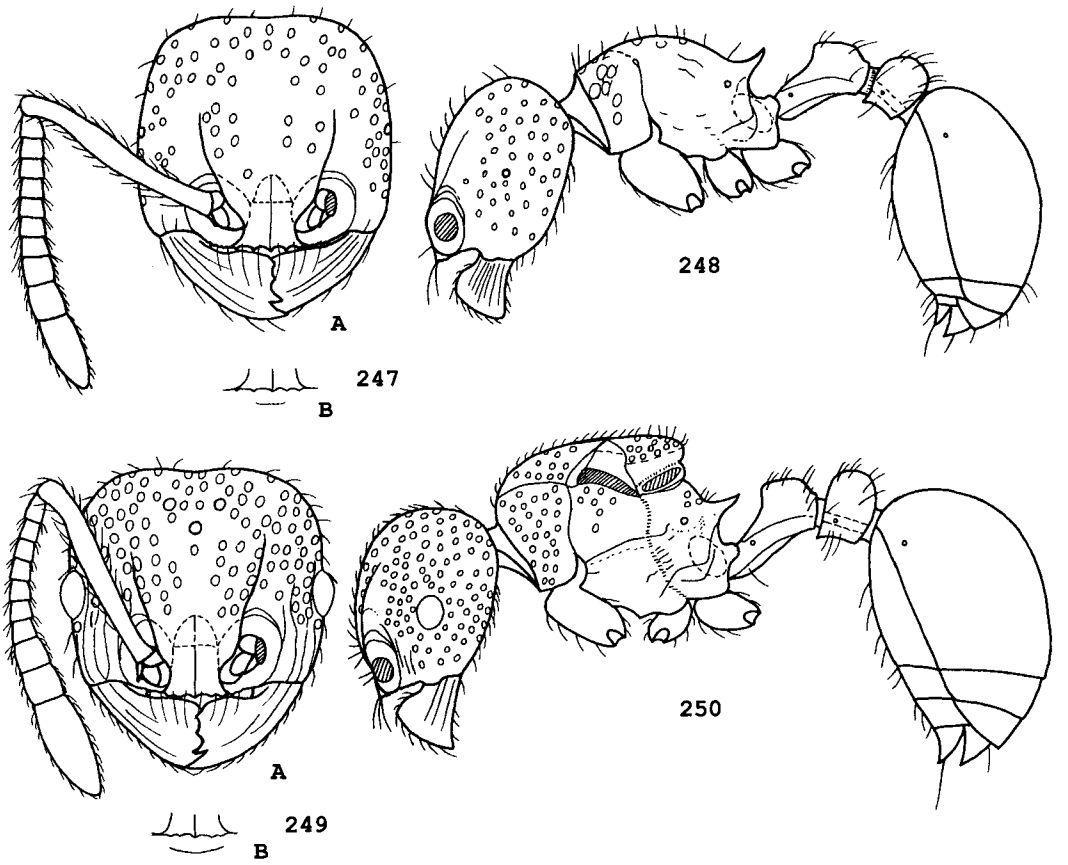
Pristomyrmex picteti Emery, 1893: 190. Lectotype worker, Sumatra: Deli (Bedot) (MCSN), here designated, [examined].

Pristomyrmex picteti var. *tingiana* Stitz, 1925: 120. Syntype workers, Philippines: N. Palawan, Binaluan, xi–xii 1913 (G. Boettcher) (MNHU, MCZC) [examined]. **Syn. n.**

Diagnosis (Worker). Masticatory margin of mandible with four teeth (an apical + a preapical + two broad-based short teeth of similar size), lacking a distinct diastema; eyes small, with three to four ommatidia in the longest row; propodeal spines fairly long, about 1.3 to 1.5 × the distance between their bases, not strongly upcurved at their apices.

Worker. TL 4.10–5.84, HL 1.04–1.36, HW 1.02–1.40, CI 96–108, SL 0.92–1.26, SI 85–97, EL 0.05–0.09, PW 0.68–0.88, AL 1.12–1.58, PPW 0.30–0.41, PPL 0.27–0.36, PPI 100–120 (n = 40).

Mandibles rather smooth or sometimes with a few longitudinal rugae. Basal margin of mandible with a broad-based, subtriangular, short prominence or a somewhat curved lobe. Clypeus smooth and shining, except for a median longitudinal carina that usually crosses the entire clypeus but sometimes does not reach the posterior clypeal margin. Anterior margin of the median portion of clypeus (not including the margins in front of the antennal fossae) with a median denticle and two (sometimes three) lateral denticles on each side. Ventral surface of clypeus with a coarse, transverse, long carina. Palp formula 1,3. Frontal carinae usually beyond the eyes. Antennal scrobes indistinct. Frontal lobes present, partially covering the condylar bulbs of holding antennal scapes. Antennal scapes, when lying on the dorsal head, just reaching or slightly beyond the occipital margin. Lamella, encircling the base of antennal scape, usually



Figures 247–250. *Pristomyrmex picteti* Emery. 247A: Worker head, full-face view; 247B: Showing a transverse carina on the ventral clypeus; 248: Worker, lateral view; 249A: Queen head, full-face view; 249B: Showing a long transverse carina on the ventral clypeus; 250: Queen, lateral view.

with a broad and deep notch on the center of the dorsal surface, but in several specimens (from Palawan I., Philippines), this lamella is entire, without a notch. Eyes very small, usually with three, at most four, ommatidia in the longest row. Occipital margin straight or very feebly concave in full-face view. Alitrunk in profile with a convex dorsum. Pronotum unarmed. Propodeum with a pair of fairly long spines, ca. 1.3 to 1.5 × the distance between their bases; sometimes the spines are weakly upcurved at their apices. Metapleural lobes rounded or somewhat truncated. Petiole node in profile slightly longer than high, with a fairly long anterior peduncle; its anterodorsal angle is usually on approximately the same level as the posterodorsal, but sometimes the former is slightly higher than the latter. Subpetiole with a narrow, semitranslucent lamella. Postpetiole in profile higher than long, rounded dorsally, in dorsal view broadening from front to back. Dorsal and ventral surfaces of head, dorsum of alitrunk, as well as the sides of pronotum with numerous foveolate punctures; space between foveolae often smooth. Antennal scapes smooth, or with one to two longitudinal rugae along their margins. Petiole smooth and shining, except for a longitudinal ruga on each side. Postpetiole and gaster smooth and shining.

Dorsal surfaces of head and alitrunk with numerous erect or suberect short hairs. Two or more pairs of hairs present on the dorsal surfaces of petiole node and postpetiole, respectively. A few of forward-projecting long hairs present near the anterior clypeal margin. Scapes and tibiae with numerous erect or suberect short hairs. First gastral tergite lacking erect or suberect hairs. Color reddish-brown.

Queen. TL 6.20–7.02, HL 1.32–1.64, HW 1.42–1.69, CI 103–113, SL 1.21–1.56, SI 85–92, EL 0.29–0.34, PW 1.14–1.42, AL 1.74–2.14, PPW 0.41–0.52, PPL 0.36–0.42, PPI 110–125 (n = 13).

General shape as in Figures 249–250, with normal caste differences from the conspecific worker; eyes much larger, usually containing more than 17 ommatidia in the longest row; other characters similar to worker.

Male (Figs. 268, 279). TL 4.46–5.28, HL 0.68–0.78, HW 0.69–0.80, CI 95–108, SL 0.30–0.42, SI 40–56, HWE 0.85–0.94, EL 0.35–0.39, PW 0.92–1.14; AL 1.44–1.78, PPW 0.30–0.38, PPL 0.28–0.34, PPI 103–114 (n = 5).

Head in full-face view, including the eyes, broader than long. Clypeus convex, lacking a median longitudinal carina. Palp formula 1,3. Frontal carinae distinct, extending to the level of the posterior margins of antennal insertions. Maximum diameter of the median ocellus 0.10 to 0.12. Scapes longer than the other antennal segments, except for the apical ones. On the mesoscutum, notauli rather wide, forming a V shape, separated into several cells by narrow transverse ridges; parapsidal furrows absent. Scuto-scutellar sulcus wide, usually with five to six narrow longitudinal ridges. Propodeum armed with a pair of robust, triangular short spines. Metapleural lobes subtriangular. Middle and hind tibiae without any spurs. Petiole node in profile low, slightly longer than high, with a fairly long anterior peduncle. Postpetiole in profile rounded dorsally, in dorsal view somewhat transversely rectangular and slightly broader than long. Dorsum of head with some small punctures, varying from scattered and shallow to dense and somewhat coarsely incised. Pronotum with dense foveolate punctures. Mesonotum with punctures, varying from a few scattered to numerous and from feeble, small to rather large. Propodeum rugulose. Sides of petiole with a few longitudinal rugae as well as some foveolate punctures between them. Sides of postpetiole with some shallow foveolate punctures. Gaster unsculptured. All dorsal surfaces with numerous blackish-brown long hairs; sometimes hairs somewhat stiff. Color blackish-brown; wings dusky.

Note: The previously described male is assigned to the species *P. picteti* for the following three reasons: (1) It belongs to the *umbripennis* group because it is very similar to the males of *P. pollux, P. reticulatus,* and *P. umbripennis* but rather different from the other known males of *Pristomyrmex* in the structure and shape of propodeal spines, petiole, notauli, and scuto-scutellar sulcus and in body size, sculpture, and hairs. (2) It differs from the males of the other species of the *umbripennis* group as follows: In the male of *P. picteti,* CI is 95–108, EL is 0.35–0.39, the propodeal spines are shorter, the postpetiole in dorsal view is slightly broader than long (PPI 103–114), and the notauli form a V shape; but in *P. pollux,* CI is 80, EL is 0.44, the propodeal spines are longer, the postpetiole is distinctly longer than broad (PPI 80–90), and the notauli form a Y shape. The male of *P. picteti* (HW 0.69–0.80, HL 0.68–0.78, and EL 0.35–0.39) is smaller than that of *P. umbripennis* (HW 0.98, HL 0.94, and EL 0.47). A distinct rugoreticulum is seen on the dorsal head and also on the mesonotum in *P. reticulatus* but not so in the male of *P. picteti.* (3) Two male specimens were collected in Dumaguete, Philippines, by J. W. Chapman on May 30, 1950, and each of them was originally mounted together with one worker or one queen of *P. picteti,* respectively, on the same pin.

Comments. Pristomyrmex picteti occurs

in Papua New Guinea, Borneo, Sabah, Brunei, Malaya, Singapore, and the Philippines. It is closely related to the other several species of the *umbripennis* group. A discussion regarding the relationship between *P. picteti* and *P. fuscipennis* is provided under *P. fuscipennis*. Characters separating *P. picteti* from *P. umbripennis* are listed under *P. umbripennis*. The workers of *P. picteti* differ from those of *P. pollux* as follows:

P. picteti

Propodeal spines relatively short, not strongly upcurved at their apices

Smaller species with HL 1.04–1.36, HW 1.02–1.40 and SL 0.92–1.26

Dorsum of head with scattered foveolate punctures; space between foveolae often smooth

Anterior margin of the median portion of clypeus usually with fewer than seven denticles

P. pollux

Propodeal spines relatively long, strongly upcurved at their apices

Larger species with HL 1.42–1.54, HW 1.42–1.58, and SL 1.40–1.52

Dorsum of head with foveolate-reticulate sculpture

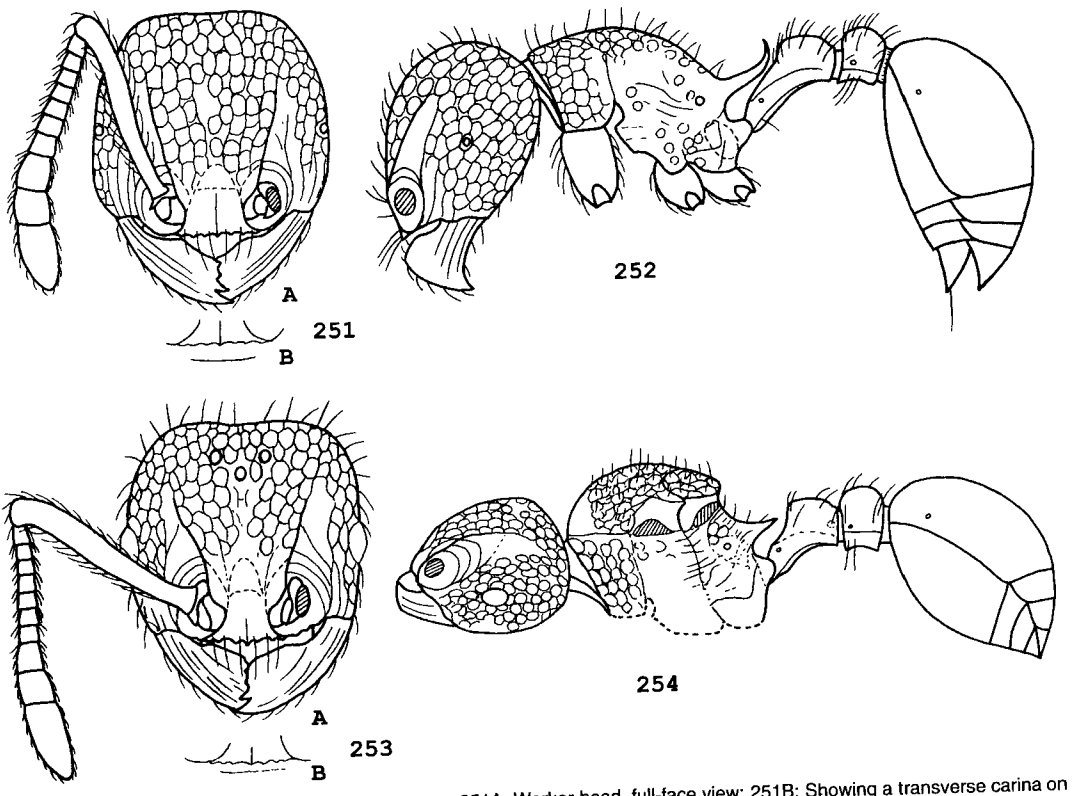
Anterior margin of the median portion of clypeus usually with seven denticles

Material Examined (ANIC, BMHH, BMNH, LAMN, MCZC, NHMV). Papua New Guinea: Gulf Prov., Ivimka Camp, Lakekamu Basin, 7.7°S, 146.8°E, 120 m elevation, lowland wet forest, #96-395 (nest in wet rotten log), #96-404 (in rotted log debris) (R. R. Snelling); NETH. Genjam, 40 km W of Hollandia, 100 to 200 m (T. C. Maa); 24 km N Madang, 80 m, 5°01′S, 145°46′E, rainforest, ex rotten log (P. S. Ward); Yawasora near Wewak, <50 m, rainforest, ex rotting log (R. W. Taylor); along Kokoda Rd., rainforest, 400 to 1,000 ft (B. B. Lowery); Lae, Didiman CK., lowland rainforest (E. O. Wilson); Lae, Busu R., lowland rainforest, in rotten wood on ground (B. B. Lowery); Lae, Markham R. Bridge, lowland rainforest, in log (B. B. Lowery); Lae 300 ft, above Bumbu Crk., edge of rainforest, wet gully, in rotten wood (B. B. Lowery); Tage L. Kutubu 2,700 ft, forest margin, ex leaves (J. H. Barrett); Papua, Brown Riv., lowland rainforest, ex rotten wood fragment (R. W. Taylor). Indonesia: Irian Jaya, PT. Freeport Concession, Siewa camp., 03.04°S, 136.38°E, 200 ft, #98-86, lowland secondary rainforest, under loose bark of dead log (R. R. Snelling); Borneo, West Kalimantan, Gunung Palung Nat. Pk. Cabang Panti Res. Sta. 100 to 400 m, 1°15′S, 110°5′E, primary forest (Datling, Rosichon, Sutrisno); Borneo, Sandakan (Baker). N. Borneo: Tawau, Quoin Hill, Forest Camp 1, 3 to 5 km WSW of Cocoa Res. Sta. (Y. Hirashima). Brunei: Belait District, Manilas, Ulu Belait (D. E. Hardy). Malaysia: Malaya, Gombak (B. Bolton); Pahang, Kuala Tahan 200 m (J. L. Gressitt); Sg. Patani (G. H. Lowe). Singapore (Baker). Philippines: Mt. Montalban, Rizal Wa-wa Dam, 150 to 200 m (H. M. Torrevillas); Mt. Apo 5 to 6,000 m (C. F. Clagg); N. Palawan, Binaluan (G. Boettcher); Palawan, 14 km S Puerto Princesa (9.44°N, 118.44°E), rainforest 0 to 250 m (B. B. Lowery); Palawan, Iwahig Penal Col., ca. Puerto Pricesa (9.44°N, 118.44°E), coffee plantation, 60 m, edge of rainforest, foraging on ground (B. B. Lowery); Luzon, Los Banos, Mt. Makiling 600 m (14.1°N, 121.11°E), rainforest, in very wet log (B. B. Lowery); Los Banos (F. X. Williams); Mt. Makiling (Baker; A. T. Cencho); Laguna, Mt. Makiling, 150 to 500 m (H. Zettel); Luzon I., Bauqui (R.C.Mcq.); Luzon, Mt. Banahao (?); Dumaguete, 4,500 ft (J. W. Chapman); Horns of Negros, 3,600 ft (J. W. Chapman); Camp (J. W. Chapman).

Ecological Information. This species occurs in rainforest, nesting in rotten logs. It has been collected on the ground, on rotten wood, and under loose bark of a log.

Pristomyrmex pollux Donisthorpe
Figures 251–254, 269, 280, 282

Pristomyrmex pollux Donisthorpe, 1944: 83. Holotype male, Malaysia: Penang, 6.xi.1913 (G. E. Bryant) (BMNH) [examined].



Figures 251–254. *Pristomyrmex pollux* Donisthorpe. 251A: Worker head, full-face view; 251B: Showing a transverse carina on the ventral clypeus; 252: Worker, lateral view; 253A: Queen head, full-face view; 253B: Showing a transverse ruga on the ventral clypeus; 254: Queen, lateral view.

Note: This species was described only from a single male, which created the difficulty of associating female castes with the male. I place the following workers under *P. pollux* for three reasons: (1) In MCZC, two males of *P. pollux* appear to belong to the same series as the following examined 28 workers bearing labels with the same locality and collector and with the absence of collecting date. (2) This male (i.e., the holotype of *P. pollux*) belongs to the *umbripennis* group because it is very similar to the males of *P. picteti, P. reticulatus,* and *P. umbripennis* but rather different from the other known males of *Pristomyrmex* in the structure and shape of propodeal spines, petiole, notauli, and scuto-scutellar sulcus and in body size, sculpture, and hairs. (3) After all available males of *Pristomyrmex* are examined, it seems that, in *Pristomyrmex,* the propodeal armaments of the male are usually shorter than those of the conspecific worker. The male of *P. pollux* has a pair of well-developed propodeal spines (which are actually the strongest and longest among all known *Pristomyrmex* males). The following workers also possess a pair of long propodeal spines, which matches with those in the male of *P. pollux* closely.

Diagnosis (Worker). Masticatory margin of mandible with four teeth (an apical + a preapical + two broad-based short teeth of similar size), lacking a distinct diastema; eyes small, with three to four ommatidia in the longest row; propodeal spines long, strongly upcurved at their apices.

Worker. TL 6.26–6.80, HL 1.42–1.54,

HW 1.42–1.58, CI 95–104, SL 1.40–1.52, SI 96–101, EL 0.06–0.08, PW 0.90–0.96, AL 1.58–1.90, PPW 0.39–0.43, PPL 0.39–0.43, PPI 100–105 (n = 28).

Mandibles with a few longitudinal rugae. Basal margin of mandible with a broad, short, somewhat truncated, prominent lobe. Clypeus with a median longitudinal carina that does not reach the posterior clypeal margin. Frontal area unsculptured. Anterior margin of the median portion of clypeus with a median denticle and three (sometimes two) others on each side. Ventral surface of clypeus with a coarse transverse carina. Palp formula 1,3. Frontal carinae strong, extending to the level of the posterior margins of eyes. Scrobal areas smooth, present lateral to the frontal carinae. Frontal lobes present, partially covering the condylar bulbs of holding antennal scapes. Antennal scapes, when lying on the dorsal head, just beyond the occipital margin. Lamella, encircling the base of antennal scape, with a broad and deep notch on the center of the dorsal surface. Eyes small, usually with three, at most four, ommatidia in the longest row. Occipital margin straight or feebly concave in full-face view. Pronotum unarmed. Propodeum with a pair of long spines that are strongly upcurved at their apices (i.e., hooklike) and laterally compressed. Metapleural lobes prominent and somewhat rounded. Petiole node in profile distinctly longer than high, with a long anterior peduncle; its anterodorsal angle is on approximately the same level as the posterodorsal. In dorsal view, petiole node longer than broad. Subpetiole with a narrow, semitranslucent lamella. Postpetiole in profile higher than long, rounded dorsally, in dorsal view broadening from front to back. Dorsum of head, except for scrobal areas and frontal area, with foveolate-reticulate sculpture. Antennal scapes with longitudinal rugae along their dorsal margins. Dorsum of alitrunk as well as the sides of pronotum with numerous foveolate punctures that are often close to each other. Sides of the rest of alitrunk with some scattered punctures. Petiole smooth and shining, but with a longitudinal ruga on each side. Postpetiole and gaster smooth and shining. Dorsal surfaces of head, alitrunk, petiole, and postpetiole with numerous erect or suberect hairs. A row of forward-projecting long hairs present near the anterior clypeal margin. Scapes and tibiae with some erect or suberect short hairs. First gastral tergite lacking erect or suberect hairs. Color yellow-brown to reddish-brown.

Queen. A single queen (BMNH) was examined. It was collected in Penang, Malaysia, by G. E. Bryant in October 1913 (i.e., the collecting locality and the collector name for this specimen are the same as the holotype male of *P. pollux*): TL ca. 7.66, HL 1.64, HW 1.69, CI 103, SL 1.56, SI 92, EL 0.29, PW 1.42, AL 2.14.

This queen possesses the following characters: (1) dentition of the masticatory margin and basal margin of mandible as in the previously mentioned worker; (2) dentition of the anterior clypeal margin as in the previously mentioned worker; (3) clypeus with a median carina that does not reach the posterior clypeal margin; (4) ventral surface of clypeus with a transverse ruga; (5) frontal lobes and frontal carinae as in the previously mentioned worker; (6) lamella encircling the base of antennal scape as in the previously mentioned worker; (7) antennal scapes with longitudinal rugae along their dorsal margins; (8) propodeum with a pair of robust, rather long spines that are longer than the distance between their bases; (9) metapleural lobes as in the previously mentioned worker; (10) petiole and postpetiole as in the previously mentioned worker; and (11) dorsum of head, except for the scrobal areas, with foveolate-reticulate sculpture. In other words, except for normal caste differences and the propodeal spines that are neither laterally compressed nor upcurved at their apices, other characters are generally similar to those in the previously mentioned worker.

Male (Figs. 269, 280, 282). TL 5.60–

5.92, HL 0.85–0.88, HW 0.68–0.70, CI 80–80, SL 0.38–0.41, SI 54–60, HWE 0.86–0.88, EL 0.44–0.44, PW 1.26–1.36, AL 2.00–2.20, PPW 0.35–0.38, PPL 0.42–0.44, PPI 80–90 (n = 3).

Head in profile high and thick, in full-face view, excluding eyes, much longer than broad, and including the eyes about as long as broad. Clypeus convex and arched in middle without a median longitudinal carina. Palp formula 1,3; maxillary palp long. Maximum diameter of the median ocellus 0.12. Scapes longer than the other antennal segments, except for the apical ones. On the mesonotum, notauli rather wide and deep, showing a Y shape, separated into small cells by narrow transverse ridges; parapsidal furrows absent. Scuto-scutellar sulcus wide, separated into small cells by seven to eight narrow ridges. Propodeum with a pair of robust, broad-based, rather long spines. Metapleural lobes prominent and somewhat rounded. Petiole node in profile distinctly longer than high with a long anterior peduncle. Postpetiole in profile slightly longer than high with a convex dorsum, in dorsal view rectangular and distinctly longer than broad. Subpostpetiole with a blunt, tooth-like prominence. Dorsum of head with numerous small foveolate punctures that sometimes are coarse and dense. Pronotum with small, coarse, and dense foveolate punctures. Mesoscutum with some scattered, small, shallow foveolate punctures. Mesoscutellum with dense, coarse foveolate punctures. Propodeum with some irregular coarse rugae. Middle and hind tibiae without any spurs. Each side of petiole with a coarse longitudinal ruga, a few irregular short rugae, and some foveolate punctures. Sides of postpetiole with some small, weak foveolate punctures. All dorsal surfaces with abundant erect or suberect stiff long hairs. Color blackish-brown; hairs blackish-brown; wings rather smoky. (Note: In the holotype, the right antenna is abnormal, with 11 segments, while the left one has 12.)

Comments. *Pristomyrmex pollux* is known from Malaya and Sabah. It must have evolved from a *P. picteti*–like ancestor. The workers of this species can be immediately recognized by possessing a pair of distinct propodeal spines that are long, strongly upcurved at their apices (i.e., hooklike), and laterally compressed. This character is unique in the genus *Pristomyrmex.*

Material Examined (MCZC, USNM, ANIC, BMNH, NHMV). N. Borneo: Mt. Dubit, 3,000 ft (E. Mjöberg).

Biological Information. Unknown.

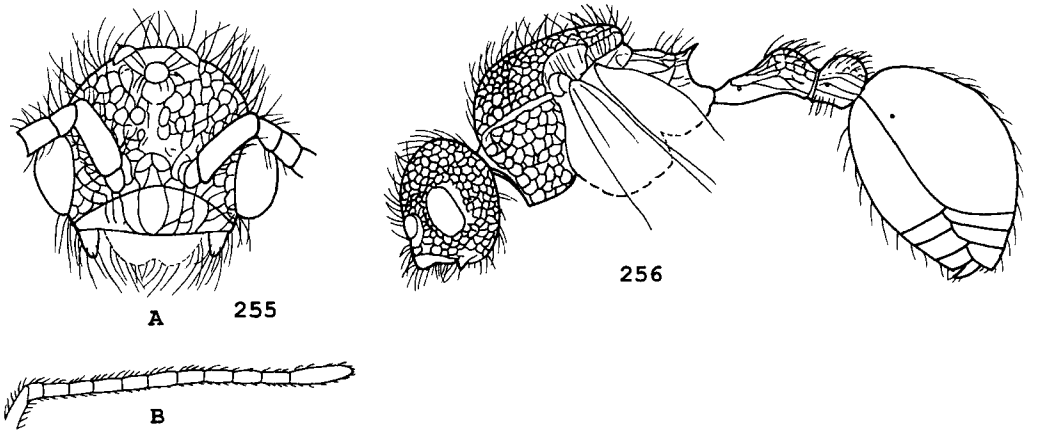
Pristomyrmex reticulatus Donisthorpe
Figures 255–256

Pristomyrmex reticulatus Donisthorpe, 1949: 750. Holotype male, New Guinea: Finschhafen, 27.iv.1944 (E. S. Ross) (CASC) [examined].

Male. TL 4.86, HL 0.82, HW 0.83, CI 101, SL 0.34, SI 41, EL 0.38, PW 1.04, AL 1.64 (n = 1).

Head, including the eyes, distinctly broader than long. Clypeus convex in middle; its anterior margin transverse. On the mesoscutum, notauli forming a Y shape, with several transverse rugae. Scuto-scutellar sulcus wide, separated into small cells by several longitudinal ridges. Propodeum armed with a pair of fairly long spines. Metapleural lobes somewhat rounded. Petiole node in profile longer than high with a long anterior peduncle. Postpetiole in profile rounded dorsally, in dorsal view subquadrate. Dorsum of head with a developed rugoreticulum, except for a narrow, long median strip that is smooth and unsculptured. Clypeus with some longitudinal rugae. Promesonotum with strongly developed rugoreticulum. Sides of petiole with rugoreticulum. Sides of postpetiole with a few longitudinal rugae as well as a few superficial foveolate punctures between them. Gaster unsculptured, smooth, and shining. All dorsal surfaces with numerous long hairs; hairs stiff on the head and alitrunk. Body and hairs blackish-brown; wings dusky.

Comments and Discussion. This species, described from a single male, belongs to



Figures 255–256. *Pristomyrmex reticulatus* Donisthorpe. 255A: Male head, full-face view; 255B: Male antenna; 256: Male, lateral view.

the *umbripennis* group because it is very similar to the males of *P. picteti, P. pollux,* and *P. umbripennis* in the structure and shape of propodeal spines and petiole and in body size, sculpture and hairs.

This male differs from the males of the other three species (*P. pollux, P. umbripennis,* and *P. picteti*) of the *umbripennis* group as follows: In *P. pollux,* the head, in full-face view, is rather narrow and long (CI = 80) with numerous small foveolate punctures; the mesoscutum possesses some scattered, small and shallow foveolate punctures; the postpetiole in dorsal view is distinctly longer than broad. But in *P. reticulatus,* CI is 101, the dorsal head and the mesonotum have a developed rugoreticulum, and the postpetiole in dorsal view is subquadrate.

The male of *P. umbripennis* is larger (HL 0.94, HW 0.98, EL 0.47, PW 1.28, AL 1.98, and TL 6.04) than that of *P. reticulatus.* In addition, the dorsum of the head between the eyes is sculptured with a rugoreticulum in *P. reticulatus* but is rather smooth in *P. umbripennis.*

The male of *P. picteti* possesses a few to some small foveolate punctures on the dorsal surfaces of the head and the mesonotum, in contrast with a rugoreticulum in *P. reticulatus.*

Whether *P. reticulatus* represents the male of *P. fuscipennis* is so far unknown. Thus, *P. reticulatus* is tentatively maintained as a valid species until enough evidence is obtained.

Ecological Information. Unknown.

Pristomyrmex umbripennis (F. Smith) Figures 257–260

Myrmica umbripennis F. Smith, 1863: 21. Holotype queen, Indonesia: Mysol (A. R. Wallace) (OXUM) [examined].

Pristomyrmex umbripennis (F. Smith) Donisthorpe, 1932: 471.

Solenopsis laevis F. Smith, 1865: 75. Holotype worker, Indonesia: Morty Island (A. R. Wallace) (OXUM) [examined]. **Syn. n.**

Pheidologeton laevis (F. Smith) Emery, 1922: 213.

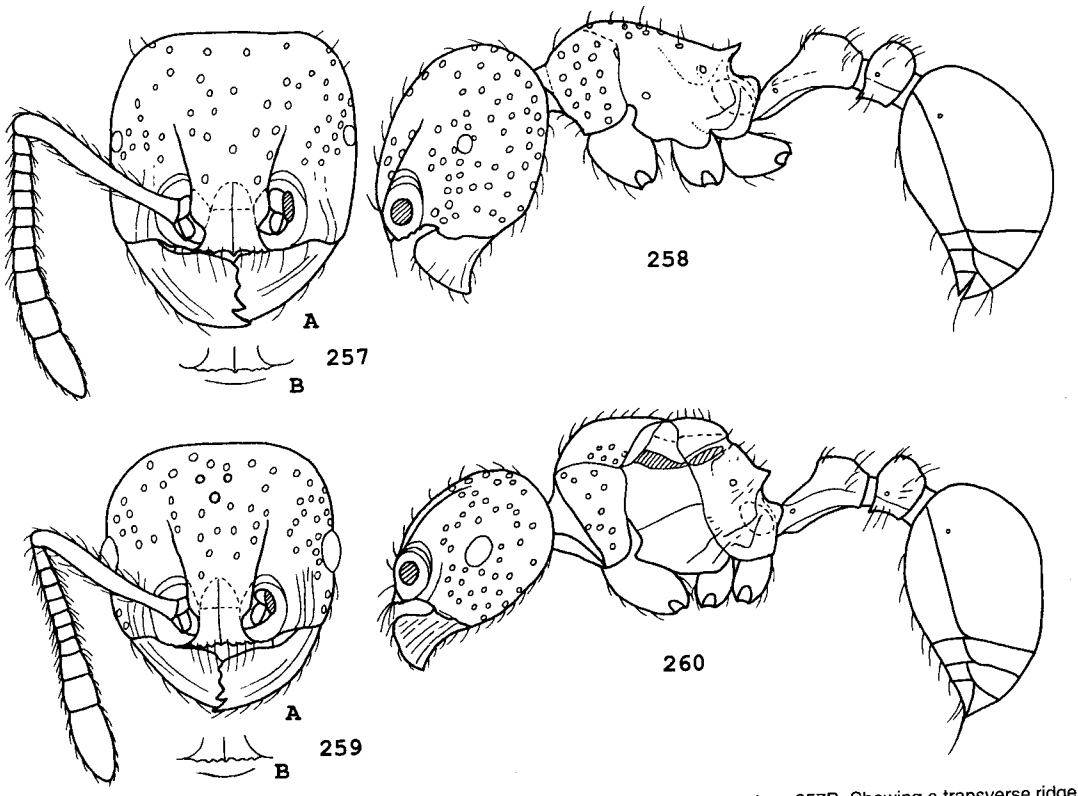
Pristomyrmex laevis (F. Smith) Donisthorpe, 1932: 473.

Pristomyrmex parumpunctatus Emery, 1887: 452. Lectotype worker, New Guinea: Andai (L. M. D'Albertis) (MCSN), here designated, [examined]. **Syn. n.**

Pristomyrmex castor Donisthorpe, 1944: 81. Lectotype queen, New Guinea: Papua, Kokoda, 1,200 ft, x.1933 (L. E. Cheesman) (BMNH), here designated, [examined]. **Syn. n.**

Pristomyrmex castaneicolor Donisthorpe, 1949: 412. Syntype workers, New Guinea: Maffin Bay, ix-1944 (E. S. Ross) (BMNH, CASC, LACM, MCZC, USNM) [examined]. **Syn. n.**

Diagnosis (Worker). Masticatory margin of mandible with four teeth (an apical + a preapical + two broad-based short teeth of similar size), lacking a distinct diastema;



Figures 257–260. *Pristomyrmex umbripennis* (F. Smith). 257A: Worker head, full-face view; 257B: Showing a transverse ridge on the ventral clypeus; 258: Worker, lateral view; 259A: Queen head, full-face view; 259B: Showing a transverse ridge on the ventral clypeus; 260: Queen, lateral view.

eyes generally with six to seven (rarely five) ommatidia in the longest row; propodeum with a pair of elongate triangular teeth.

Worker. TL 5.48–7.06, HL 1.32–1.68, HW 1.30–1.74, CI 98–109, SL 1.20–1.52, SI 81–92, EL 0.12–0.18, PW 0.86–1.16, AL 1.46–1.88, PPW 0.33–0.47, PPL 0.32–0.44, PPI 103–113 (n = 52).

Mandibles with a few longitudinal rugae that often reach to the masticatory margin. Basal margin of mandible with a central, broadly curved prominence. Clypeus smooth and shining with a strong median longitudinal carina. Anterior clypeal margin usually with seven denticles: a median denticle and three others on each side; sometimes one to two lateral denticles are indistinct; sometimes, two lateral denticles are fused into a broad lobe. Ventral surface of clypeus with a coarse transverse ridge. Palp formula 1,3. Frontal carinae extending to the level of the posterior margins of eyes. Antennal scrobes absent. Frontal lobes present, partially covering the condylar bulbs of holding antennal scapes. One third to one half of the antennal scapes usually laterally compressed near the bases. Antennal scapes, when lying on the dorsal head, just beyond the occipital margin. Lamella encircling the base of the antennal scape with a broad and deep notch on the center of the dorsal surface. Eyes generally containing more than 20 (rarely 15) ommatidia, with six to seven (rarely five) in the longest row. Occipital margin straight or feebly concave in full-face view. Alitrunk, in profile, with a convex dorsum, in dorsal view without any su-

tures. Pronotum unarmed. Propodeum with a pair of slightly elongate triangular teeth. Metapleural lobes prominent and rounded. Petiole node in profile longer than high with a long anterior peduncle; its anterodorsal angle is on approximately the same level as the posterodorsal. Subpetiole with a narrow, semitranslucent lamella. Postpetiole in profile higher than long, rounded dorsally, in dorsal view slightly broadening from front to back. Dorsal surfaces of head and alitrunk and the sides of pronotum with scattered foveolate punctures, varying from shallow, small, and few to distinct, rather large and many; space between foveolae usually smooth. Petiole, postpetiole, and gaster smooth and shining. Dorsal surfaces of head and alitrunk with some erect or suberect short hairs. Usually two to three pairs of hairs present on the dorsal surfaces of petiole node and postpetiole, respectively. A row of forward-projecting hairs present near the anterior clypeal margin. Scapes and tibiae with numerous suberect short hairs. First gastral tergite lacking erect or suberect hairs. Color reddish-brown, but the masticatory margin of mandible blackbrown.

Queen. TL 8.00–8.25, HL 1.80–2.02, HW 2.00–2.25, CI 99–118, SL 1.52–1.65, SI 73–79, EL 0.40–0.42, PW 1.50–1.60, AL 2.26–2.40, PPW 0.52–0.52, PPL 0.48–0.50, PPI 104–108 (n = 4).

General shape as in Figures 259–260, with normal caste differences from the conspecific worker; propodeal armaments toothlike; other characters similar to worker.

Male. A single male specimen (BMNH), collected in Papua (Kokoda, 1,200 ft) by L. E. Cheeman in August 1933, has the following measurements: TL ca. 6.04, HL 0.94, HW 0.98, CI 104, SL 0.35, SI 36, EL 0.47, PW 1.28, AL 1.98.

Head, including the eyes, distinctly broader than long. Clypeus narrow, transverse, convex in the middle, its anterior margin almost straight. Frontal carinae short. Eyes large and prominent. On the mesoscutum, notauli rather wide, forming a Y shape with several coarse rugae. Scutoscutellar sulcus wide, separated into small cells by longitudinal ridges. Propodeum armed with a pair of strong triangular teeth. Metapleural lobes rounded. Petiole node in profile low, distinctly longer than high, with a long anterior peduncle. Postpetiole in profile slightly longer than high and rounded dorsally. Dorsum of head behind the level of the posterior margins of eyes with some foveolate-reticulate sculpture, but the centrical disc of the dorsal head, under the median ocellus, smooth and shining. Each side of the dorsal head, between the eye and the frontal carina, with several transverse rugae; spaces between the rugae smooth and shining. Promesonotum with somewhat coarse foveolate-reticulate sculpture. Sides of petiole node with foveolate-reticulate sculpture. Postpetiole rather smooth, only with few superficial short rugae on each side. Gaster unsculptured, smooth, and shining. Body blackish-brown, but gaster and scapes reddish-brown.

Note: This male is assigned to the species *P. umbripennis* for the following reasons: (1) It belongs to the *umbripennis* group because it is similar to the males of *P. picteti, P. pollux,* and *P. reticulatus* but different from the other known males of *Pristomyrmex* in the structure and shape of propodeal spines, petiole, notauli, and scuto-scutellar sulcus and in body size, sculpture, and hairs. (2) It cannot be placed in the other species of the *umbripennis* group. It differs from the male of *P. pollux* because the former has a wider head (HW 0.98, CI 104) than the latter (HW 0.68–0.70, CI 80). This male is larger (HW 0.98, HL 0.94, EL 0.47) than the males of *P. picteti* and *P. reticulatus* (HW < 0.85, HL < 0.85, EL < 0.40). In fact, it is the largest male specimen so far found in *Pristomyrmex.* This matches with the workers and queens of *P. umbripennis,* which are the largest in the genus. (3) The collecting locality and the collector name

for this male are the same as the other two queens of *P. umbripennis*.

Comments. Pristomyrmex umbripennis occurs in New Guinea and some islands of Indonesia. It is closely related to *P. pollux* and *P. picteti*, but their workers and queens can be separated by the following characters:

P. umbripennis

Eyes larger, generally consisting of 20 or more ommatidia and containing six to seven (rarely five) ommatidia in the longest row (worker)

Propodeum with a pair of triangular toothlike armaments that are shorter than the distance between their bases (worker and queen)

One-third to one-half of the antennal scape usually laterally compressed near the base (worker and queen)

P. pollux and ***P. picteti***

Eyes smaller, generally consisting of 10 or less ommatidia, and containing two to three (rarely four) ommatidia in the longest row (worker)

Propodeum with a pair of fairly long or long spines that are longer (or much longer) than the distance between their bases (worker) or with a pair of short spines (queen)

Antennal scape not laterally compressed near the base (worker and queen)

Material Examined (ANIC, MCZC, LAMN, BMNH, BMHH). Papua New Guinea: Gulf Prov., Ivimka Camp, Lakekamu Basin, 7.7°S, 146.8°E, 120 m, #96-266 (R. R. Snelling); NETH. Santani, 90+ m (T. C. Maa); NE Eloa River 488 to 518 m (S. Cutleck); N. Dist. of Papua, Kokoda (P. M. Room); N. Dist. of Papua, Saiho (P. M. Room); N. Dist. of Papua, Lejo Rd (P. M. Room); Papua, Brown Riv., lowland rainfor., ground, rotten tree stump (R. W. Taylor); Maffin Bay (E. S. Sepik Province, ca. 2 to 3 km S of Wirui, S of Wewak 50 to 100 m, 03.36°S, 143.37°E (R. J. Kohout); Lae, Bupu River, wet rotten log (B. B. Lowery); Bulolo, 3,000 ft, rainforest, in rotten log (B. B. Lowery); near Popondetta, <50 m, rainforest, ex trunks and low foliage (R. W. Taylor); 4 mi S of Popondetta, rainforest (B. B. Lowery); Sangara N.D. (G. Baker). Indonesia: Amboina (Biró); Irian Jaya, 50 km S Manokwari, Arfak Mtns. Nature Reserve 25 m, second rainforest, ex log (G. D. Alpert); Irian Jaya, PT. Freeport Concession, Siewa camp., 03.04°S 136.38°E, 200 ft, lowland secondary rainforest, #98-62 and #98-86, under loose bark of log (R. R. Snelling); Seram I., Solea (M. Brendell).

Ecological Information. This species occurs in rainforest and has been collected in and on rotten logs and under loose bark of a log.

NOMEN NUDUM

Pristomyrmex parvispina Emery

Emery (1900) mentioned the name *Pristomyrmex parvispina* but provided neither an indication such as "n.sp." (or its equivalent, e.g., "sp. nov.") nor a description and designated no types. *Pristomyrmex parvispina* is thus a nomen nudum. Emery (1922: 233) cited *P. parvispina* Emery as a synonym of *P. brevispinosus* Emery, but this was incorrect because *P. parvispina* was not a valid name. In addition, Emery (1922: 233) cited the original publication date incorrectly as 1901 [see Bolton's (1995) catalog for the dating of the original paper].

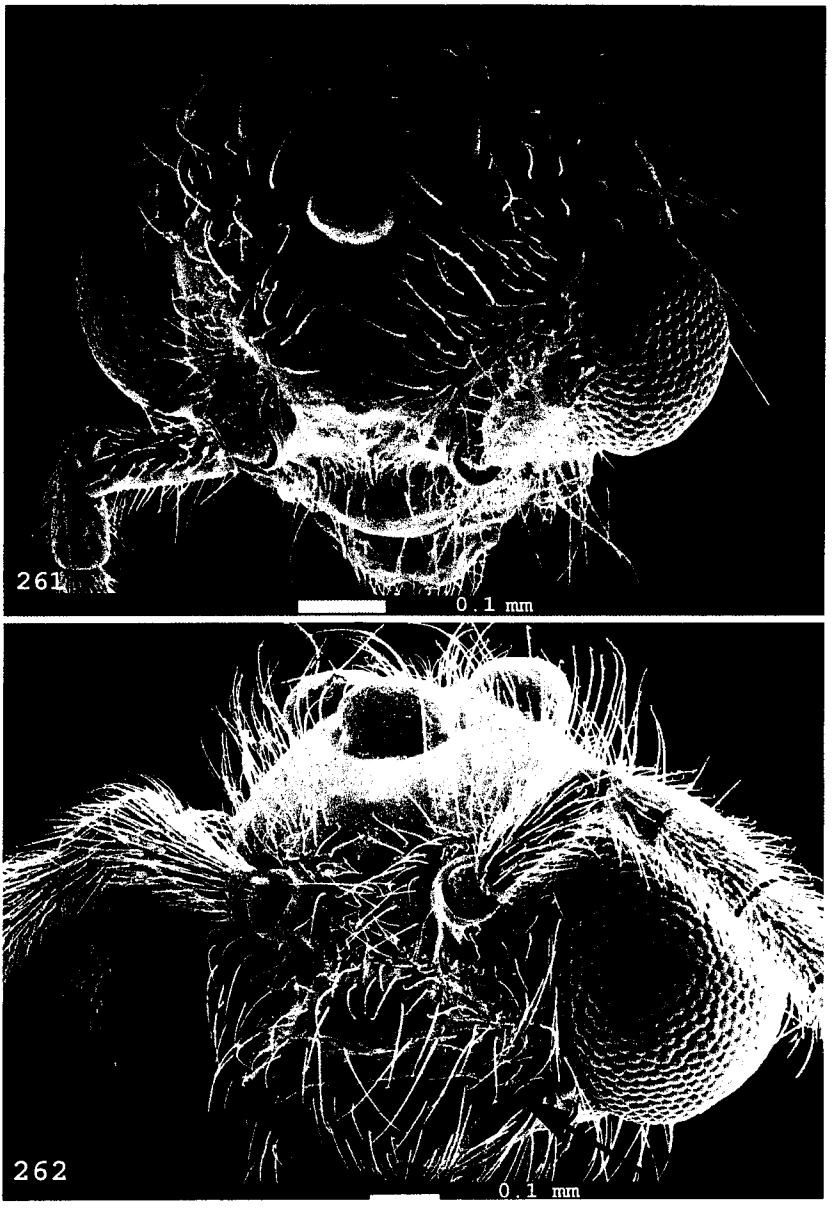


Figure 261. Head of the male of *Pristomyrmex brevispinosus* Emery, full-face view.

Figure 262. Head of the male of *Pristomyrmex ?flatus* (see the text), full-face view; mandible indicated by an arrow.

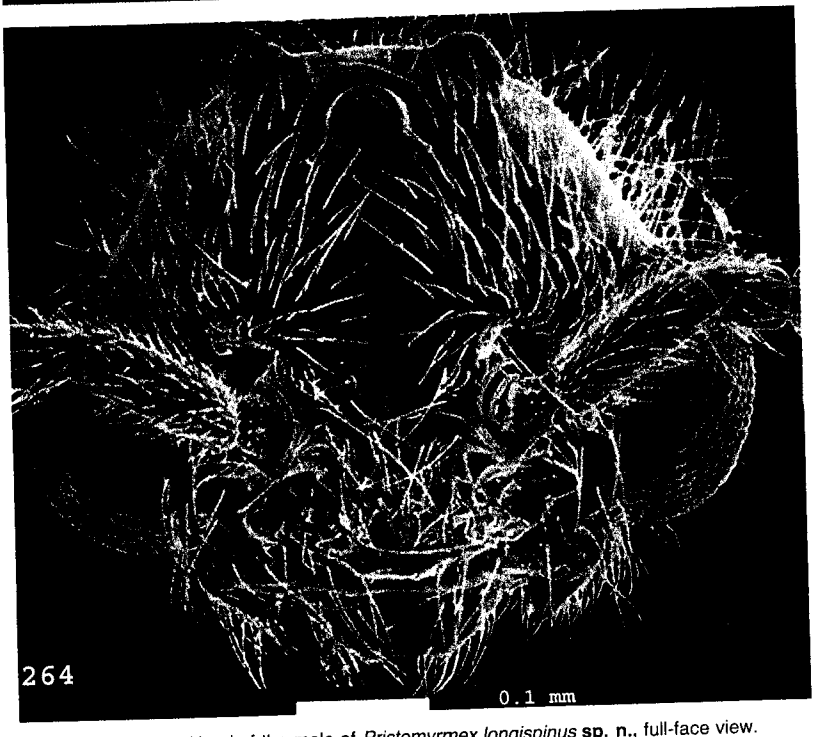


Figure 263. Head of the male of *Pristomyrmex longispinus* **sp. n.**, full-face view.

Figure 264. Head of the male of *Pristomyrmex orbiceps* (Santschi), full-face view.

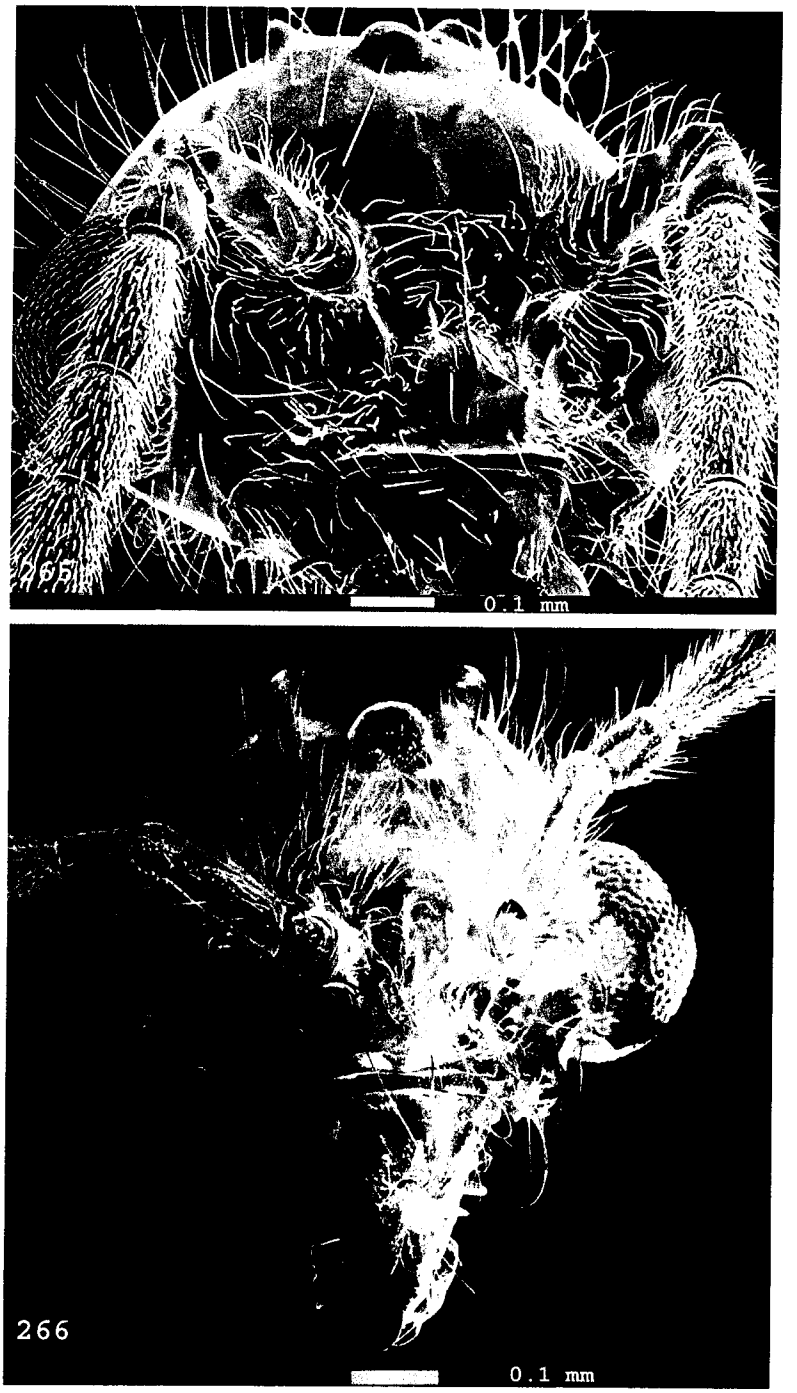


Figure 265. Head of the male of *Pristomyrmex quadridentatus* (André), full-face view.

Figure 266. Head of the male of *Pristomyrmex sulcatus* Emery, full-face view.

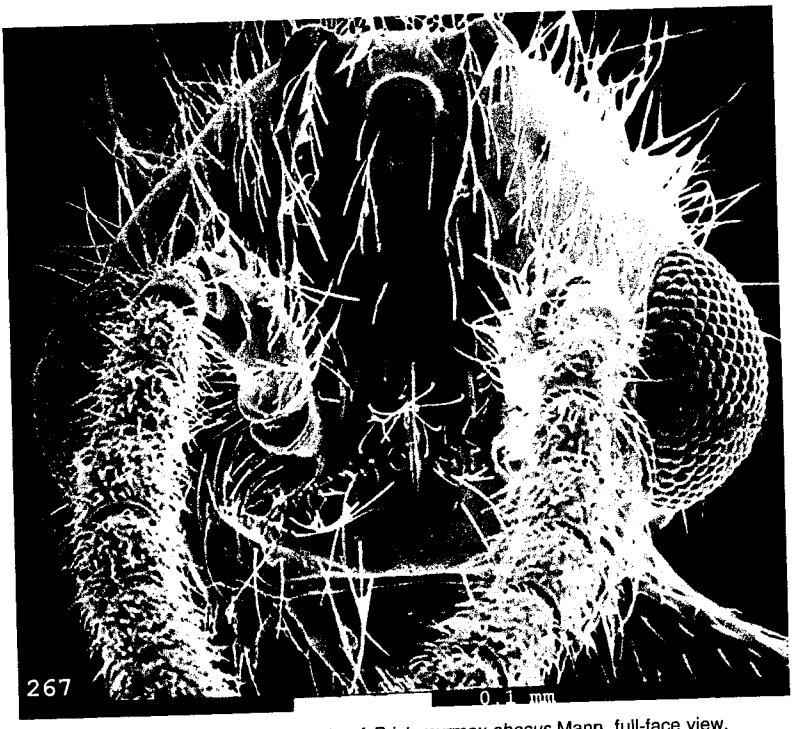
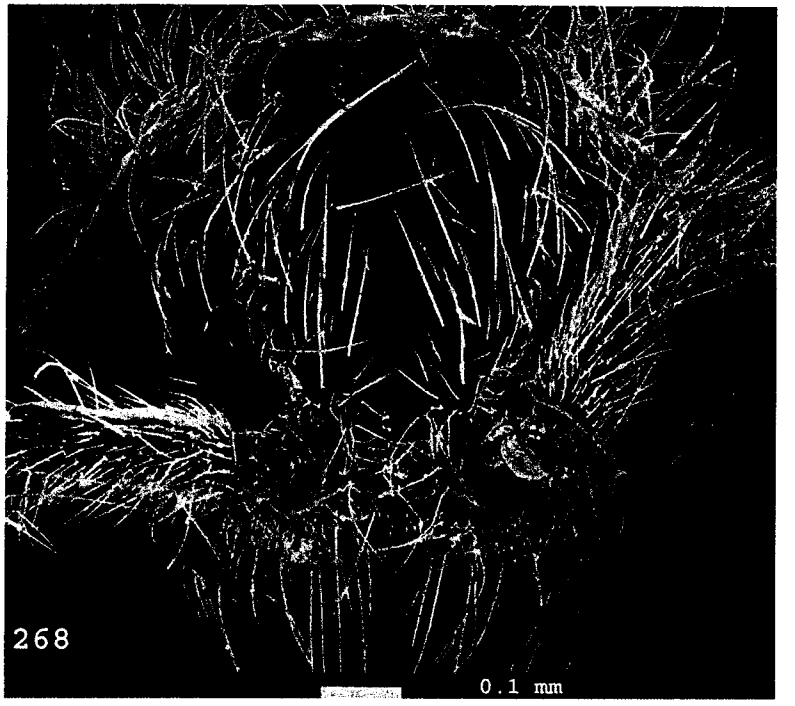


Figure 267. Head of the male of *Pristomyrmex obesus* Mann, full-face view.



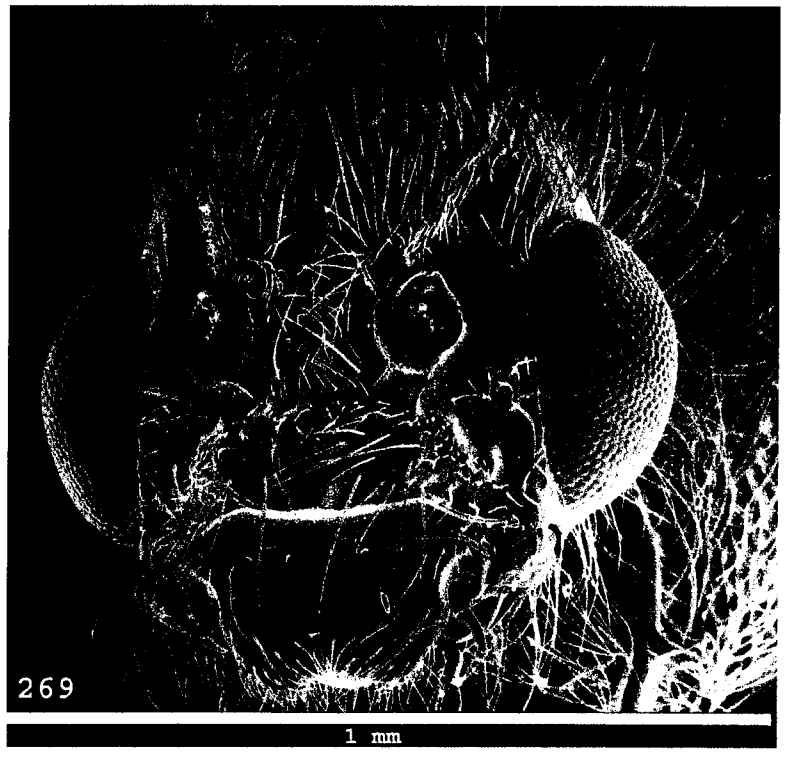


Figure 268. Head of the male of *Pristomyrmex picteti* Emery, full-face view.

Figure 269. Head of the male of *Pristomyrmex pollux* Donisthorpe, full-face view (antennae missing).

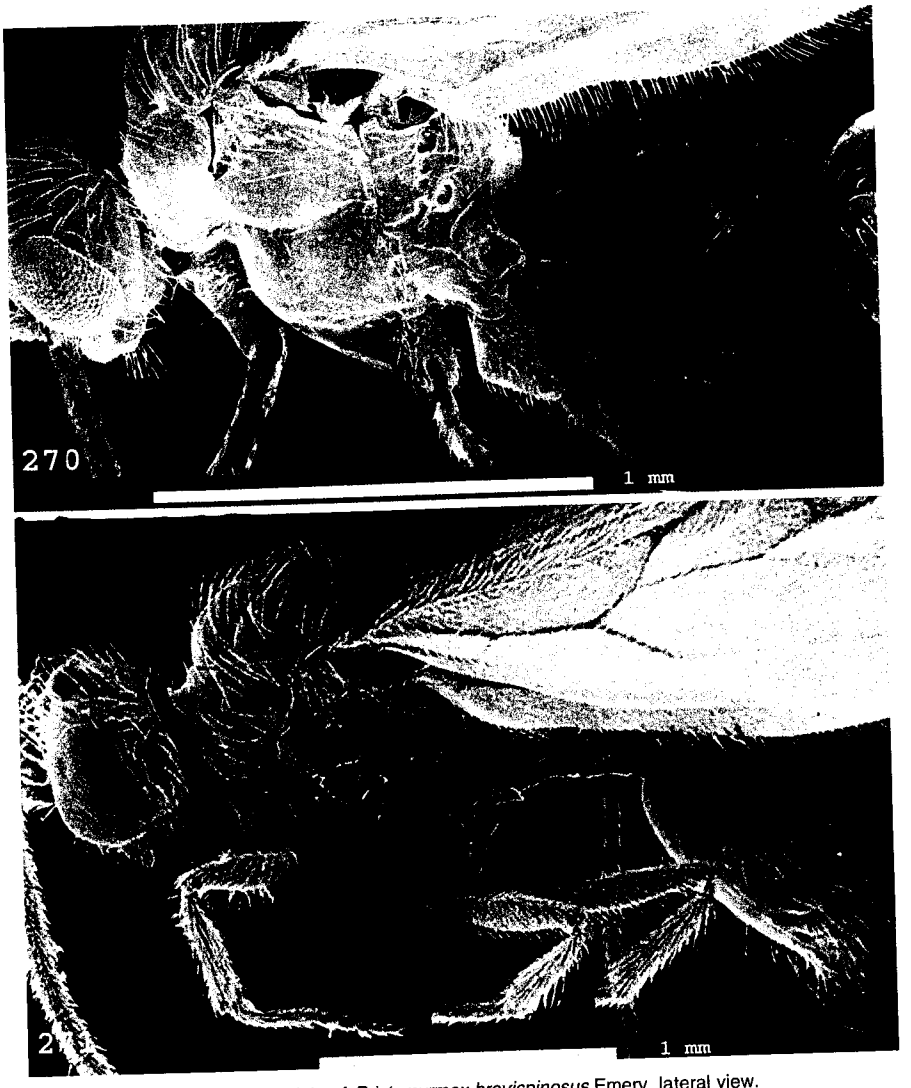


Figure 270. Male of *Pristomyrmex brevispinosus* Emery, lateral view.

Figure 271. Male of *Pristomyrmex ?flatus* (see the text), lateral view.

Figure 272. Male of *Pristomyrmex longispinus* **sp. n.,** lateral view.

Figure 273. Male of *Pristomyrmex orbiceps* (Santschi), lateral view.

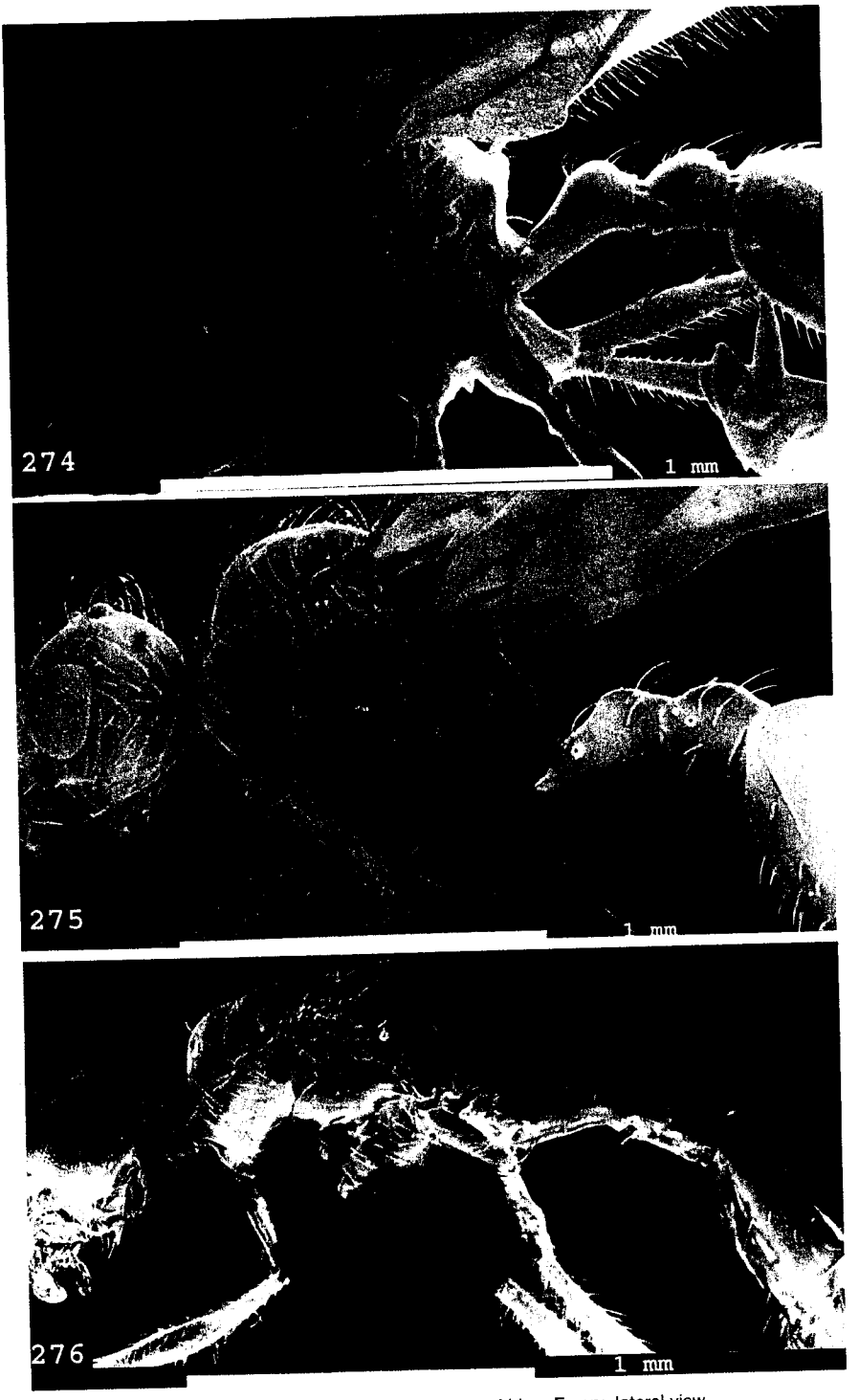


Figure 274. Male of *Pristomyrmex quadridens* Emery, lateral view.

Figure 275. Male of *Pristomyrmex quadridentatus* (André), lateral view.

Figure 276. Male of *Pristomyrmex sulcatus* Emery, lateral view.

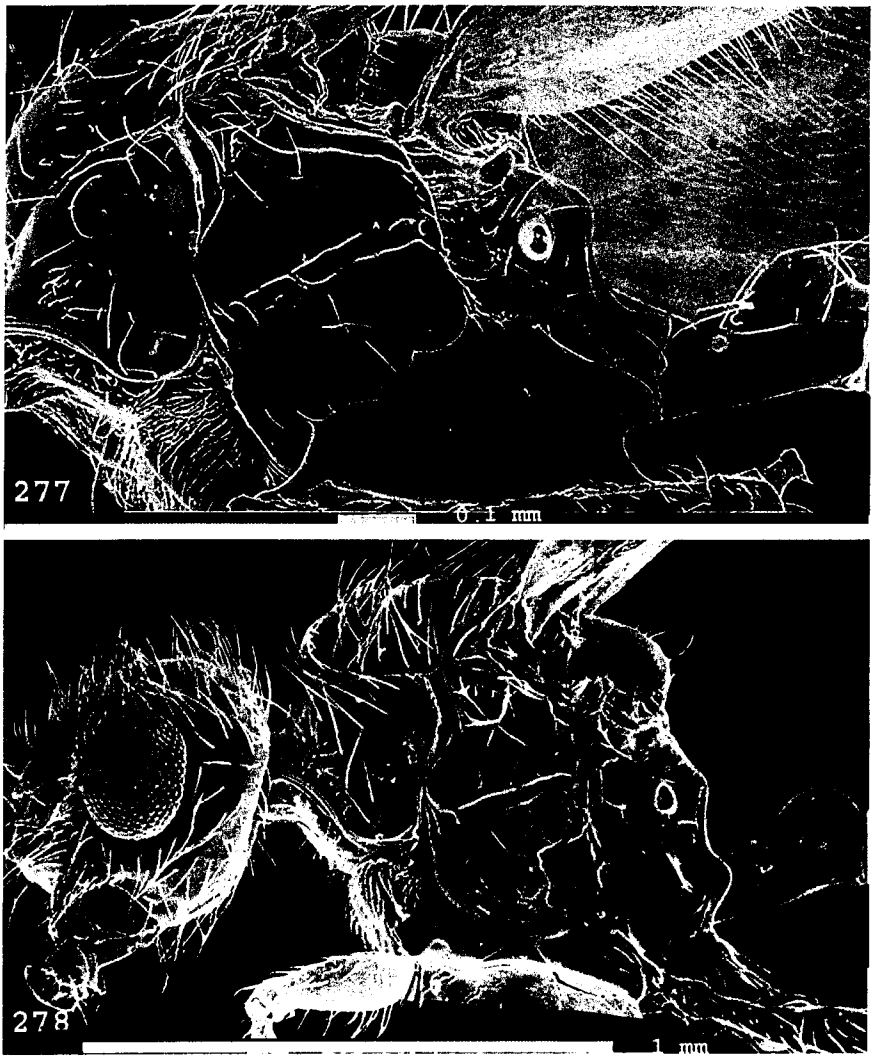


Figure 277. Alitrunk and petiole node of the male of *Pristomyrmex levigatus* Emery, lateral view.

Figure 278. Head, alitrunk and petiole node of the male of *Pristomyrmex obesus* Mann, lateral view.

Figure 279. Male of *Pristomyrmex picteti* Emery, lateral view; propodeal spine and petiole node indicated by an arrow, respectively.

Figure 280. Male of *Pristomyrmex pollux* Donisthorpe, lateral view; propodeal spine and petiole node indicated by an arrow, respectively.

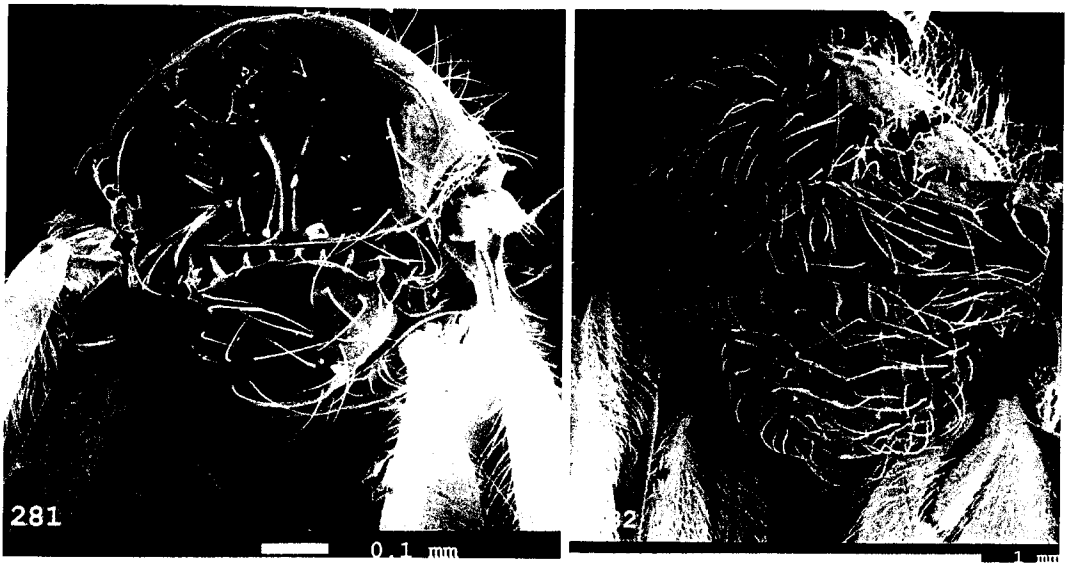


Figure 281. Mesonotum of the male of *Pristomyrmex levigatus* Emery, dorsal view.

Figure 282. Mesonotum of the male of *Pristomyrmex pollux* Donisthorpe, dorsal view.

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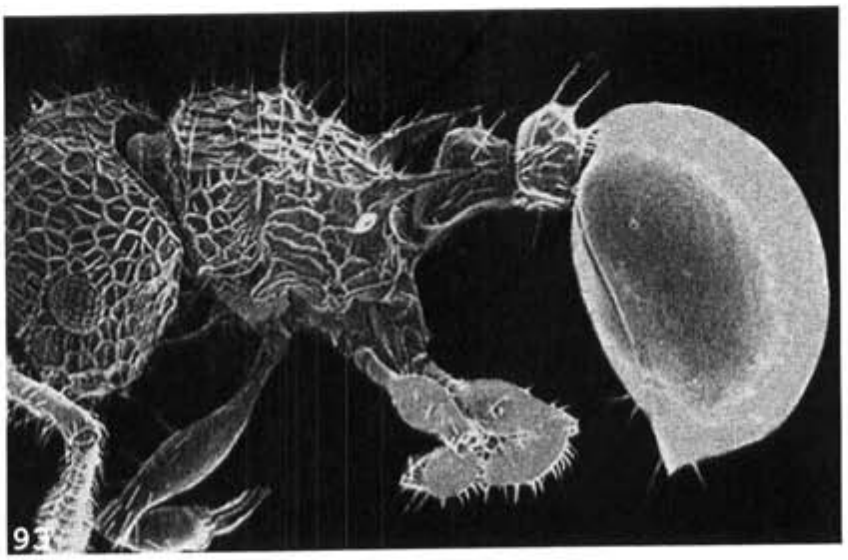


Figure 93. Showing that the worker of *Pristomyrmex punctatus* (F. Smith) has a more or less depressed dorsum of alitrunk.

present, respectively, bilaterally on the dorsums of petiole node and postpetiole, of which usually a pair shorter and the other pair longer. First gastral tergite lacking erect or suberect hairs. A few pairs of long, forward-projecting hairs present near the anterior clypeal margin that are symmetrical on the two sides of the midpoint. Scapes and tibiae with numerous erect to suberect short hairs. Color reddish-brown, but sometimes the gaster much darker or the appendages slightly lighter.

Ergatoid Queen. TL 3.60, 3.72; HL 0.86, 0.88; HW 0.94, 0.94; CI 107, 109; SL 0.89, 0.91; SI 97, 97; EL 0.23, 0.23; PW 0.66, 0.68; AL 0.94, 0.96; PPW 0.31, 0.32; PPL 0.23, 0.24; PPI 133, 135 (n = 2).

Closely resembling the worker in the structure of mandibles, clypeus, petiole, postpetiole and gaster and also in sculpture, color, and pilosity. But the head with three ocelli; eyes larger; pronotum and propodeum narrower than those of worker; mesonotum more convex; an impression present at the approximate positions of promesonotal suture and of metanotal groove, respectively; propodeal spines stronger than in worker. Wing absent, but the rudimentary vestige of a wing is present on the each lateral margin of the mesonotum.

Queen. Unknown.

Male. TL 3.22, HL 0.60, HW 0.57, CI 95, SL 0.18, SI 32, HWE 0.79, EL 0.32, PW 0.74, AL 1.04, PPW 0.26, PPL 0.17, PPI 153 (n = 1; one specimen [MCZC] collected from Nara, Japan, by Silvestri on July 21, 1925, was examined).

Head, including the eyes, broader than long. Clypeus transverse, with a median short carina. Frontal area with a median longitudinal carina. Frontal carinae short, slightly beyond the posterior margins of antennal sockets. Palp formula 5,3. On the mesoscutum, notauli pronounced, forming a Y shape; parapsidal furrows superficially impressed. Propodeum with a pair of teeth. Metapleural lobes subtriangular. Middle and hind tibiae each with a simple spur. Petiole node wedge-shaped, with a triangular apex; dorsum of petiole peduncle forming a declivity that reaches the top of the node. Postpetiole in profile rounded dorsally, in dorsal view transverse-rectangular and distinctly broader than long. Dorsum of head smooth and shining, except for few short rugae present behind the posterior margin of clypeus. Pronotum

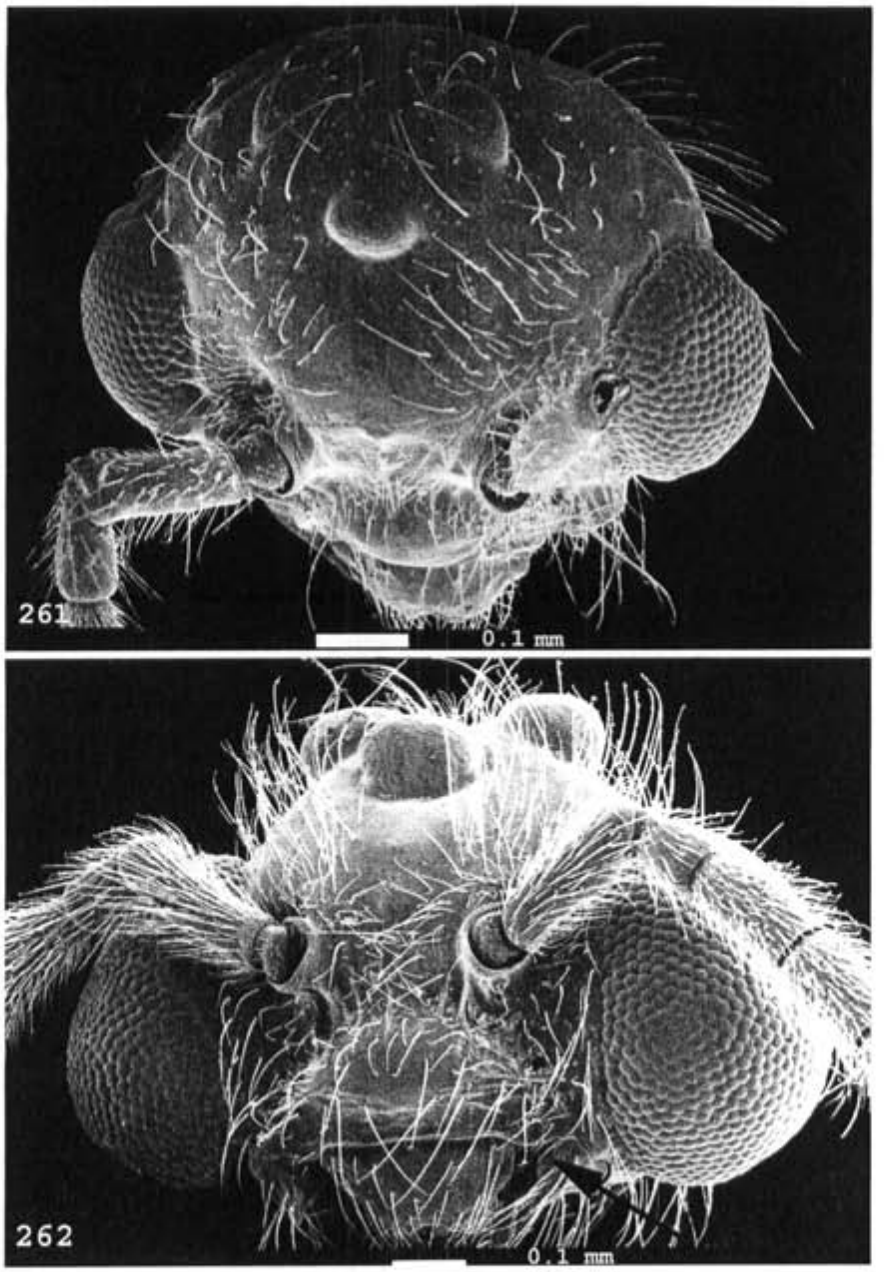
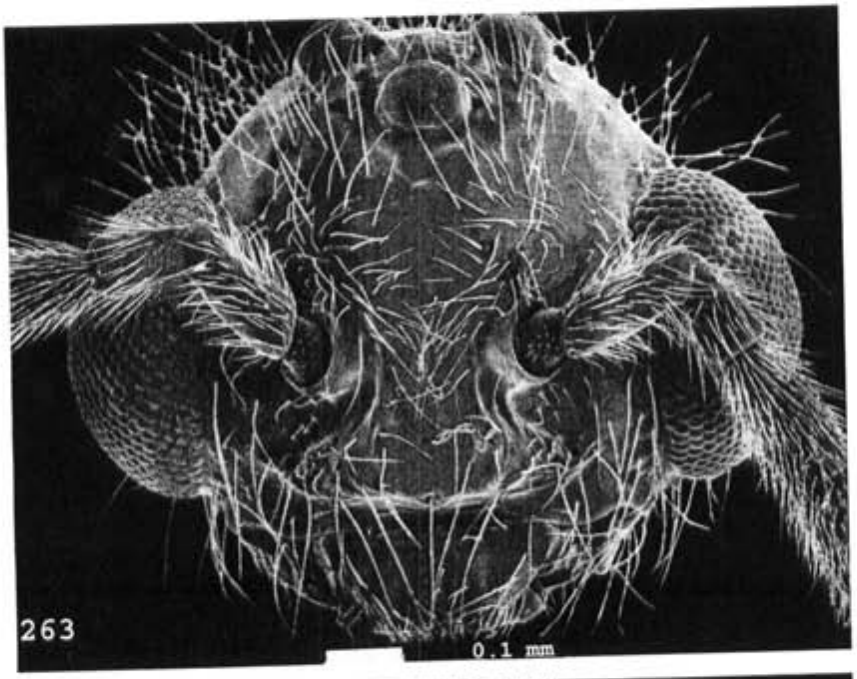


Figure 261. Head of the male of *Pristomyrmex brevispinosus* Emery, full-face view.

Figure 262. Head of the male of *Pristomyrmex ?flatus* (see the text), full-face view; mandible indicated by an arrow.



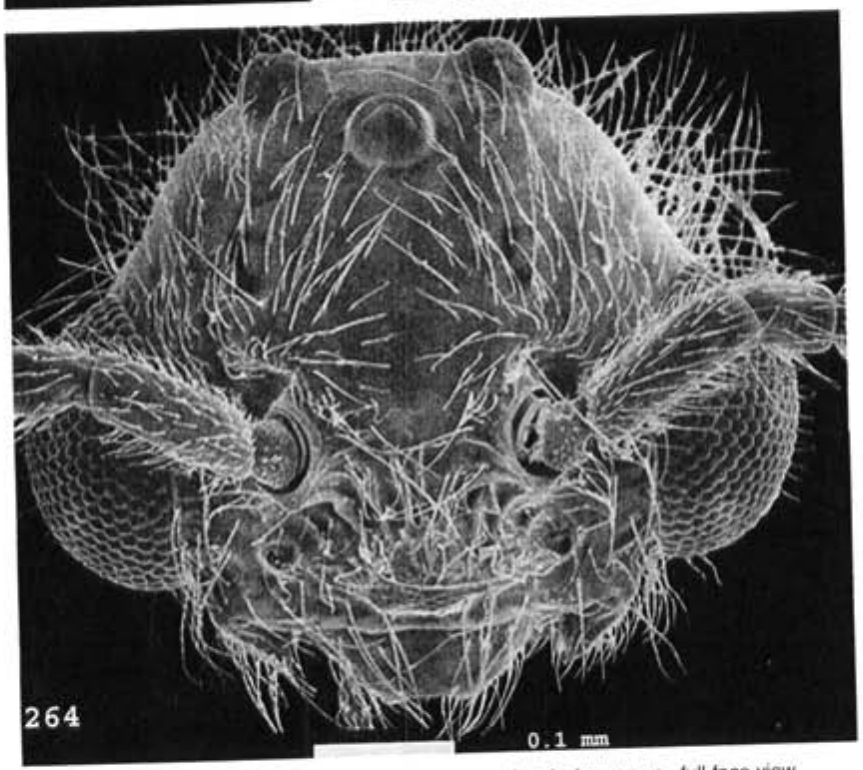
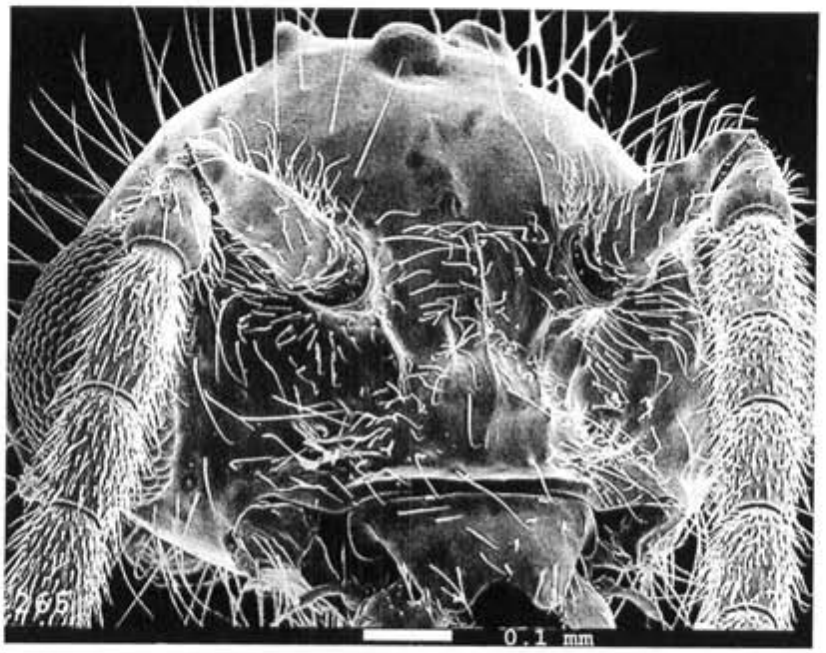


Figure 263. Head of the male of *Pristomyrmex longispinus* **sp. n.**, full-face view.

Figure 264. Head of the male of *Pristomyrmex orbiceps* (Santschi), full-face view.



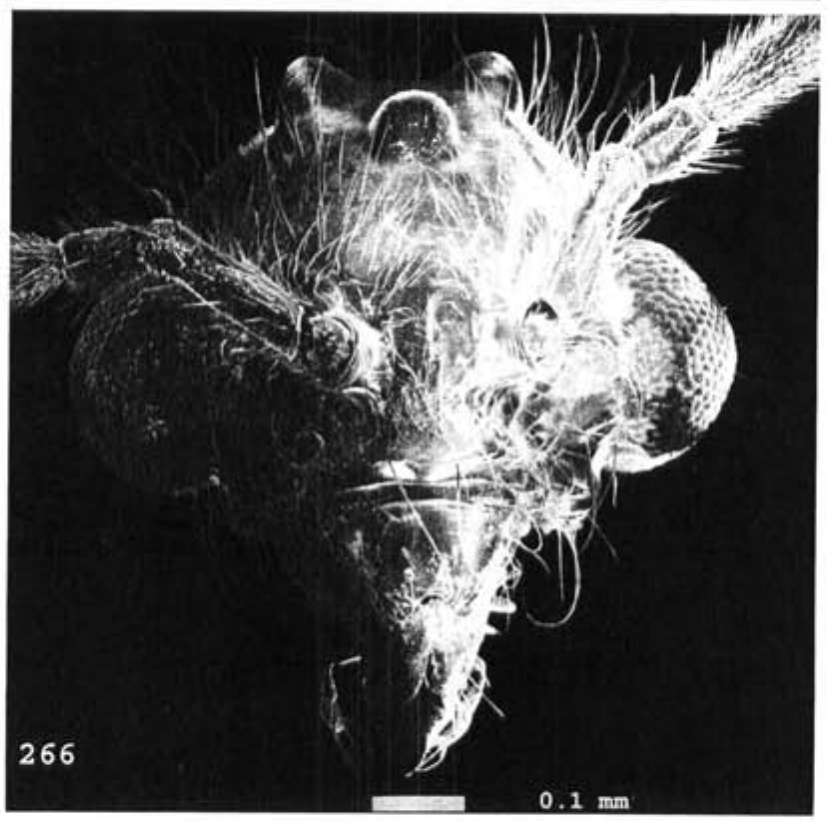


Figure 265. Head of the male of *Pristomyrmex quadridentatus* (André), full-face view.

Figure 266. Head of the male of *Pristomyrmex sulcatus* Emery, full-face view.

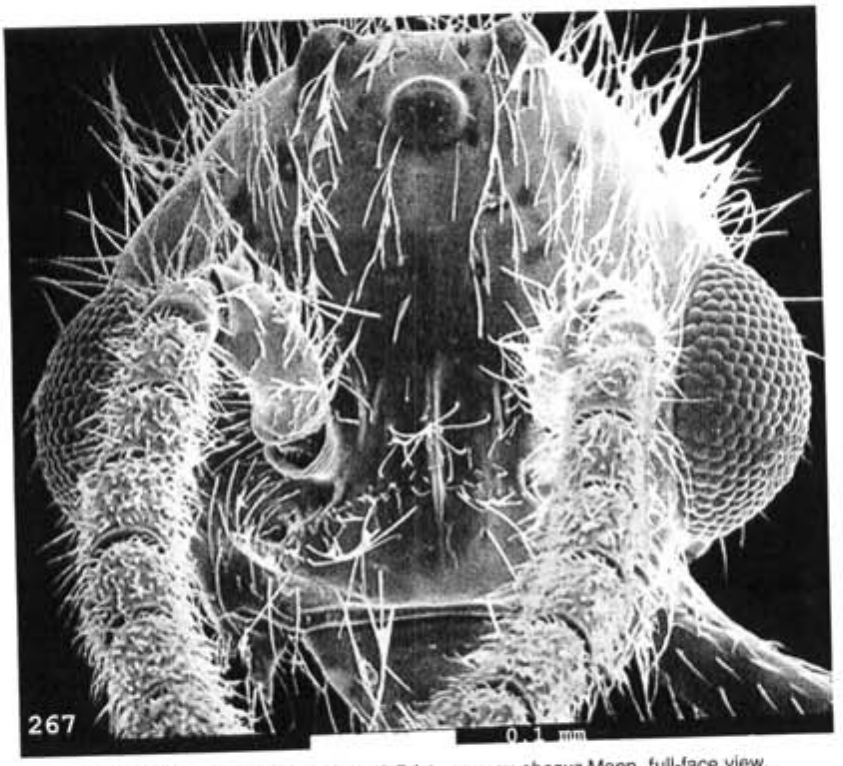


Figure 267. Head of the male of *Pristomyrmex obesus* Mann, full-face view.

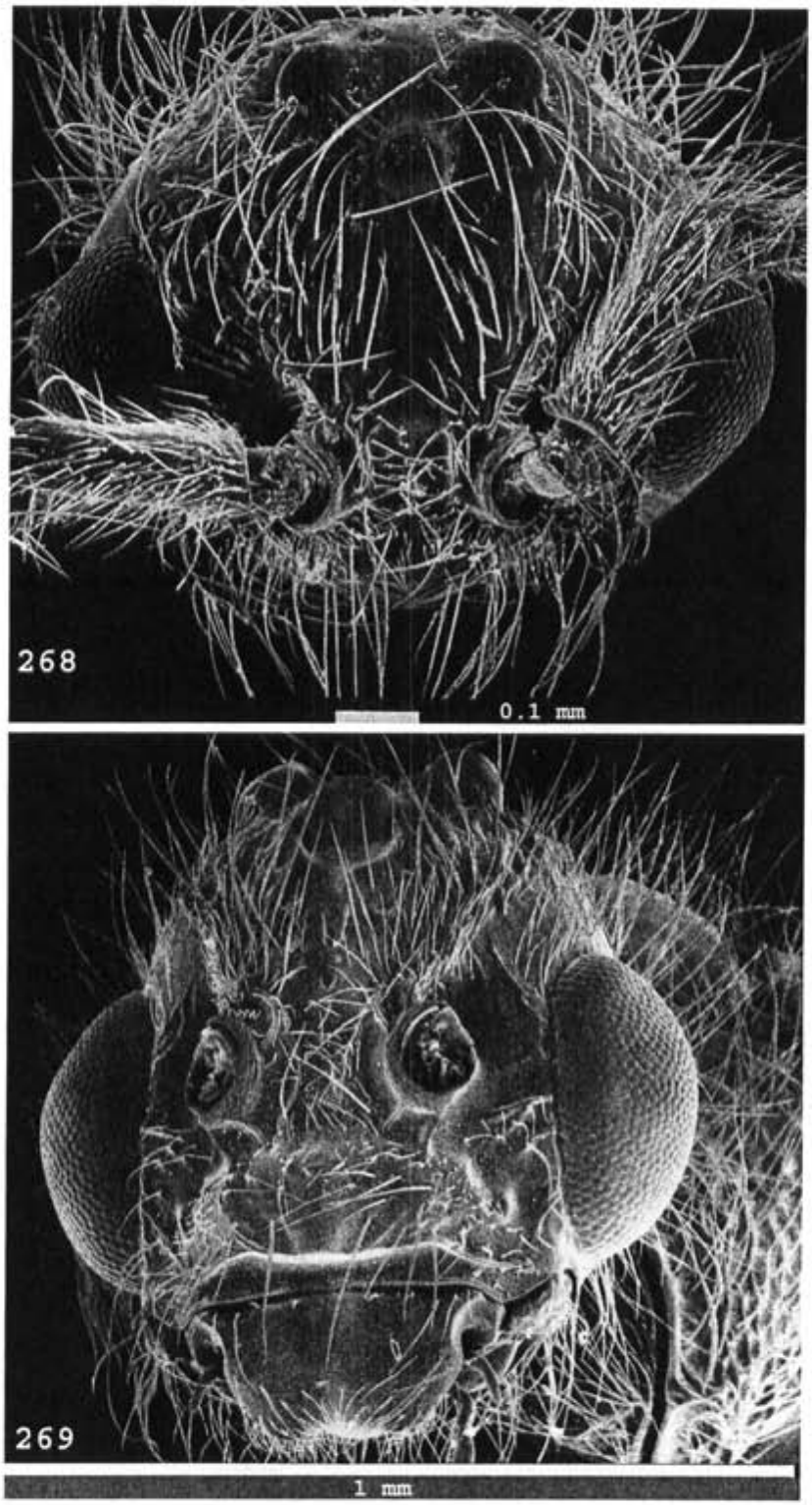


Figure 268. Head of the male of *Pristomyrmex picteti* Emery, full-face view.

Figure 269. Head of the male of *Pristomyrmex pollux* Donisthorpe, full-face view (antennae missing).

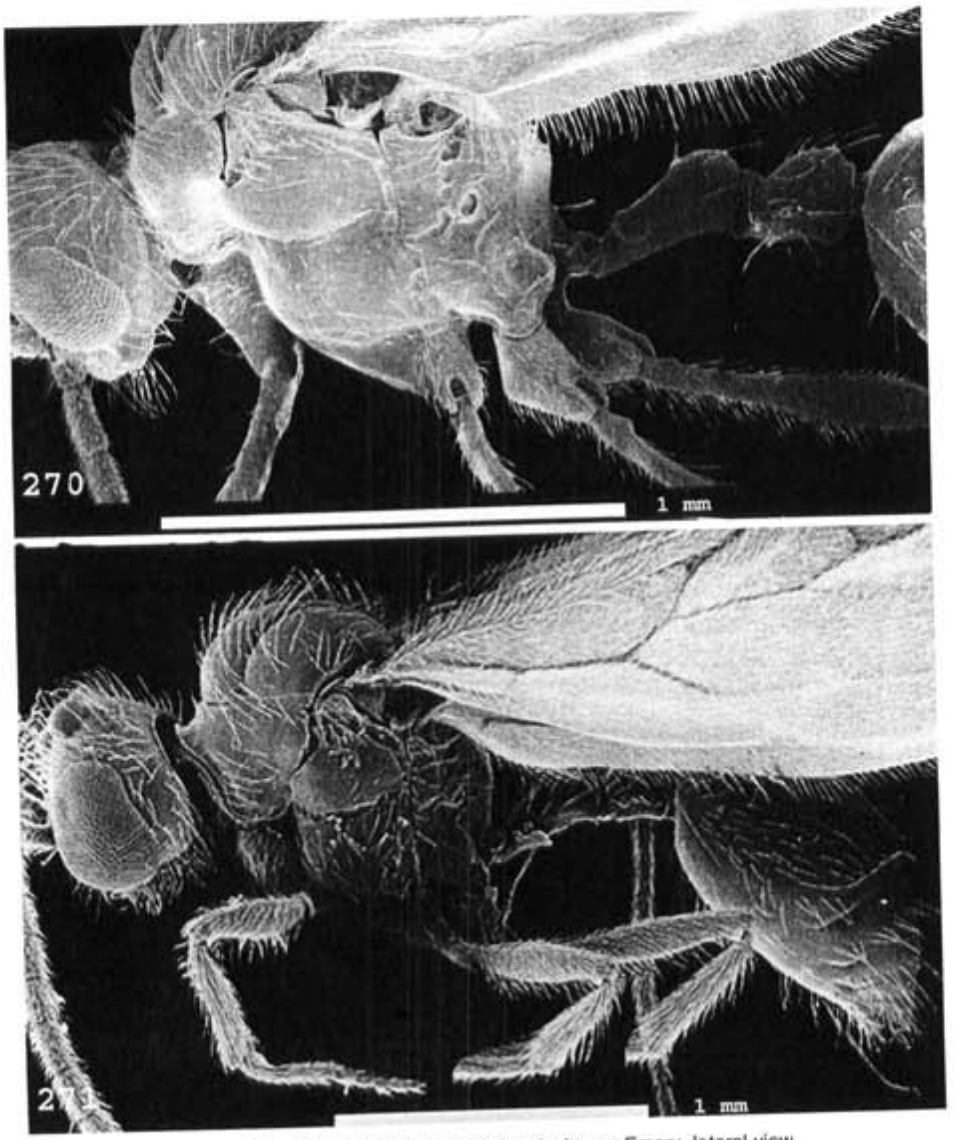


Figure 270. Male of *Pristomyrmex brevispinosus* Emery, lateral view.

Figure 271. Male of *Pristomyrmex ?flatus* (see the text), lateral view.

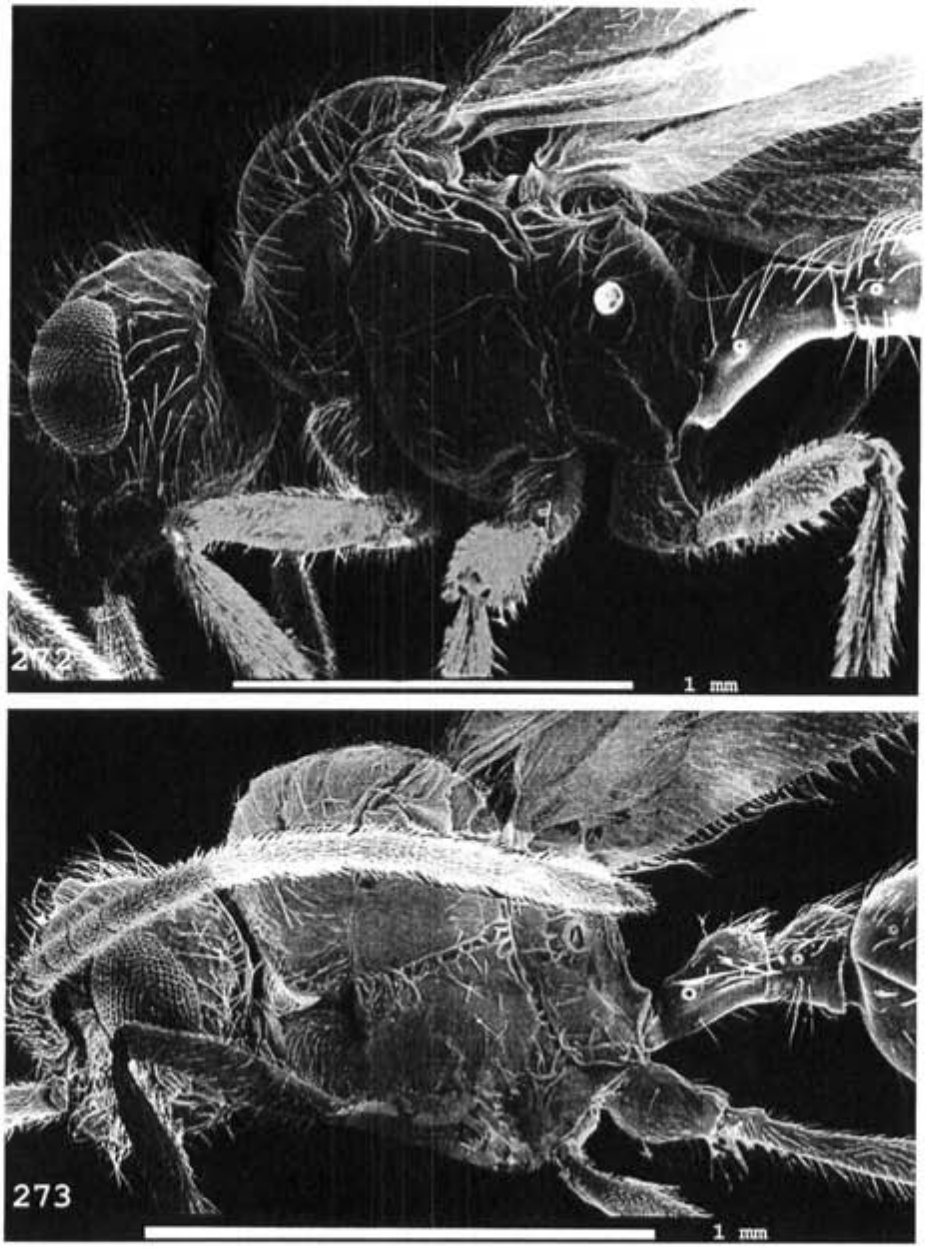


Figure 272. Male of *Pristomyrmex longispinus* **sp. n.**, lateral view.

Figure 273. Male of *Pristomyrmex orbiceps* (Santschi), lateral view.

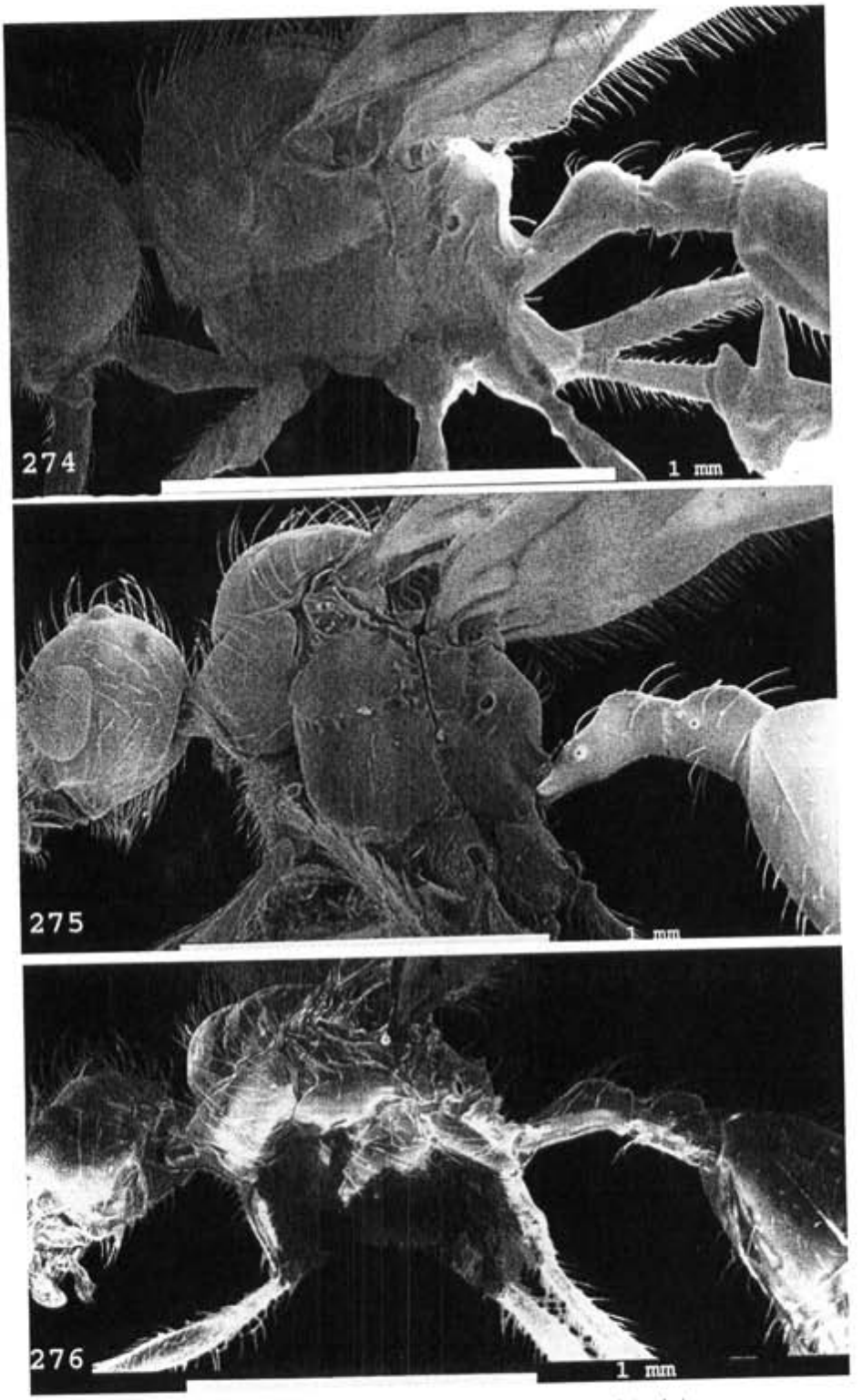
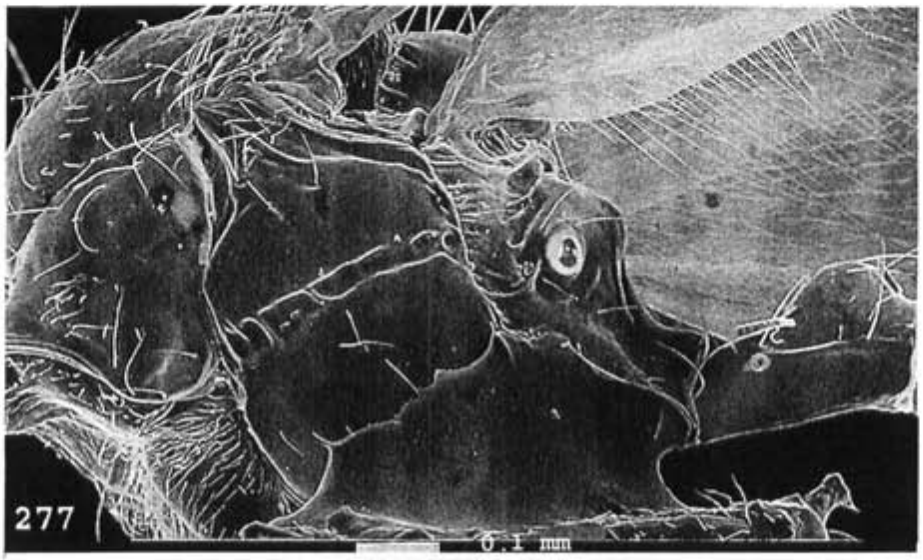


Figure 274. Male of *Pristomyrmex quadridens* Emery, lateral view.

Figure 275. Male of *Pristomyrmex quadridentatus* (André), lateral view.

Figure 276. Male of *Pristomyrmex sulcatus* Emery, lateral view.



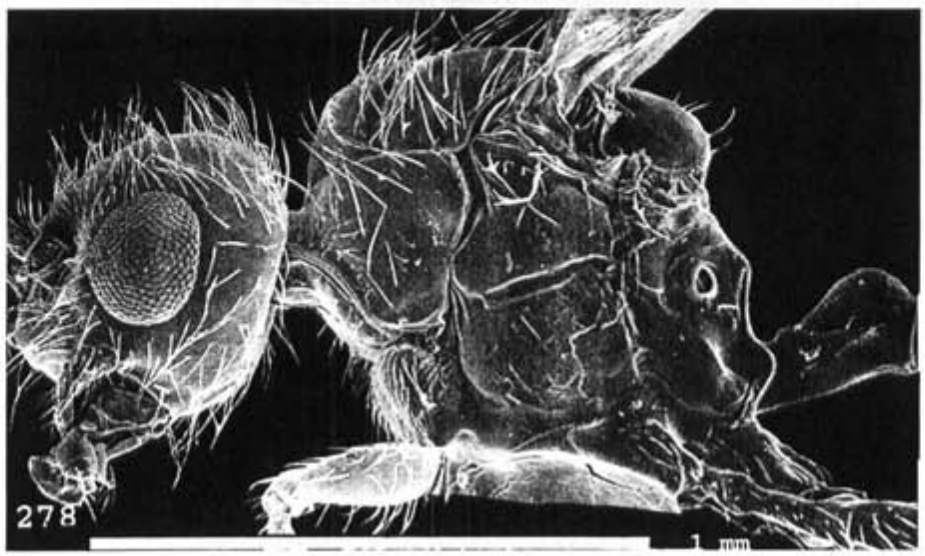
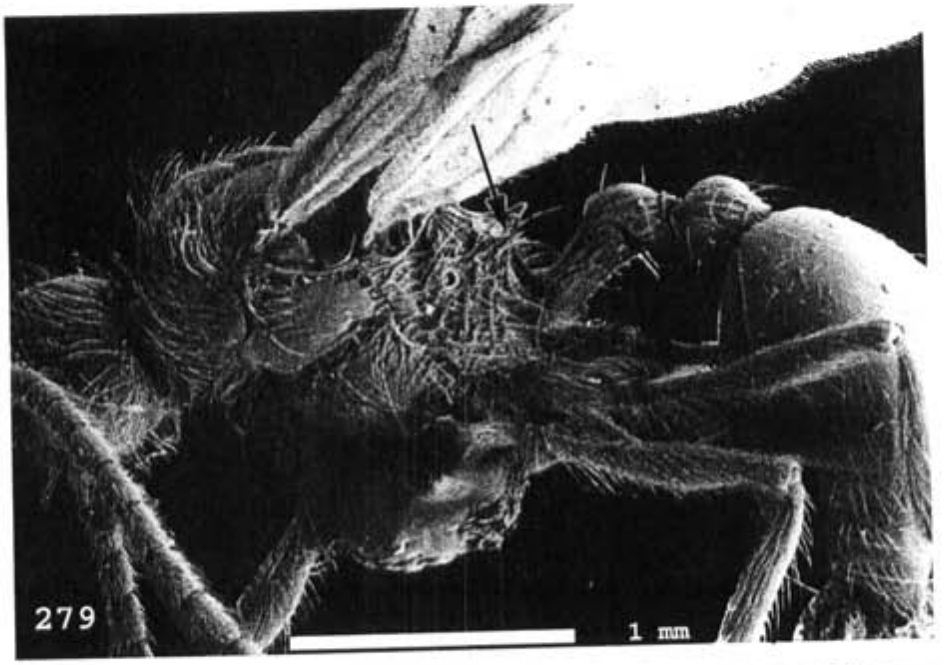


Figure 277. Alitrunk and petiole node of the male of *Pristomyrmex levigatus* Emery, lateral view.

Figure 278. Head, alitrunk and petiole node of the male of *Pristomyrmex obesus* Mann, lateral view.



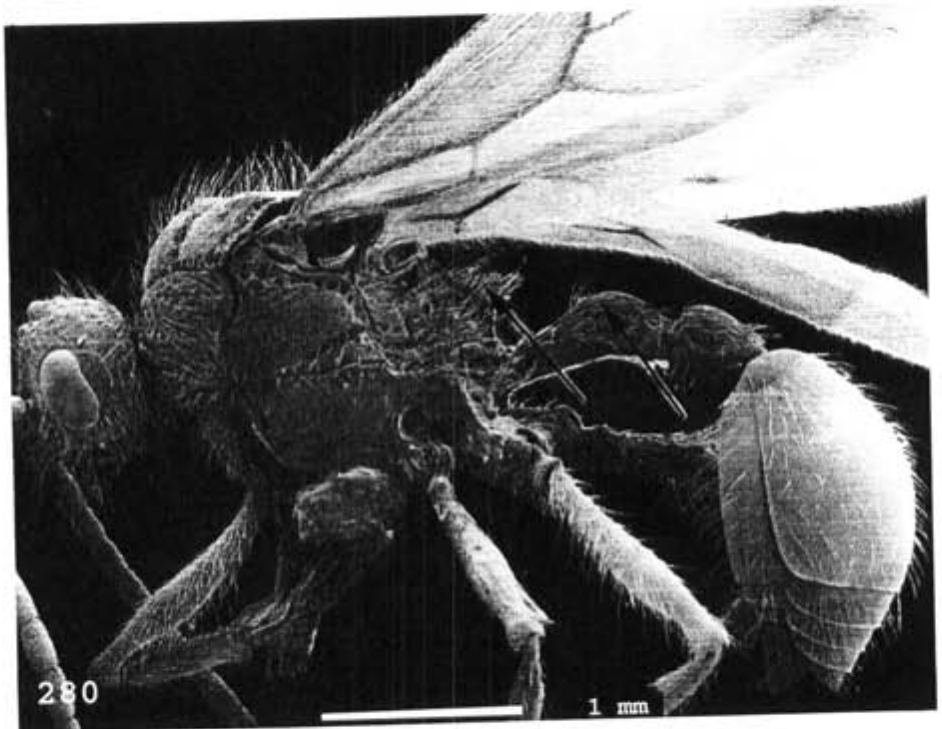


Figure 279. Male of *Pristomyrmex picteti* Emery, lateral view; propodeal spine and petiole node indicated by an arrow, respectively.

Figure 280. Male of *Pristomyrmex pollux* Donisthorpe, lateral view; propodeal spine and petiole node indicated by an arrow, respectively.

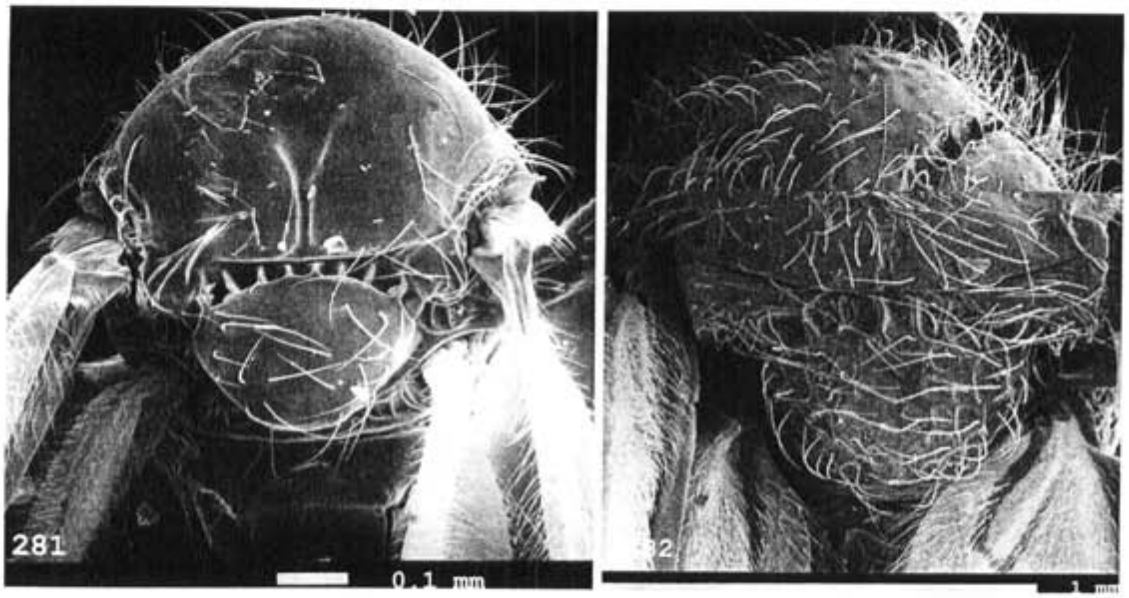


Figure 281. Mesonotum of the male of *Pristomyrmex levigatus* Emery, dorsal view.

Figure 282. Mesonotum of the male of *Pristomyrmex pollux* Donisthorpe, dorsal view.

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