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STUDIES ON THE ANT FAUNA OF MELANESIA
V. THE TRIBE ODONTOMACHINI

BY EDWARD O. WILSON

Biological Laboratories, Harvard University

WITH TWO PLATES

CAMBRIDGE, MASS., U.S.A.

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No. 5 — *Studies on the Ant Fauna of Melanesia*
V. *The Tribe Odontomachini*¹

By EDWARD O. WILSON

Biological Laboratories, Harvard University

The odontomachine fauna of Melanesia is the largest and most diversified of any comparable area of the world. Eighteen species of *Odontomachus* and five of *Anochetus* are known from New Guinea alone. The evolutionary history of *Odontomachus* seems to have pursued a pattern common for the Formicidae in this part of the world: initial colonization from southeastern Asia, followed by extensive radiation on New Guinea and concurrent penetration by some of the more successful stocks into outer Melanesia and Australia.² Three species, *aciculatus*, *cephalotes*, and *saevissimus*, appear to have begun a secondary expansion out of New Guinea across the Moluccas; *cephalotes* has in addition entered Queensland. The Papuan species of *Anochetus* are for the most part peculiar to this region, with no clear affinities to any known Oriental or Australian stocks. It is uncertain whether they have been derived ultimately from early invaders from southeastern Asia, as is the case with most precinctive *Odontomachus* species.

The *Odontomachus saevissimus* group is the largest and most varied odontomachine species group in Melanesia. Of the eleven species found on New Guinea, two (*malignus*, *papuanus*) are closely related to or conspecific with widespread Oriental species; the remaining nine are truly precinctive. *O. malignus* is unusual among the odontomachines, and Melanesian ants generally, in its preference for littoral habitats. Possibly as a result of this exceptional ecological distribution, it is one of the most widely dispersed of all Indo-Australian ants, ranging from Sarawak in the west to Aru and Santa Cruz in the east.

New Caledonia is occupied by only two odontomachine species, *Odontomachus simillimus* and *Anochetus graeffei*. Both of these species very likely have been introduced onto the island by

¹ Previous parts of this series were published in the *Bulletin of the Museum of Comparative Zoology*, 118:101-153, and 119:303-371 (1958).

² Wilson, E. O. 1959. Adaptive shift and dispersal in a tropical ant fauna. *Evolution*, in press.

man, since they are widespread in other parts of the Pacific, and on New Caledonia occur mostly in disturbed habitats.

The author wishes to express his gratitude to the following persons for making possible the examination of many of the critical type specimens: W. Forster, Zoologische Staatssammlung, Munich; D. Guiglia, Museo Civico di Storia Naturale, Genoa; G. E. J. Nixon, British Museum (Natural History); E. S. Ross, California Academy of Sciences, San Francisco; E. Taylor, Oxford University Museum.

The Genus *ODONTOMACHUS* Latreille

List of the Melanesian and Moluccan *Odontomachus*, Arranged in Species Groups and Including New Synonymy.

Group of *O. saevissimus* Fr. Smith

angulatus Mayr

animosus Fr. Smith

emeryi Mann

gressitti Wilson

imperator Emery

latissimus Viehmeyer

linae Donisthorpe

malignus Fr. Smith

= *Odontomachus tuberculatus* Roger

montanus Stitz

opaculus Viehmeyer

papuanus Emery

= *Odontomachus papuanus* var. *concentricus* Emery

rufithorax Emery

saevissimus Fr. Smith

= *Odontomachus imperator* var. *tauerni* Stitz

= *Odontomachus transversostriatus* Donisthorpe

Group of *O. simillimus* Fr. Smith

aciculatus Fr. Smith

= *Odontomachus ruficeps cephalotes* var. *verticillatus*

Stitz

aeneus Emery

cephalotes Fr. Smith

- = *Odontomachus ruficeps cephalotes* var. *cruenta* Emery
- = *Odontomachus ruficeps cephalotes* var. *fusca* Emery
- = *Odontomachus ruficeps cephalotes* var. *ternatensis* Forel
- = *Odontomachus ruficeps cephalotes* var. *tamensis* Stitz
- = *Odontomachus ruficeps* subsp. *aruanus* Karawajew
- = *Odontomachus ruficeps cephalotes* var. *longitudinalis* Donisthorpe
- simillimus* Fr. Smith (*haematoda* auct. part.)
- = *Odontomachus haematodus* var. *fuscipennis* Forel
- Group of *O. tyrannicus* Fr. Smith
- nigriceps* Fr. Smith
- = *Odontomachus angulatus* subsp. *praefectus* Forel
- testaceus* Emery
- = *Odontomachus gulosus* Emery
- = *Odontomachus gulosus* var. *nubila* Emery
- = *Odontomachus nigrifrons* Donisthorpe
- tyrannicus* Fr. Smith
- = *Odontomachus tyrannicus* var. *obsolescens* Donisthorpe

*Key to the ODONTOMACHUS Species of Melanesia and the
Moluccas, based on the Worker Caste*¹

1. Extraocular furrow not demarcated posteriorly, the posterior declivity of the ridge sloping evenly and without a break into the occipital zone (see Fig. 3, upper); exceptionally slender species, with heads either entirely blackish brown or else bearing a distinct infuscation in the frontal area, thus contrasting with a predominantly yellow or light reddish brown gaster (*tyrannicus* group) 2
- Extraocular furrow demarcated posteriorly by a distinct secondary rise between it and the occipital zone (see Fig. 3, lower); stouter species, never showing the above color combination 4
2. Entire head, alitrunk, and petiole blackish brown, contrasting sharply with the gaster, which is light reddish brown *tyrannicus* Fr. Smith

¹Two morphological terms pertaining to the head and used in the key and subsequent descriptions need definition. The *ocular ridge* is the transverse welt bearing the eye; the two ocular ridges arise at the anterior margins of the compound eyes and converge obliquely and posteriorly toward the midline of the head (see Fig. 3). The *extraocular furrow* is the trench-like depression just posterior to the ocular ridge in species of the *saevissimus* and *simillimus* groups; this term is not used to refer to any finer sculptural details such as rugae or striae. The standardized measurements used have already been defined in an earlier paper (Bull. Mus. Comp. Zool., 116:355, 1957).

- Body of a different color 3
3. Entire head blackish brown; the remainder of the body testaceous, with local infuscations on the gaster..... *nigriceps* Fr. Smith
At most only the central portion of the head dark in color, and this area ranges from light brown to blackish brown; the remainder of the body testaceous, with local infuscations on the gaster
testaceus Fr. Smith
4. Central portion (disc) of first gastric tergite striate 5
Entire first gastric tergite completely smooth or partly shagreened... 7
5. Much of body surface showing pronounced metallic reflections
aeneus Emery
Body surface completely lacking metallic reflections 6
6. Sculpturing of first gastric tergite in addition to central striae consisting chiefly of either coarse shagreening or striation; if the latter, then the individual striae are strongly curved and many run longitudinally for variable distances *cephalotes* Fr. Smith
Sculpturing of first gastric tergite consisting of striae that are at most slightly curved and always transverse ... *aciculatus* Fr. Smith
7. Most of the pronotum, including all of its dorsal surface exclusive of the anterior "neck," completely lacking striae, its surface either shagreened or smooth and shining 8
Most or all of the pronotum covered by striae; in occasional specimens a limited transverse strip may lack striae and be smooth and shining, but in these individuals the greater part of the pronotum is still striate 12
8. Occiput bearing distinct tumosities on either side of the median line of the head one-third the distance from the median line to the occipital corners; color uniformly yellowish orange
malignus Fr. Smith
Occiput lacking tumosities; color other than described above 9
9. Posterior border of basal portion of petiolar spine viewed exactly from the side strongly convex, contrasting markedly with the weakly convex anterior border (Fiji Islands) *angulatus* Mayr
Posterior border of basal portion of petiolar spine viewed exactly from the side only weakly convex, appearing very similar in this respect to the anterior border (New Guinea) 10
10. Seen exactly from the side, the anterior face of the petiolar node forms an angle of 120°-130° with the dorsal node face (for a similar condition, see drawing of *papuanus* in Fig. 1) ... *latissimus* Viehmeyer
Seen exactly from the side, the anterior face of the petiolar node forms an angle of approximately 100° with the dorsal node face (see drawing of *imperator* in Fig. 1) 11
11. Extraocular furrows at least partly striate; head and gaster black, alitrunk and petiole red *rufithorax* Emery

- Extraocular furrows completely lacking striae; body uniformly dark reddish brown *imperator* Emery
12. Striae covering almost the entire dorsum of the head 13
- Striae covering at most the interocular depression and parts of the ocular ridge and extraocular furrow, and strongly developed only in the interocular depression 15
13. Entire body concolorous blackish brown (widespread over all Melanesia and the Moluccas) *simillimus* Fr. Smith
- Head, alitrunk, and petiole dull dark reddish yellow; gaster dark reddish brown (New Guinea only) 14

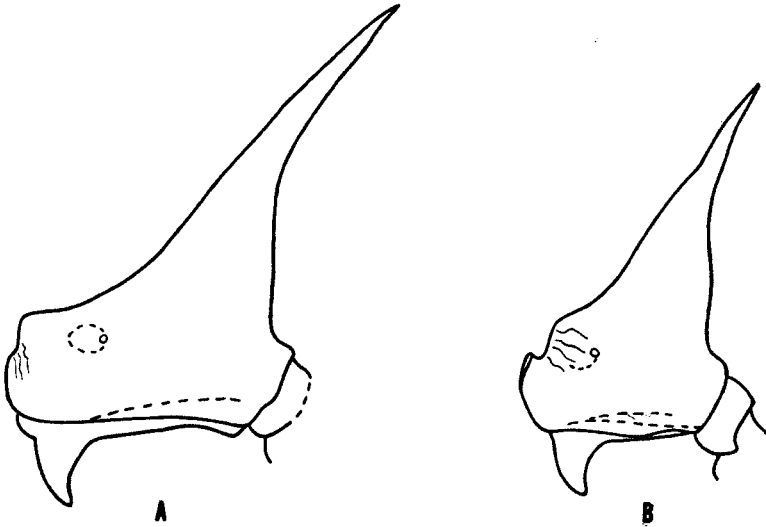


Fig. 1. Side views of petioles of worker syntypes of *Odontomachus imperator* Emery (A) and *O. papuanus* Emery (B); based on specimens in the Emery Collection, Genoa.

14. Mesepisternum completely smooth and shining except for the anterior sixth of its length, which is vertically striate; smaller species, HW of unique type 2.08 mm (Manokwari, Neth. New Guinea) *animosus* Fr. Smith
- Mesepisternum completely covered by dense vertical striae; larger species, HW of syntype examined 2.64 mm (Sepik Watershed, N-E. New Guinea) *montanus* Stitz
15. Extraocular furrows partly striate, although occasionally the striae are very feeble and limited to the inner one-fifth of the furrows 16
- Extraocular furrows completely smooth and shining 18

16. Head, alitrunk, and petiole light reddish brown; gaster medium reddish brown *linae* Donisthorpe (*partim*)
 Body concolorous dark to blackish brown 17
17. Striae limited to upper fifth of extraocular furrows; anterior and anterodorsal faces of petiolar node grading into one another through an even curve without any sign of an intervening angle
papuanus Emery (*partim*)
 Striae covering approximately the upper half of the extraocular furrow; anterior and anterodorsal petiolar node faces meeting in a distinct angle of about 100° *opaculus* Viehmeyer
18. Anterodorsal surface of petiole, exclusive of the spine, transversely striate; color of head and alitrunk yellowish to light reddish brown, with the possible exception of the mesonotum, which is occasionally (in *gressitti*) medium to dark reddish brown 19
 Either the anterodorsal surface of the petiole is completely smooth, or the color of the head and alitrunk is dark reddish brown, or both 20
19. Head, alitrunk, and petiole uniformly light reddish brown; larger species, HW of two specimens examined 2.52-2.54 mm
linae Donisthorpe (*partim*)
 Either head, mesonotum, and gaster dark reddish brown, contrasting with the yellowish brown alitrunk (exclusive of mesonotum) and petiole (Central Highlands of New Guinea), or body concolorous yellowish brown, the mesonotum a shade darker than the rest (Guadalcanal); smaller species, HW of two type specimens 2.16 mm
gressitti Wilson
20. Posterior face of petiole, extending from the tip of the spine to the posterior peduncle, evenly concave when viewed from the side
saevisimus Fr. Smith (*partim*)
 Lower half of posterior face of petiole appearing distinctly convex when viewed from the side 21
21. Mesepisternum almost completely smooth; body and antennae dark reddish brown, legs yellowish brown (New Guinea)
papuanus Emery
 Mesepisternum completely striate; coloration not as above 22
22. Head and gaster dark reddish brown; alitrunk and petiole light yellowish red, with the mesonotum lightly infuscated (Solomon Islands)
emeryi Mann
 Gaster medium reddish brown, only slightly darker than the alitrunk (head color unknown) (New Ireland variant)
saevisimus Fr. Smith (*partim*)

ODONTOMACHUS ACICULATUS Fr. Smith

(Fig. 4, no. 12)

Odontomachus aciculatus Fr. Smith, 1863, J. Proc. Linn. Soc. London, Zool., 7:19, worker. Type locality: Misol. Mayr, 1876, J. Mus.

Godeff. Hamburg, 12:86; worker. Donisthorpe, 1940, Entomologist, 70:109; worker.

Odontomachus cephalotes var. *aciculatus*, Emery, 1887, Ann. Mus. Civ. Stor. Nat. Genova, 4:428, worker, dist.

Odontomachus ruficeps var. *aciculata*, Emery, 1911, Gen. Ins., 118:115.

Odontomachus ruficeps cephalotes var. *verticillatus* Stitz, 1912, Sitzber. Ges. Nat. Freunde Berlin, 9:501-503, figs. 5, 6, worker. Type locality: New Guinea (ex Kaiserin-Augustafuss Exped.). NEW SYNONYMY. (Syntype examined — MCZ.)

Material examined. NEW GUINEA: *verticillatus* syntype.

ODONTOMACHUS AENEUS Emery

Odontomachus aeneus Emery, 1910, Nova Guinea, 5(4) Zool.: 534, worker. Type locality: Wendèsi, Neth. New Guinea.

Known from only the unique type worker. This species should be easily distinguished from all other Melanesian *Odontomachus* through its remarkable metallic coloration: "La tête est bronzée avec des reflets violacés, le corselet est de la même teinte, mais plus foncée, le pétiole et le gastre noir-bronze, les pattes sont brun foncé."

ODONTOMACHUS ANGULATUS Mayr

Odontomachus angulatus Mayr, 1866, Sitzber. Akad. Wiss. Wien, 53:500, fig. 10, worker. Type locality: Ovalau, Fiji Islands. Mann, 1921, Bull. Mus. Comp. Zool., 64:427, fig. 11, queen, ecology, distribution.

Material examined. FIJI ISLANDS: Nadarivatu, Viti Levu (W. M. Mann); Vunidawa, Viti Levu (N. L. H. Krauss); Andubangda, 300-500 m., Ovalau (E. C. Zimmerman).

ODONTOMACHUS ANIMOSUS Fr. Smith

(Fig. 4, no. 3)

Odontomachus animosus Fr. Smith, 1860, J. Proc. Linn. Soc. London, Zool., 4 (suppl.): 102-103, worker. Type locality: Dory (Manokwari), Neth. New Guinea. Donisthorpe, 1932, Ann. Mag. Nat. Hist., (10)10:461. (Holotype examined — Oxford University Museum.)

Through the courtesy of Mr. Ernest Taylor of Oxford University I have recently had the opportunity to study the unique type of this most enigmatic of *Odontomachus* species. *O. animosus* proves to be a very distinct species belonging to the *saevissimus* group. In petiole shape and general habitus it is convergent (or annectant) to the species of the *simillimus* group, in particular *simillimus* itself, and may in fact represent a true phylogenetic link between the two groups. Unfortunately, I have been unable to find any more material of this species in recent collections. Below is a brief redescription of the holotype.

Holotype worker. HW 2.08 mm, HL 3.08 mm, SL 3.09 mm, PW 1.19 mm, distance from the basal line of the petiolar node to the tip of the petiolar spine 1.34 mm, distance from the posterior margin of the petiolar spiracle to the tip of the spine 1.21 mm. Shape of petiole similar to that of *O. papuanus* Emery, differing in that the anterodorsal face of the node seen from the side forms an almost perfectly straight line from the spine itself to the anterior collar, thus lacking the rounded angle that separates the anterior and dorsal faces in other members of the *saevissimus* group (*animosus* shares this character with some species of the *simillimus* and *tyrannicus* groups; see Fig. 4). Entire dorsal surface of head striate, the striae becoming feeble in the occipital region. Ocular ridge striate posterior to the eye, smooth anterior to it. Sides of head ventral to the inner border of the eye, including the ventral half of the extraocular furrow, smooth and shining. Pronotum, mesonotum, and propodeum covered by dense transverse striae. Anepisternum vertically striate; katepisternum almost completely smooth and shining. Anterior face of petiolar node very faintly and transversely striate; remainder of node smooth and shining. Gaster entirely smooth and shining. Coloration uniformly yellowish brown (but the specimen is undoubtedly faded; Frederick Smith described it in 1860 as "ferruginous").

ODONTOMACHUS CEPHALOTES Fr. Smith
(Fig. 4, no. 11)

Odontomachus cephalotes Fr. Smith, 1863, J. Proc. Linn. Soc. London, Zool., 7:19, worker. Type locality: Ceram. Crawley, 1922, Ann. Mag. Nat. Hist., (9)9:441, fig. 6; redescription of holotype.

Odontomachus ruficeps subsp. *cephalotes*, Emery, 1911, Nova Guinea, 9(2)
Zool.: 250-251, diagnosis, variation, distribution.

Odontomachus ruficeps cephalotes var. *cruenta* Emery, 1911, *ibid.*, p. 251,
worker, queen. Original localities: Merauke and Etna Bay, Neth. New
Guinea. NEW SYNONYMY.

Odontomachus ruficeps cephalotes var. *fusca* Emery, 1911, *ibid.*, p. 251,
worker. Type locality: Merauke, Neth. New Guinea. NEW
SYNONYMY.

Odontomachus ruficeps subsp. *cephalotes*, Forel, 1911, Sitzber. Bayer.
Akad. Wiss., (1911), p. 252, worker, variation.

Odontomachus ruficeps cephalotes var. *ternatensis* Forel, 1911, *ibid.*, p. 252,
worker. Type locality: Ternate. NEW SYNONYMY.

Odontomachus ruficeps cephalotes var. *tamensis* Stitz, 1912, Sitzber. Ges.
Nat. Freunde Berlin, 9:503, fig. 7, worker. Type locality: Tami
Islands, N-E. New Guinea. NEW SYNONYMY.

Odontomachus ruficeps subsp. *aruanus* Karawajew, 1925, Konowia, 4:295,
fig. 14, worker. Type locality: Wammar Island, Aru Archipelago.
NEW SYNONYMY.

Odontomachus ruficeps cephalotes var. *longitudinalis* Donisthorpe, 1940,
Entomologist, 73:108-109, fig. 1, worker. Type locality: Camp Nok,
Waigeo, 800 m. NEW SYNONYMY. (Syntype examined — MCZ.)

Material examined. WAIGEO: Camp Nok: (*longitudinalis*
Donisthorpe syntype). NETH. NEW GUINEA: Merauke
(MCZ). PAPUA: Karema, Brown R. (Wilson, nos. 545, 553,
579); Bisianumu, 500 m. (Wilson, no. 615). N-E. NEW
GUINEA: Sepalakambang, 1920 m., Saruwaged Ra. (E. J.
Ford). AUSTRALIA: several series from various localities in
North Queensland (MCZ).

Taxonomic note. This species shows considerable variation in
several external characters. The sculpturing of the first gastric
tergite usually consists of whorled, coarse striae, but in a minor-
ity of series from Queensland the striae are replaced by heavy
shagreening. The pattern of pronotal sculpturing is also very
variable. The petiolar node varies in shape from a form re-
sembling that of *O. papuanus* to one resembling that of *O. simil-*
imus. The body color is typically blackish brown but is
occasionally replaced locally by a lighter reddish brown.

Ecological notes. At Karema a colony was found nesting in a
small rotting log on the floor of primary lowland rain forest.
Workers from other colonies were found at the same locality
foraging in leaf litter during the day.

ODONTOMACHUS EMERYI Mann, n. status

(Fig. 4, no. 5)

Odontomachus imperator subsp. *emeryi* Mann, 1919, Bull. Mus. Comp. Zool., 63:303, fig. 12, worker, queen, male. Type locality: Maliali, Florida, Solomon Islands. (Syntypes examined — MCZ.)

Material examined. SOLOMON ISLANDS: Maliali, Florida (syntypes); Fulakora, Santa Isabel (syntypes); Torokina R., Bougainville (B. D. Valentine); Kokure, 690 m., Bougainville (E. J. Ford); Boku, Bougainville (Ford).

Taxonomic notes. This species is very similar to the widespread *O. saevissimus* of western Melanesia and in fact may be no more than a geographic variant of it. *Emeryi* differs in its distinctive coloration and convex posterior border of petiolar node. A single worker of *saevissimus* from New Ireland appears to be both geographically and morphologically intermediate. It has a petiolar node like that of *emeryi*, but the body coloration is typical of *saevissimus*. Unfortunately, the head of this interesting specimen is missing.

Ecological notes. Mann made the following observations on the type colonies: "They were in dense forest; the nests were in the ground among the roots of trees and contained large numbers of workers. The workers are less active than *haematoda* [= *similimus*] and not as aggressive." E. J. Ford, Jr., collected winged queens from a nest at Kokure on June 12, 1956.

ODONTOMACHUS GRESSITTI Wilson, n. sp.

(Fig. 4, no. 8)

Diagnosis. A small, slender species belonging to the *saevissimus* group and most closely resembling *papuanus* Emery. It differs from *papuanus* by its distinctive coloration, presence of transverse striae on the anterodorsal face of the petiolar node, and more slender petiolar spine. It bears a superficial resemblance to *linae* Donisthorpe but differs markedly from that species in its smaller size, distinctive coloration, and "*papuanus*-type" petiolar node.

Holotype worker. HW 2.16 mm, HL 3.48 mm, SL 3.43 mm, PW 1.35 mm, length of petiolar node 1.00 mm, distance from posterior margin of petiolar spiracle to tip of petiolar spine 1.42 mm.

Cephalic striae entirely limited to frontal lobes and interocular depression; remainder of head entirely smooth and shining. Entire alitrunk transversely striate, the striae becoming very weak in the center of the pronotum and even failing entirely in a limited area just 1.32 mm posterior to the anterior margin of the pronotal "neck." Entire anterodorsal and lateral faces of petiolar node, exclusive of the spine and most of its supporting cone, transversely striate. Gaster completely smooth and shining.

Head and gaster dark reddish brown. Pronotal "neck," posterior margin of pronotum, entire mesonotum, and propodeal dorsum posterior to the level of the propodeal spiracles medium reddish brown. All of these areas contrast with the remainder of the alitrunk and the petiole, which are a much lighter shade of brownish yellow.

Type locality. Nondugl, 1750 m., Ahl Valley, N-E. New Guinea (J. L. Gressitt). The single worker from this locality has been returned to Dr. Gressitt for deposit in the B. P. Bishop Museum, Honolulu.

Paratype worker. A single worker from Gold Ridge-to-Suta (Jonapau), 1100 m., Guadalcanal (Gressitt) has been determined as this species. It differs from the holotype in its overall much lighter coloration (body light brownish yellow, the pronotal neck and mesonotum a shade darker than the rest), slightly thicker petiolar spine, and presence of numerous oblique hairs on the spine and cone (standing hairs completely lacking in holotype). Further collecting may show the Solomons form to rank as a distinct species. The single Solomons specimen has been deposited in the Museum of Comparative Zoology.

ODONTOMACHUS IMPERATOR Emery
(Fig. 1A)

Odontomachus imperator Emery, 1887, Ann. Mus. Civ. Stor. Nat. Genova, (2)5:429, pl. 1, fig. 1, worker. Type locality: Andai, near Manokwari, Neth. New Guinea. (Lectotype examined — Emery Coll.)

Through the courtesy of Dott. Delfa Guiglia, I have been able to examine a syntype worker, which, with her permission, is herein designated as lectotype.

Lectotype worker. HW 2.59 mm, HL 4.20 mm, SL 4.20 mm, PW 1.55 mm, petiolar node length 1.13 mm, distance from the

level of the basal line of the petiolar node to the tip of the petiolar spine 1.55 mm. Striae of the head limited to the transverse depression just anterior to the ocular ridge, and not extending onto the ridge itself; remainder of head smooth and shining. Anterior "neck" of pronotum transversely striate, remainder of pronotum smooth and shining. Entire mesonotal and propodeal surfaces transversely striate, the mesonotal striae much more feeble than those on the propodeum, becoming obsolescent anteriorly and medially. Anepisternum striate; katapisternum striate only along its dorsal margin, the remainder of its surface smooth and shining. Petiolar node and gaster entirely smooth and shining. Body uniformly dark reddish brown, appendages medium reddish brown.

ODONTOMACHUS LATISSIMUS Viehmeyer

Odontomachus latissimus Viehmeyer, 1913, Arch. Naturges., 79A(12):31, fig. 5, worker. Type locality: Sattelberg, N.-E. New Guinea.

Known from type material only.

ODONTOMACHUS LINAE Donisthorpe, n. status
(Fig. 4, no. 6)

Odontomachus saevissimus var. *linae* Donisthorpe, 1940, Entomologist, 73:107, worker, queen. Type locality: Mt. Lina, 1200 m., Cyclops Mts., Neth. New Guinea. (Syntype examined — MCZ.)

Material examined. NETH. NEW GUINEA: Mt. Lina (syntype). N.-E. NEW GUINEA: Kumur, 1000 m., upper Jimmi Valley (J. L. Gressitt).

Taxonomic notes. The only observable difference between this species and *opaculus* Viehmeyer is in the color characters cited in couplet 16 of the key. But the two forms have widely overlapping ranges and occur at similar elevations. The wisest course for the present would seem to be to treat them tentatively as distinct biological species.

The Kumur specimen differs from the syntype cited in its weaker body sculpturing. Striae are very feeble in the center of the pronotum and completely lacking from the extraocular furrows and mesopleural centers.

ODONTOMACHUS MALIGNUS Fr. Smith
(Figs. 3; 4, no. 9)

Odontomachus malignus Fr. Smith, 1859, J. Proc. Linn. Soc. London, Zool., 3:144, worker. Type locality: Ara. Emery, 1887, Ann. Mus. Civ. Stor. Nat. Genova, 4:429; distribution. Kutter, 1934, Mitt. Schweiz. Ent. Ges., 15:472. Donisthorpe, 1940, Entomologist, 73:107, redescription of holotype.

Odontomachus tuberculatus Roger, 1861, Berl. Ent. Zeitschr., 5:28-30, worker. Type locality: unknown. NEW SYNONYMY (provisional). Donisthorpe, 1940, Entomologist, 73:107, worker.

Odontomachus malignus subsp. *tuberculatus*, Mann, 1919, Bull. Mus. Comp. Zool., 63:305-306, fig. 13, worker.

Material examined. SANTA CRUZ: Graciosa Bay (W. M. Mann). Emery (1887) records this species from Sarawak, Celebes, and New Guinea (Sorong), while Kutter (1934) records it from Jacquinot Bay, on the southern coast of New Britain.

Taxonomic note. Roger's *tuberculatus* is probably conspecific with *malignus*. The only difference that can be gleaned from the original description is in the orientation of the mesonotal striation, which is said to be horizontal in *malignus* and longitudinal in *tuberculatus* (Mann, 1919). However, the distinction is doubtful. In Mann's single nest series of "*tuberculatus*" from Santa Cruz the orientation of mesonotal striae actually varies widely, from longitudinal to oblique.

Ecological notes. This species, which ranges from Borneo to the Santa Cruz Islands, appears to be a normal inhabitant of the littoral zone. Mann says of his Solomons collections, "I found this species only once, at Graciosa Bay, where workers were moving in and out of the crevices of a large block of coral on the beach. Mr. Harry Hall, who brought me specimens from Simoli on South Malaita, states that he found it nesting there under the same conditions." According to Kutter (1934), H. Hediger found workers of *malignus* at Jacquinot Bay, New Britain, foraging 100 meters out in the intertidal zone during low tide! These individuals were running among the coral rocks and far from the normal foraging ranges of other ant species.

ODONTOMACHUS MONTANUS Stitz, n. status
(Fig. 4, no. 7)

Odontomachus imperator var. *montanus* Stitz, 1923, Sitzber. Ges. Nat. Freunde Berlin, p. 116, worker. Type locality: Lordberg, middle Sepik

region, N-E. New Guinea. (Syntype examined — MCZ.)
Known from type material only.

ODONTOMACHUS NIGRICEPS Fr. Smith

Odontomachus nigriceps Fr. Smith, 1860, J. Proc. Linn. Soc. London, Zool., 4 (suppl.): 103, pl. 1, fig. 9 (this figure is also referred to by Smith as *O. saevissimus*). Type locality: Dory (Manokwari), Neth. New Guinea. Mayr, 1876, J. Mus. Godeff. Hamburg, 12:85, distribution. Donisthorpe, 1932, Ann. Mag. Nat. Hist., (10)10:461, worker.

Odontomachus angulatus subsp. *praefectus* Forel, 1911, Sitzber. Akad. Wiss. Munich, p. 251, worker. Type locality: New Guinea. (Holotype examined — Zoologische Staatssammlung, Munich.) NEW SYNONYMY.

Material examined. PAPUA: Kokoda, 350 m. (L. E. Cheesman); Dobodura (P. J. Darlington).

Taxonomic notes. This species is closely related to *testacea* Emery, from which it can be distinguished by its distinctive coloration and much denser body pilosity. The two species occur together at Dobodura.

The holotype of *O. angulatus* subsp. *praefectus* Forel is a typical worker of *nigriceps*. It has relatively convex anterior and posterior nodal borders, resembling the Kokoda specimen rather more closely than workers from Dobodura. There is no evident reason for Forel's decision to associate it with *angulatus* Mayr, a widely dissimilar member of the *saevissimus* group.

ODONTOMACHUS OPACULUS Viehmeyer, n. status

Odontomachus imperator subsp. *opaculus* Viehmeyer, 1912, Abh. Zool. Anthropol. Mus. Dresden, 14:6, fig. 6, worker. Type locality: Torricelli Mts., 640 m., N-E. New Guinea. (Syntype examined — MCZ.)

Material examined. NETH. NEW GUINEA: Wendèsi-Majosi (S. Issiki). N-E. NEW GUINEA: Torricelli Mts. (syntype).

Taxonomic note. A single worker examined from Wendèsi-Majosi differs from the *opaculus* syntype in its larger size (HW 2.77 mm vs. 2.32 mm), different orientation of pronotal striae (concentric vs. straight-transverse), and feebler striation within the extraocular furrow.

ODONTOMACHUS PAPUANUS Emery, n. status (Fig. 1B)

Odontomachus rixosus var. *papuanus* Emery, 1887, Ann. Mus. Civ. Stor. Nat. Genova, (2)5:429, worker. Type locality: Aru. (Syntype examined — Emery Coll.).

Odontomachus papuanus var. *concentricus* Emery, 1897, *op. cit.*, 38:557, worker. Type locality: Moroka, Papua. NEW SYNONYMY (provisional).

Material examined. NETH. NEW GUINEA: Maffin Bay (E. S. Ross). N-E. NEW GUINEA: lower Busu River (Wilson, nos. 901, 923); Bulolo, 730 m. (E. J. Ford); Sattelberg-Maroruo, 800-900 m. (Wilson, no. 724); Maroruo, 900 m. (Wilson, no. 729); Nganduo, 1000 m. (Wilson, no. 733); Ebabaang, 1300-1400 m. (Wilson, no. 828); Wamuki, 800 m. (Wilson, no. 850). ARU: syntype worker.

Taxonomic notes. *O. papuanus* is closely related to the Oriental species *rixosus* Fr. Smith, differing chiefly in its longer petiolar spine and more rounded apical mandibular teeth. Its recognition here as a distinct species is a provisional measure only. Significant geographic variation occurs within the range of *papuanus* on New Guinea. Workers from the lowlands (Maffin Bay, lower Busu River) are smaller and lighter in color than those from the mountains of the Huon Peninsula. The syntype from Aru is light in color but as large as the montane New Guinea workers.

Ecological notes. This species has been collected in both primary lowland rain forest and primary and secondary mid-mountain rain forest on New Guinea. Workers were found foraging singly on the ground during both the day and night. At the Busu River, a nest was found on a steep forested hillside. It consisted of a single shaft, five centimeters wide, extending horizontally into the soil beneath a tree root for a distance of approximately 45 centimeters. The colony was a small one, containing a single queen and about twenty workers, and may have been incipient.

ODONTOMACHUS RUFITHORAX Emery, n. status

Odontomachus imperator subsp. *rufithorax* Emery, 1910, Nova Guinea, 5(4)Zool.: 534, worker. Original localities: "Tawarin" and "Timena," Neth. New Guinea.

Known from type material only.

ODONTOMACHUS SAEVISSIMUS Fr. Smith (Fig. 4, no. 4)

Odontomachus saevissimus Fr. Smith, 1858, Cat. Hym. Brit. Mus., 6:80, pl. 5, fig. 10, worker. Type locality: Ceram. Fr. Smith, 1860, J. Proc.

Linn. Soc. London, Zool., 5(suppl.): pl. 1, fig. 9, queen. Mayr, 1867, Tijdschr. Ent., 10:47, worker, distribution. Karawajew, 1925, Kono-wia, 4:290-292, fig. 12, worker, queen, male. (Holotype examined — BMNH.)

Odontomachus imperator var. *tauerni* Stitz, 1923, Sitzber. Ges. Nat. Freunde Berlin, p. 116, worker. Type locality: Ceram. (Syntype examined — MCZ.) NEW SYNONYMY.

Odontomachus transverso-striatus Donisthorpe, 1941, Trans. Roy. Ent. Soc. London, 91:53, worker. Type locality: Mt. Baduri, 300 m., Japen I., Neth. New Guinea. (Holotype examined — BMNH.) NEW SYNONYMY.

Material examined. MOLUCCAS: Ceram (holotype; syntype of *tauerni*). NETH. NEW GUINEA: Japen I. (*transverso-striatus* holotype); Doormanpad (W. C. van Heurn). N-E. NEW GUINEA: Korop, 1300 m., Upper Jimmi Valley (J. L. Gressitt). NEW BRITAIN: St. Paul's, 350 m., Bainings Mts. (Gressitt). NEW IRELAND: "Camp Bishop," 12 km. up Kait River, 240 m. (E. J. Ford) (tentative determination; see below).

Taxonomic notes. This is one of the most widespread of the Papuan-based *Odontomachus*. Mayr (1867) records it from Celebes, while as noted elsewhere the form *emeryi* Mann may be nothing more than a geographic variant from the Solomon Islands. Notable geographic variation is shown in the sculpturing of the mesepisternum. Workers from New Guinea have katepisterna completely striate and the anepisterna smooth except for feeble striation along the dorsal and posterior margins. A single worker examined from the offshore island of Japen has essentially similar sculpturing, except that on the katepisternum striation is confined to the posterior margin. Workers from more peripheral localities both to the east and west (Ceram, New Britain, New Ireland) have completely striate mesepisterna. Thus geographic variation in this character appears to exhibit a concentric "central-peripheral" pattern. A single headless worker from New Ireland differs from other material in having heavier alitruncal sculpturing and a convex posterior border of petiolar node, in these characters approaching the Solomons form *emeryi*. Future collecting may show that *saevissimus* and *emeryi* are connected by other morphologically intermediate populations and hence must be considered conspecific. If so, then alitruncal sculpturing and coloration clearly show discordant patterns of geographic variation.

ODONTOMACHUS SIMILLIMUS Fr. Smith

(Fig. 4, no. 10)

Odontomachus simillimus Fr. Smith, 1858, Cat. Hym. Brit. Mus., 6:80, pl. 5, figs. 8, 9, queen. Original localities: Fiji Islands, Ceylon.

Odontomachus haematodus, div. auct. (nec *Formica haematoda* Linné, 1758, Syst. Nat., 10th ed., 1:582).

Odontomachus haematodus var. *fuscipennis* Forel, 1913, Zool. Jahrb. Syst., 36:19, worker, queen, male. Original localities: Peradeniya, Ceylon; Bahsoemboe, Sumatra. NEW SYNONYMY.

Material examined. MOLUCCAS: Amboina (H. Smith). NETH. NEW GUINEA: Doormanpad (W. C. van Heurn); Biak I. (G. E. Bohart). N-E. NEW GUINEA: Goroka, 1600 m., Asaro Valley, Central Highlands (J. J. H. Szent-Ivany); Mt. Misim (H. Stevens); Wareo; Nadzab (Wilson, no. 1100); Bubia (N. L. H. Krauss); lower Busu River (Wilson, no. 944); Finschhafen (Wilson); Bolingbangeng, 900-1000 m. (Wilson, no. 728); Zingzingu, 1200 m. (Wilson, no. 763). PAPUA: China Strait (W. J. Eyerdam); Dobodura (P. J. Darlington); Laloki R., near Port Moresby (Wilson, no. 528). NEW BRITAIN: St. Paul's, Bainings Mts., Gazelle Pen. (J. L. Gressitt). NEW IRELAND: "Camp Bishop," 12 km. up Kait R., 240 m. (J. L. Gressitt). SOLOMON ISLANDS: Kungana Bay, Rennell (M. Willows, Jr.); Bellona I. (Willows). SANTA CRUZ: Vanikoro (Willows). NEW HEBRIDES: Vila, Efate (N. L. H. Krauss); Aore I. (W. L. Nutting); Ratard Plantation, near Luganville, Espiritu Santo (Wilson). FIJI ISLANDS: numerous series from throughout the islands, from Viti Levu to the Lau Archipelago, collected chiefly by W. M. Mann. This species is also widespread through Micronesia and Polynesia.

Taxonomic note. W. L. Brown (pers. commun.), who is currently studying the New World species of *Odontomachus*, informs me that the true *O. haematodus* is probably a species indigenous to the Amazon-Orinoco Basins and not conspecific with the Pacific *simillimus*. According to Linné's original description, *haematodus* possesses the following color characters: "Abdomen nigricans . . . Pedes flavi . . . Corpus nigrum." The Melanesian species identified here as *simillimus* (the next oldest name applicable to Indo-Australian populations) has medium brown legs and dark brown head and alitrunk.

Ecological notes. In eastern New Guinea *simillimus* is common everywhere in clearings and second-growth forest. Colonies apparently nest in the soil, and workers can be found foraging in leaf litter during both day and night. At the Laloki River in Papua a colony was found nesting in accumulated soil and vegetable debris in the primary fork of a tree a little less than two meters from the ground. Near Luganville, in the New Hebrides, a large colony, containing alate queens and males, was found in early January beneath a rotting log on the floor of low-land rain forest.

ODONTOMACHUS TESTACEUS Emery, n. status
(Fig. 4, no. 2)

Odontomachus tyrannicus var. *testacea* Emery, 1897, Ann. Mus. Civ. Stor. Nat. Genova, 38:557, worker. Type locality: "Haveri," New Guinea. (Syntype examined — Emery Coll.)

Odontomachus gulosus Emery, 1902, Természetr. Füzt., 25:160, worker. Type locality: Sattelberg, N-E. New Guinea. NEW SYNONYMY. (Syntype examined — Emery Coll.)

Odontomachus gulosus var. *nubila* Emery, 1911, Nova Guinea, 9(2)zool.: 250, worker. Type locality: Etina Bay, Neth. New Guinea. NEW SYNONYMY (provisional).

Odontomachus nigrifrons Donisthorpe, 1940, Entomologist, 73:106, worker. Type locality: Hollandia, Neth. New Guinea. NEW SYNONYMY. (Syntype examined — BMNH.)

Material examined. NETH. NEW GUINEA: Hollandia (*nigrifrons* Donisthorpe syntype). N-E. NEW GUINEA: lower Busu River (Wilson, nos. 904, 944); Lae (N. L. H. Krauss); Boana, 1100 m. (Wilson, no. 1115); Finschhafen (N. G. L. Wagner); Lambaeb, 900 m., Saruwaged Ra. (E. J. Ford); Foria River to Zingzingu, ca. 1000 m. (Wilson, no. 757); Zingzingu, 1200 m. (Wilson, no. 761); Gemeheng, 1300 m. (Wilson); Tumnang, 1450-1600 m., a single male (Wilson). PAPUA: Dobodura (P. J. Darlington); Karema, Brown R. (Wilson, no. 595); Bisianumu, 500 m. (Wilson, nos. 607, 623; J. L. Gressitt).

Taxonomic note. Workers from the Huon Peninsula have a paler ground color than those from Papua, and their cephalic and gastric patches are reduced to faint infuscations. They include the type specimens of Emery's synonymous form *gulosus*.

Ecological notes. Many nests of this species were found by the author during his field studies in New Guinea. In most cases they had been excavated in the soil and were marked externally by a single wide, vertical entrance shaft surrounded by a ring of coarse pellets of excavated earth. Often they were located between the buttresses of forest trees. At Karema a single colony was in the rotting center of a branch of a fallen tree, in a terminal portion raised off the ground. At Bisianumu a dealate queen was found isolated with five eggs in a cell under the bark of a rotting log. Mature colonies contain several hundred workers. Alate queens and males were taken in a nest at Karema on March 10, 1955, and a lone male was collected at light at Tumnang on April 14, 1955. The workers are unusually aggressive and capable of delivering a shocking sting. These traits, combined with the large size of the workers, make them among the most formidable ants to be found anywhere in the world.

ODONTOMACHUS TYRANNICUS Fr. Smith
(Fig. 4, no. 1)

Odontomachus tyrannicus Fr. Smith, 1859, J. Proc. Linn. Soc. London, Zool., 3:455, worker. Type locality: Aru. Viehmeyer, 1912, Abh. Zool. Anthropol. Mus. Dresden, 14:6. *Nec Odontomachus tyrannicus* Fr. Smith, 1861, J. Proc. Linn. Soc. London, Zool., 6:44, pl. 1, fig. 4 (see *O. gladiator* Donisthorpe, 1932, Ann. Mag. Nat. Hist., (10)10:467).

Odontomachus tyrannicus var. *obsolescens* Donisthorpe, 1940, Entomologist, 73:106-107, worker, male. Original localities: Kokoda, Papua; Camp Nok, Waigeo. NEW SYNONYMY. (Syntypes examined — MCZ.)

Material examined. WAIGEO: Camp Nok (syntypes). NETH. NEW GUINEA: Mamberamo River (W. C. van Heurn). N-E. NEW GUINEA: Finschhafen (2 series; N. G. L. Wagner, E. S. Ross); Lambaeb, 900 m., Saruwaged Ra. (E. J. Ford); Sattelberg, 660 m. (Wilson, no. 722); Sattelberg-Maroruo, 800-900 m. (Wilson, no. 724); Bolingbangeng-Nganduo, 900-1000 m. (Wilson, no. 731). PAPUA: Mt. Lamington (C. T. McNamara); Bisianumu, 500 m. (Wilson, nos. 659, 667). NEW BRITAIN: St. Paul's, 350 m., Bainings Mts., Gazelle Pen. (J. L. Gressitt); Ti, Nakanai Mts. (Ford).

Taxonomic note. The depth of pronotal striation varies greatly, as noted by Donisthorpe in his description of var. *obsolescens*, but this variation is apparently non-geographic. Both

extremes as well as intermediates are included in material from a single locality, Finschhafen.

Ecological note. This species was relatively common in second-growth forest along the native trail between Sattelberg and Nganduo. Both in this area and at Bisianumu, Papua, workers were found foraging on the ground during the day. A note accompanying van Heurn's Mamberamo series (MCZ) states that this collection was made from a small colony nesting in the soil beneath a fallen palm trunk.

The Genus *ANOCHETUS* Mayr

List of the Melanesian and Moluccan Species,
Arranged into Species Groups and Including New Synonymy

Group of *A. cato* Forel

cato Forel

= *Anochetus cato* var. *subfasciatus* Mann

= *Odontomachus rossi* Donisthorpe

isolatus Mann

seminiger Donisthorpe

splendens Karawajew

Group of *A. chirichinii* Emery

chirichinii Emery

fricatus Wilson

Group of *A. graeffei* Mayr

graeffei Mayr

= *Anochetus amati* Karawajew

= *Anochetus minutus* Karawajew

= *Anochetus punctiventris* Mayr

= *Anochetus punctiventris* subsp. *oceanicus* Emery

Group of *A. variegatus* Donisthorpe

variegatus Donisthorpe

Incertae Sedis

filicornis (Wheeler)

*Key to the ANOCHETUS Species of Melanesia and the
Moluccas, based on the Worker Caste*

1. Masticatory border of mandible with a prominent blunt tooth located at midlength; dorsolateral propodeal corners tuberculate; dorsal margin of petiolar node concave when node is viewed anteroposteriorly 2
- Masticatory border of mandible lacking a prominent tooth at midlength; dorsolateral propodeal corners rounded or obtusely angulate; dorsal margin of petiolar node convex to acute in anteroposterior view 3
2. Central portion of pronotum striate and subopaque; dorsolateral corners of petiolar scale forming angles of 80° or more *fricatus* Wilson
- Central portion of pronotum completely smooth and shining; dorsolateral corners of petiolar scale drawn out into spine-like processes of which the apices form angles of 60° or less *chirichinii* Emery
3. Central portion of pronotum coarsely rugose and subopaque; propodeum angulate when viewed from the side; petiolar scale broad and moderately convex in anteroposterior view; anterior half of first gastric tergite often punctate *graeffei* Mayr
- Central portion of pronotum smooth and shining; propodeum rounded in side view; petiolar scale narrowed dorsally, its crest strongly convex to acute; anterior half of first gastric tergite always completely smooth and shining 4
4. Intercalary tooth of apical mandibular fork located on the inner border of the ventral tooth about two-thirds the distance from the angle of the fork to the tip of the ventral tooth (position of the median tooth is measured from the center of its base); petiolar scale tapering dorsally into a spine *variegatus* Donisthorpe
- Intercalary tooth of apical mandibular fork located on the inner border of the ventral tooth about half way between the angle of the fork and the tip of the ventral tooth; petiolar scale tapered somewhat dorsally but not forming a spine 5
5. Cephalic striae covering most of the dorso-central surface of the head as well as the frontal area *cato* Forel
- Cephalic striae limited to the area between the frontal carinae (*isolatus* superspecies) 6
6. Head and alitrunk black, gaster and appendages yellowish brown (Waigeo) *seminiger* Donisthorpe
- Head and alitrunk at most dark reddish brown, gaster and appendages dark yellowish brown to reddish brown 7
7. Head and alitrunk dark reddish brown, petiole and gaster dark yellowish brown (eastern Solomons and Santa Cruz) *isolatus* Mann

Head and alitrunk light yellowish brown, petiole and gaster light reddish brown (Aru) *splendens* Karawajew

ANOCHETUS CATO Forel

(Fig. 2)

Anochetus Cato Forel, 1901, Mitt. Zool. Mus. Berlin, 2(1, b); 6, worker.

Type locality: Lowon Valley, near Ralum, New Britain.

Anochetus cato var. *subfasciatus* Mann, 1919, Bull. Mus. Comp. Zool., 63:301, worker, queen, male. Type locality: Malapaina I., Three Sisters Group, Solomons. (Syntypes examined — MCZ.) NEW SYNONYMY.

Odontomachus rossi Donisthorpe, 1947, Ann. Mag. Nat. Hist., (11)14:186-187, worker, queen. Type locality: Maffin Bay, Neth. New Guinea. *Nec Anochetus rossi* Donisthorpe, 1949, *op. cit.*, (12)1:747. (Syntypes examined — CAS, MCZ.) NEW SYNONYMY.

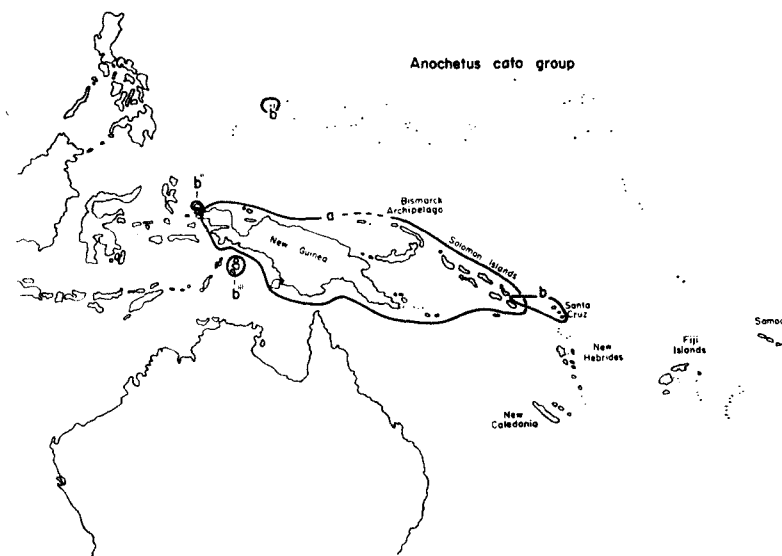


Fig. 2. Maximum known distributions of species of the *Anochetus cato* group. *a*, *cato*, New Guinea to Solomon Islands; *b*, *isolatus*, eastern Solomons and Santa Cruz; *b'*, *splendidulus*, Palau; *b''*, *seminiger*, Waigeo; *b'''*, *splendens*, Aru.

Material examined. NETH. NEW GUINEA: Maffin Bay (syntypes of *Odontomachus rossi* and one additional nest series).

N-E. NEW GUINEA: Bolingbangeng-Nganduo, 900-1000 m., alate queen (Wilson, no. 731). PAPUA: Bisianumu, 500 m. (Wilson, nos. 659, 660, 667). NEW BRITAIN: Keravat, 60 m., Gazelle Pen. (J. L. Gressitt). SOLOMONS: Rendova; Malapaina; Fulakora, Santa Isabel; Pawa, Ugi; Auki, Malaita; Wai-ai, San Cristoval (all W. M. Mann).

Taxonomic notes. The available material of this species shows noteworthy geographic variation in color, which can be outlined as follows. *New Britain and Rendova*: body and appendages concolorous reddish yellow. *Ugi*: body medium reddish brown, legs yellowish brown. *San Cristoval*: body dark reddish brown, legs yellowish brown. *Malapaina and Santa Isabel*: body very dark reddish brown, nearly black, the legs medium brown. *Malaita*: body and appendages intermediate in shade between the San Cristoval and Malapaina-Santa Isabel series. *Bisianumu, Papua*: body very dark reddish brown, almost black, legs yellowish to medium brown. *Bolingbangeng, N-E. New Guinea*: head, alitrunk, and petiole very dark reddish brown, almost black, gaster somewhat lighter in shade, appendages medium brown. *Maffin Bay, Neth. New Guinea*: head very dark reddish brown, almost black, alitrunk medium to moderately dark reddish brown; petiole and gaster contrasting dark yellowish brown; legs light reddish brown.

Of particular interest is the possibility revealed in the above data of the existence of graded inter-island variation in the eastern Solomons. As more material becomes available from over its entire range, this species should prove an especially fruitful subject for a thorough analysis of geographic variation.

Ecological notes. At Bisianumu a small colony of this species was found nesting in a large, "passalid-stage" log on the floor of second-growth foothills rain forest. Workers from other nests were found foraging on the forest floor during the daytime. On Rendova, Mann (1919) also found a colony nesting in a rotting log, presumably in lowland rain forest. Winged queens were collected in a nest on September 9, 1944, at Maffin Bay by Dr. E. S. Ross.

ANOCHETUS CHIRICHINII Emery

Anochetus Chirichinii Emery, 1897, Természetr. Fü., 20:597, pl. 15, figs. 46, 47, worker. Type locality: Hansemann Mts., N-E. New Guinea. (Syntype examined — Emery Coll.)

Material examined. N-E. NEW GUINEA: Hansemann Mts., near Madang (syntype); Nadzab (Wilson, nos. 1088, 1101, 1107); lower Busu River (Wilson, nos. 999, 1051, 1112).

Ecological notes. The collections so far recorded indicate that *A. chirichinii* is relatively abundant in both rain forest and monsoon forest. At the Busu River and Nadzab, workers were encountered on several occasions foraging during the day on the forest floor. A male tentatively determined as *chirichinii* was collected at light on May 16, 1955, at the Busu River.

ANOCHETUS FRICATUS Wilson, n. sp.

Diagnosis. Closely related to *A. chirichinii* Emery, differing primarily in the following characters:

(1) In *fricatus* the entire pronotum is covered by longitudinal striae, and its surface is subopaque. In *chirichinii* striae are limited to the declivitous surfaces and posterior margin of the pronotum, and the entire central portion of the sclerite is smooth and shining.

(2) In *fricatus* the striae of the central portion of the cephalic dorsum extend all the way back to the occipital border; in *chirichinii* they reach only to within about 0.09 mm of it.

(3) In *fricatus* the posterolateral corners of the petiolar node are much less attenuated than in *chirichinii*, forming a blunt angle of 80° or more (as opposed to 60° or less in *chirichinii*).

(4) The body pilosity of *fricatus* is considerably denser overall than in *chirichinii*. When the mesonotum is seen in exact side view the number of hairs projecting beyond its dorsal margin is 15-19 in the *fricatus* types and 5-10 in the Museum of Comparative Zoology series of *chirichinii*.

Holotype worker. HW 1.06 mm, HL 1.22 mm, SL 1.00 mm, CI 87, SI 94, PW 0.58 mm, petiole height 0.36 mm.

Worker paratype variation. HW 1.02-1.12 mm, HL 1.17-1.30 mm, SL 0.98-1.10 mm, CI 85-87, SI 94-98, PW 0.56-0.62 mm, petiole height 0.33-0.35 mm.

Material examined. PAPUA: Karema, Brown River (type locality), holotype and two paratype workers (Wilson, no. 541). N-E. NEW GUINEA: Bubia, a single paratype worker (Wilson, no. 683).

Ecological note. The holotype nest series was collected from a large rotting log on the floor of primary lowland rain forest.

ANOCHETUS GRAEFFEI Mayr

Anochetus Graeffei Mayr, 1870, Verh. zool.-bot. Ges. Wien, 20:961, worker.

Type locality: Upolu, Samoa.

Anochetus punctiventris Mayr, 1878, *op. cit.*, 28:15-16, worker. Type locality: Calcutta area, India. NEW SYNONYMY. (Syntype examined — Emery Coll.)

Anochetus punctiventris subsp. *oceanicus* Emery, 1897, Természetr. Füzt., 20:597, worker. Original localities: Friedrich-Wilhemshafen (Aitape), N-E. New Guinea. NEW SYNONYMY. (Holotype examined — Emery Coll.)

Anochetus amati Karawajew, 1925, Konowia, 4:285, fig. 8, queen. Type locality: Wammar I., Aru Archipelago. NEW SYNONYMY (provisional).

Anochetus minutus Karawajew, 1925, *ibid.*, pp. 288-289, fig. 10, worker, queen. Type locality: Segamat, Johore, Malaya. NEW SYNONYMY (provisional).

Anochetus minutus, Yasumatsu, 1940, Annot. Zool. Jap., 19:313, fig. 2, worker, distribution.

Material examined. N-E. NEW GUINEA: Aitape (*oceanicus* Emery holotype); Didiman Creek, Lae (Wilson, no. 690). SOLOMON ISLANDS: Maravo Lagoon, New Georgia (W. M. Mann); Auki, Malaita (Mann); Wainoni Bay and Pamua, San Cristoval (Mann). NEW HEBRIDES: Ratard Plantation, Luganville, Espiritu Santo (Wilson, no. 332). FIJI ISLANDS: Lasema, Vanua Levu (Mann); Somo Somo, Taviuni (Mann). NEW CALEDONIA: Chapeau Gendarme (Wilson, no. 62); Mt. Mou (Wilson); "S.E. New Caledonia" (N. L. H. Krauss). This species is found through large parts of southeastern Asia, Melanesia, Polynesia, and Queensland. Very probably it has been distributed through part of this range through the inadvertent agency of man.

Taxonomic notes. During the course of the present study the author has examined large amounts of Asian, Melanesian, and Australian material determined by earlier specialists variously as *graeffei* and *punctiventris*, without being able to distinguish two species on the basis of Mayr's original diagnostic characters or any other characters. There appears to be but a single relatively variable species. In particular, sculpturing of the first gastric tergite, traditionally stressed in earlier descriptions, varies gradually from smooth and shining (extreme "*graeffei*" form) to coarsely punctate and subopaque ("*punctiventris*"

form). The same conclusion has been reached with respect to the supposed distinction between *punctiventris* and its subspecies *oceanicus*. A few differences observed between types of the two forms in the Emery Collection, involving, especially, total size and petiolar node shape, are connected in other series by inter-gradient forms.

A. amati Karawajew was described without reference to *A. graeffei*, but its characters seem to fit the latter species in detail. *A. minutus* Karawajew was compared with *amati* in the original description; it is supposedly distinguished from that species by its smaller size and proportionately shorter mandibles. There seems to be no reason to suppose that it is anything more than an infraspecific variant of *graeffei*.

Ecological notes. Both the author's New Guinea and New Hebrides collections consist of stray workers taken during the day from the floor of lowland rain forests. At Chapeau Gendarme, New Caledonia, a small colony was found nesting beneath a rock in a clearing.

ANOCHETUS ISOLATUS Mann, n. status
(Fig. 2)

Anochetus cato subsp. *isolatus* Mann, 1919, Bull. Mus. Comp. Zool., 63:302, fig. 11, worker, male. Type locality: Graciosa Bay, Santa Cruz. (Syn-types examined — MCZ.)

Material examined. SANTA CRUZ: Graciosa Bay (syntypes). Mann also recorded this species from Malapaina, Three Sisters Group, Solomons, on which island it occurs sympatrically with the closely related *A. cato* Forel.

Taxonomic note. *A. isolatus* forms with *A. splendens* (Aru), *A. seminiger* (Waigeo), and *A. splendidulus* (Carolines), the "*isolatus* superspecies," i.e., a tightly-knit group of cognate forms which seem sufficiently well differentiated to be good biological species, but which are completely allopatric in distribution. Actually, treatment of these four forms as species must be considered arbitrary until evidence is obtained of non-intergradation in areas of overlap, if indeed such areas exist at all.

The range of the *isolatus* superspecies forms a nearly complete circle around that of the related species *cato*. Brown (Quart. Rev. Biol., 32:271, 1957) has suggested that this unusual pattern

may have resulted from the replacement of *isolatus* in New Guinea, Bismarek Archipelago, and western Solomons by the more recently evolved *cato*.

ANOCHETUS SEMINIGER Donisthorpe
(Fig. 2)

Anochetus seminiger Donisthorpe, 1943, Ann. Mag. Nat. Hist., (11)9:170, worker. Type locality: Camp Nok, 800 m., Waigeo.

Known only from type material. See discussion under *A. isolatus* Mann.

ANOCHETUS SPLENDENS Karawajew

Anochetus splendens Karawajew, 1925, Konowia, 4:289, fig. 11, queen. Type locality: Wammar I., Aru Archipelago.

Known from type material only. See discussion under *A. isolatus* Mann.

ANOCHETUS VARIEGATUS Donisthorpe, n. status

Anochetus cato var. *variegatus* Donisthorpe, 1938, Ann. Mag. Nat. Hist., (11)1:597, worker. Type locality: Mt. Nomo, south of Mt. Bougainville, Neth. New Guinea. (Syntype examined — MCZ.)

Material examined. NETH. NEW GUINEA: Mt. Nomo (syntype). N-E. NEW GUINEA: Didiman Creek, Lae (Wilson, no. 711).

Taxonomic note. The Lae specimens differ from the MCZ syntype in having cephalic striae limited to the area between the frontal carinae; in the type, striae extend laterally beyond the carinae to a point midway between the carinae and the compound eyes, and posteriorly to within 0.20 mm of the anterior-most point of the occipital border. The Lae specimens also have somewhat more acute petiolar spines.

Ecological notes. At Lae, two workers were found during early evening foraging on the lower part of a tree trunk at the edge of rain forest.

Species Inquirendae
ANOCHETUS FILICORNIS (Wheeler)

Myrmapatetes filicornis Wheeler, 1929, Amer. Mus. Novitates, no. 349: 6, fig. 3, male. Type locality: Larat I., Tanimbar. (Holotype examined — MCZ.)

Anochetus filicornis, Brown, 1953, Breviora, Mus. Comp. Zool., no. 18: 2.

Brown's assignment of this species to *Anochetus* is probably correct. However, its affinities to other known Papuan species of the genus remain problematical. The holotype is similar in size to the males of the largest known New Guinea species *A. cato* Forel and *A. isolatus* Mann, but it differs widely from these in its much larger eyes and proportionately broader head and in details of petiolar and genitalic structure.

PLATES

Fig. 3. Heads of the worker caste of two species of *Odontomachus*.
Above, *O. testaceus* Emery, Finschhafen; *below*, *O. malignus* Fr. Smith,
Graciosa Bay, Santa Cruz.



Fig. 4. Lateral view of worker petioles of various Melanesian *Odontomachus*. (1) *tyrannicus* Fr. Smith, Finschhafen, N.-E. New Guinea; (2) *testaceus* Emery, Finschhafen; (3) *animosus* Fr. Smith, holotype from Manokwari, Neth. New Guinea; (4) *saevissimus*, Doormanpad, Neth. New Guinea; (5) *emeryi* Mann, syntype from Maliali, Solomon Islands; (6) *linae* Donisthorpe from Cyclops Mts., Neth. New Guinea; (7) *montanus* Stitz, syntype from Lordberg, N.-E. New Guinea; (8) *gressitti* Wilson, holotype from Nondugl, N.-E. New Guinea; (9) *malignus* Fr. Smith, Graciosa Bay, Santa Cruz; (10) *simillimus* Fr. Smith, Luganville, Espiritu Santo, New Hebrides; (11) *cephalotes* Fr. Smith, Bisianumu, Papua; (12) *aciculatus* Fr. Smith, syntype of synonymous *verticillatus* Stitz.

