

THE NEW GUINEAN SPECIES OF THE ANT GENUS
ORECTOGNATHUS FR. SMITH (HYMENOPTERA: FORMICIDAE)

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Abstract

Three New Guinean *Orectognathus* species are recognised: *O. csikii* Szabó (redescribed), *O. echinus* sp. n. and *O. hystrix* sp. n.

INTRODUCTION

The dacetine ant genus *Orectognathus* Fr. Smith includes nine described species from eastern mainland Australia. One of these is found also on Tasmania and another on the North Island of New Zealand. New Caledonia and Lord Howe Island each carry an endemic species. One species, *O. csikii* Szabó, has been previously described from New Guinea. A serviceable key to the genus was provided by Brown (1957) and an additional Australian species was described by Lowery (1967).

Recent collections, mainly by the authors, have yielded several undescribed Australian species and two from New Guinea, both collected by Lowery. The latter are described below as *O. hystrix* sp. n. and *O. echinus* sp. n. They are among the most bizarre and extraordinary of all ants. Through the courtesy of Dr. L. Móczár of the Hungarian National Museum, Budapest, we have been able to redescribe and figure a syntype of *O. csikii*.

Although *Orectognathus* species are relatively large and brightly coloured, they have eluded most collectors in New Guinea. Available evidence indicates that the genus (as well as the related *Arnoldidris*) frequents very wet and well sheltered areas in rain forest, especially the banks of creek beds and the floors of deep gullies, where they nest in rotting logs or in the soil.

The three species discussed here do not closely resemble one another. They can easily be distinguished from all Australian and other species: *O. csikii* and *O. echinus* by the presence of distinct paired spines in the middle of the vertex; *O. hystrix* by the horn-like spines on the anterior faces of the occipital lobes, and the smooth integument. We do not wish now to discuss the status of *Arnoldidris* Brown, relative to *Orectognathus*. These two genera might ultimately prove synonymous but for the present we feel that it is practical to maintain them as separate taxa.

Most of the abbreviations and details of measurements used here are those established by Brown (1953) for dacetine descriptions. HL (max.) is equivalent to Brown's HL; HL (mid.) is the midline length of the head; SL is the maximum measurable chord length of the scape. Thoracic length (ThL) differs from the conventional Weber's length (WL); it is taken from the anterior point of the pronotal collar to the apex of the inferior propodeal plates in square dorsal view. PL is the length of the petiole—the maximum measurable distance from the apex of the inferior propodeal plate to the posterior edge of the petiolar tergite (not including the dorsal spines), measured in square side view. Cephalic Index (CI) is calculated using HL (max.).

The figures of *O. csikii* are based on camera lucida drawings. The plates are micrographs prepared with a J.E.O.L. JSM U3 scanning electron microscope, using gold-palladium coated specimens. Mr. Timothy Stolz assisted with their preparation.

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Holotypes and most paratypes of both new species are deposited in the Australian National Insect Collection, CSIRO, Canberra (*O. hystrix* type no. 7511; *O. echinus* type no. 7512). Additional paratypes of both species are deposited with the Bernice P. Bishop Museum, Honolulu, Hawaii; British Museum (Natural History), London; Department of Agriculture Stock and Fisheries, Konedobu, Papua; Department of Forests, Bulolo, New Guinea; Museum d'Histoire Naturelle, Geneva, Switzerland; and the Museum of Comparative Zoology, Cambridge, Massachusetts. Paratypes of *O. echinus* alone are in the Hungarian National Museum, Budapest, and the Humboldt Museum, Berlin.

Orectognathus csikii Szabó

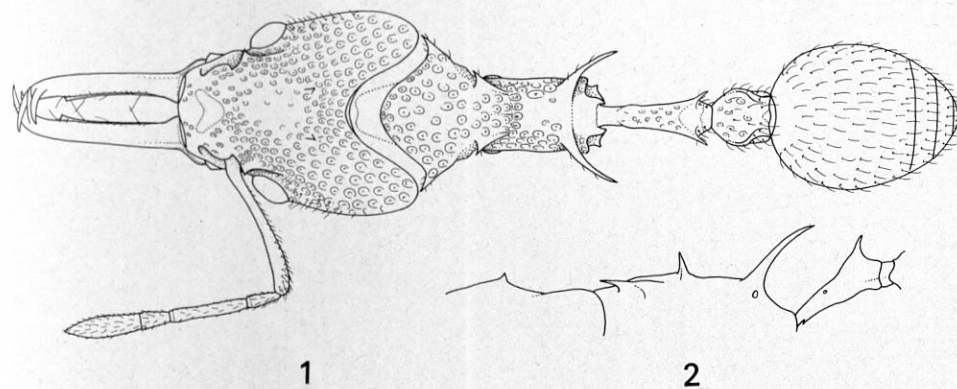
(Figs. 1, 2)

Orectognathus csikii Szabó, 1926, *Ann. Mus. Nat. Hung.* 24: 350-352, figs. A, a.; Brown, 1953, *Mem. Qd Mus.* 13(1): 100.

This species was taken by L. Biró at Erima, Astrolabe Bay in 1897, and at Marega in 1901. No other collections are known.

The species was adequately described by Szabó. Dimensions of a syntype from Marega are: HL (max.) 1.22 mm; HL (mid.) 0.90 mm; HW 1.02 mm; Cl 84; SL 0.76 mm; SI 75; ML 0.90 mm; MI 74; ThL 1.26 mm; PL 0.53 mm.

O. csikii is a not unusual, medium-sized *Orectognathus*; it is much more conservative in structure than either of the new species described here.



FIGS. 1, 2.—*Orectognathus csikii* Szabó, syntype worker: (1) dorsal view; (2) lateral profile of head, thorax and petiole. HW = 1.02 mm.

Orectognathus hystrix sp. n.

(Plate I)

Type locality.—6.4 km south of Bulolo, Morobe District, N.E. New Guinea, level rain forest near Bulolo River, c. 610 m. The type colony was nesting in soil with workers foraging in leaf litter and on the ground at mid day (15.xii.1967, B. B. Lowery). Unfortunately most of the original colony of 74 workers and 4 males has been lost; 12 workers, designated as *nidoparatypes* have survived; 2 males and some larvae are in the ANIC.

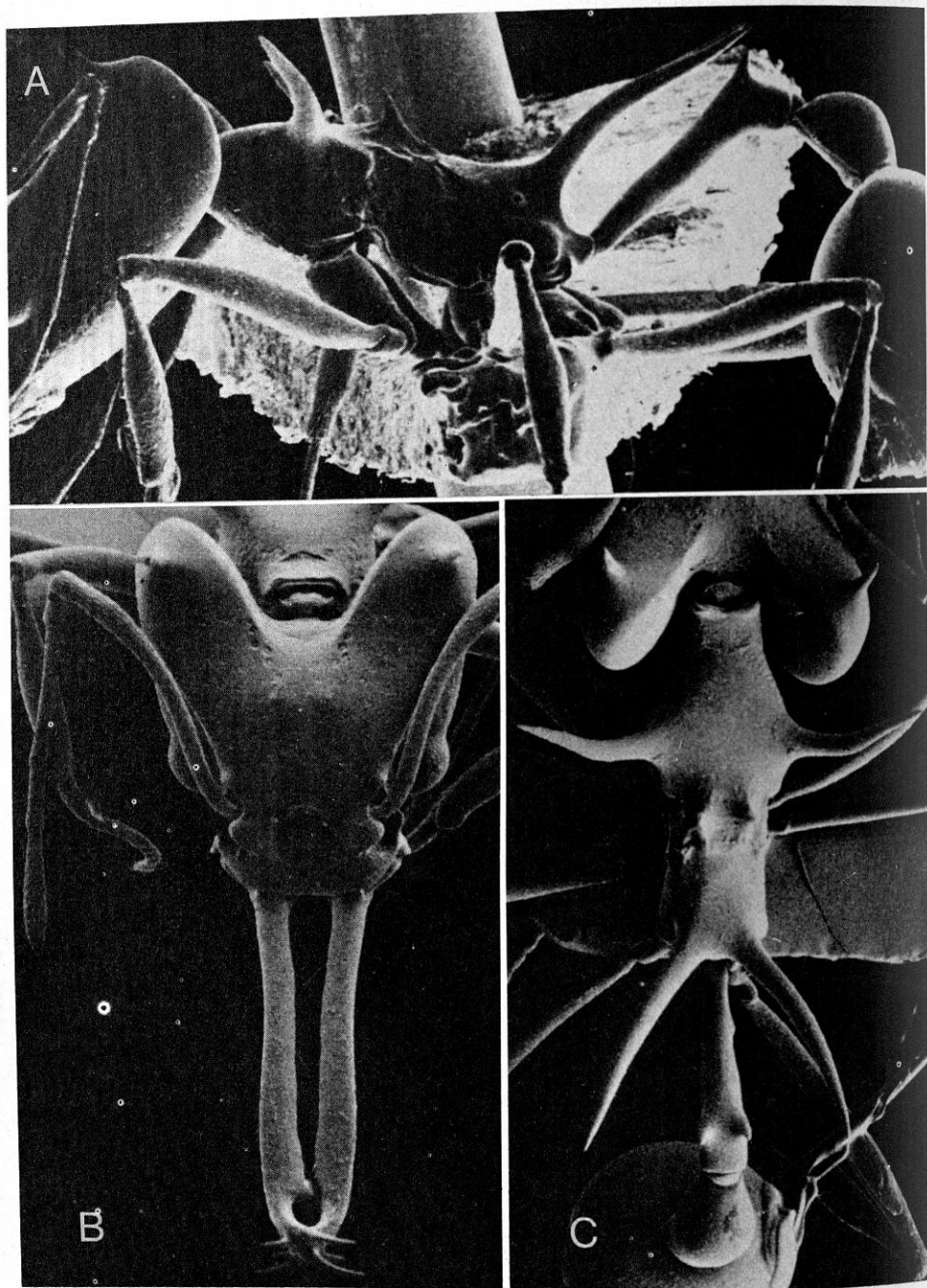


PLATE I

Orectognathus hystrix sp. n., holotype worker: (A) thorax and nodes, lateral; (B) head, frontal; (C) thorax and nodes, dorsal. HW = 1.18 mm, ThL = 1.60 mm, PL = 0.86 mm.

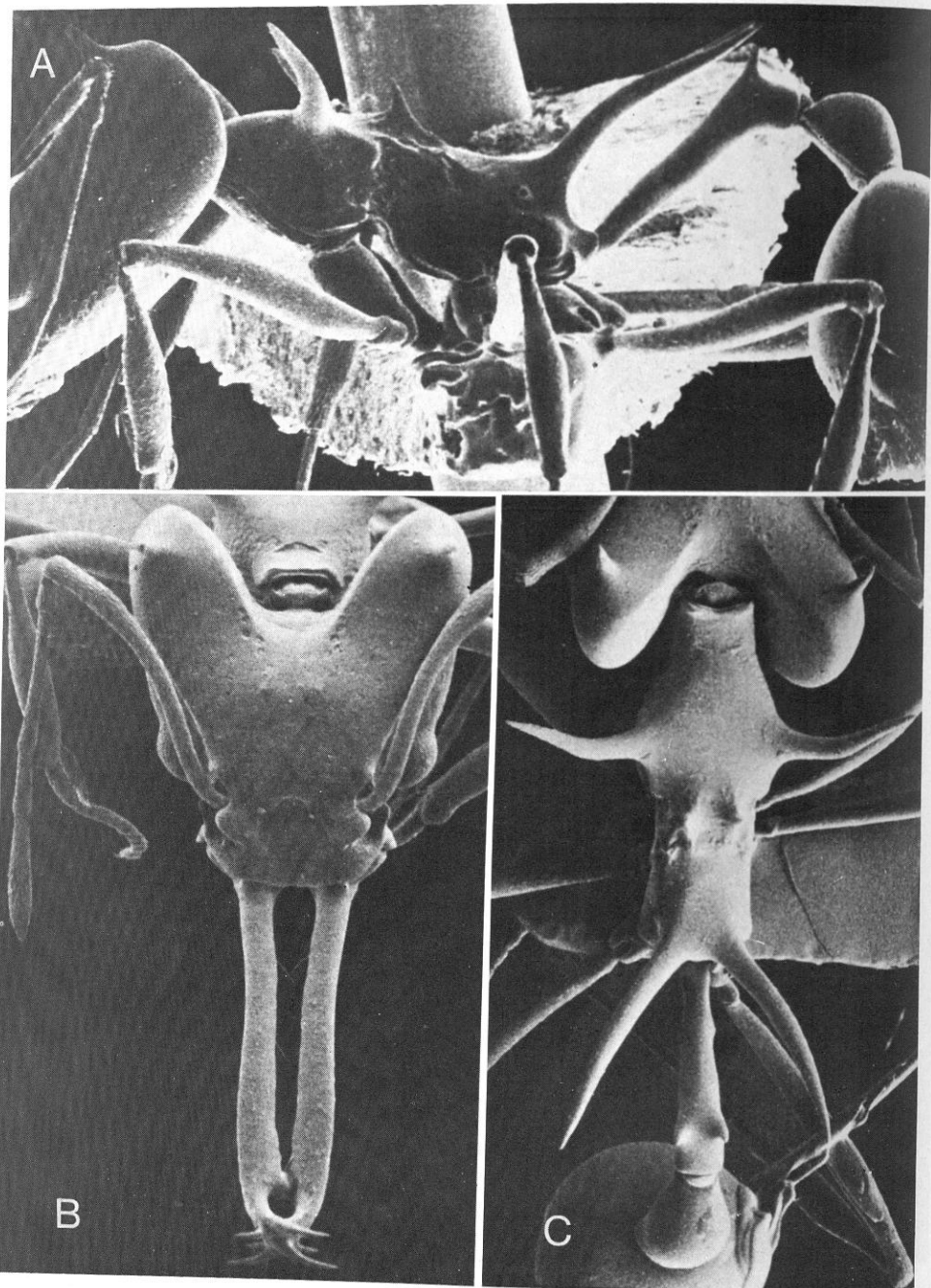


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Three additional workers are here designated as *paratypes*. Two were collected 8 km east of Bulolo, swept from low foliage near a creek bed in rain forest at 4.30-5.30 p.m. (c. 1060 m., 19.xii.1970, B. B. Lowery). *Arnoldidris biroi* (Szabó) was taken at the same locality. A single *O. hystrix* worker was found foraging in leaf litter in a deep gully at 10.30 a.m. in rain forest c. 13 km west of Bulolo (c. 760 m, 22.xii.1970, B. B. Lowery). *O. echinus* and *Arnoldidris biroi* were collected at the same site.

Dimensions.—(All specimens cited above are included, *holotype* cited first): HL (max.) 1.50, 1.38-1.54 mm; HL (mid.) 1.08, 1.02-1.10 mm; HW 1.18, 1.06-1.24 mm; CI 79, 75-82; SL 1.14, 1.06-1.20 mm; SI 97, 94-100; ML 1.44, 1.40-1.50 mm; MI 96, 95-101; ThL 1.60, 1.54-1.64 mm; PL 0.86, 0.84-0.92 mm.

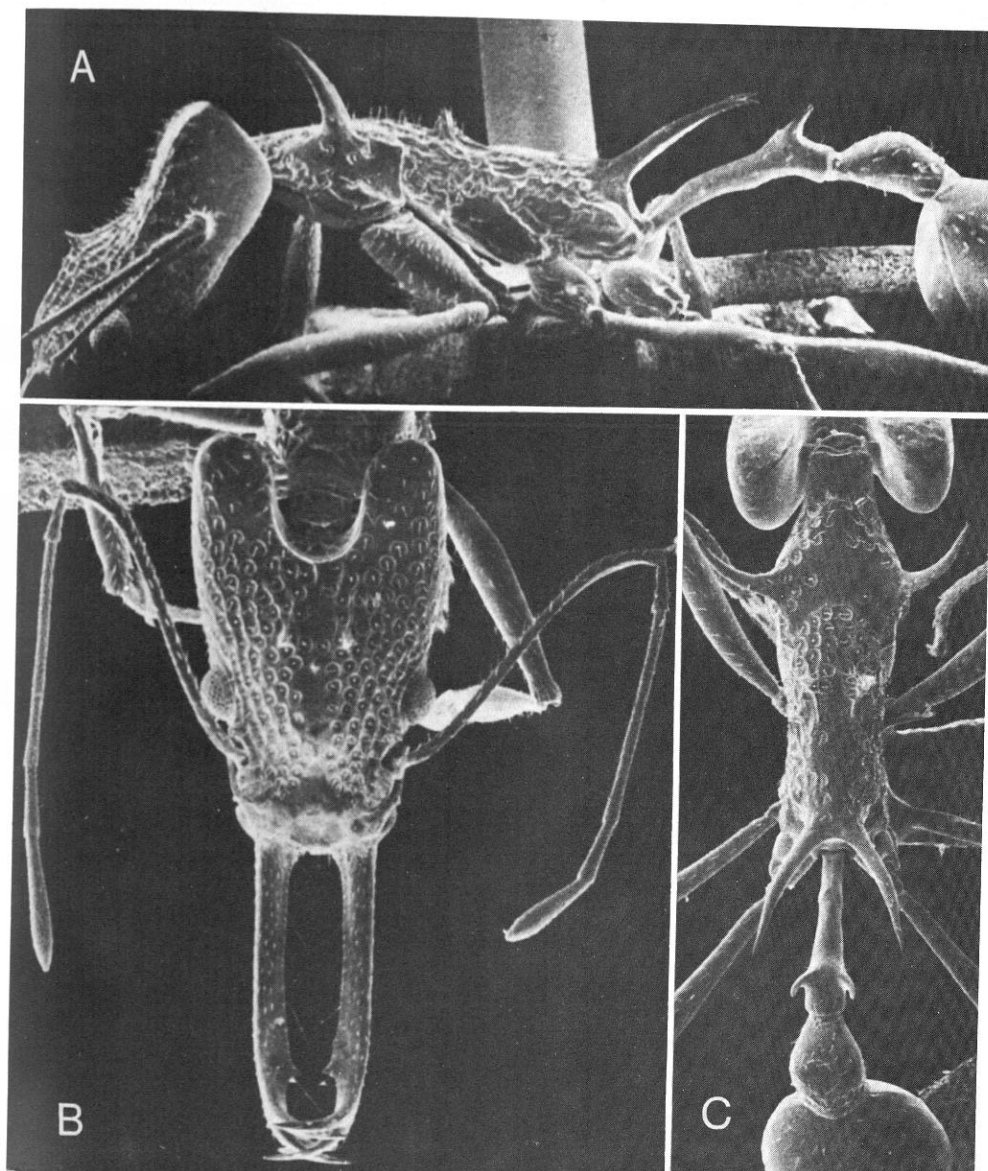


PLATE II

Orectognathus echinus sp. n., holotype worker: (A) thorax and nodes, lateral; (B) head, frontal; (C) thorax and nodes, dorsal. HW = 1.09 mm, ThL = 2.02 mm, PL = 0.82 mm.

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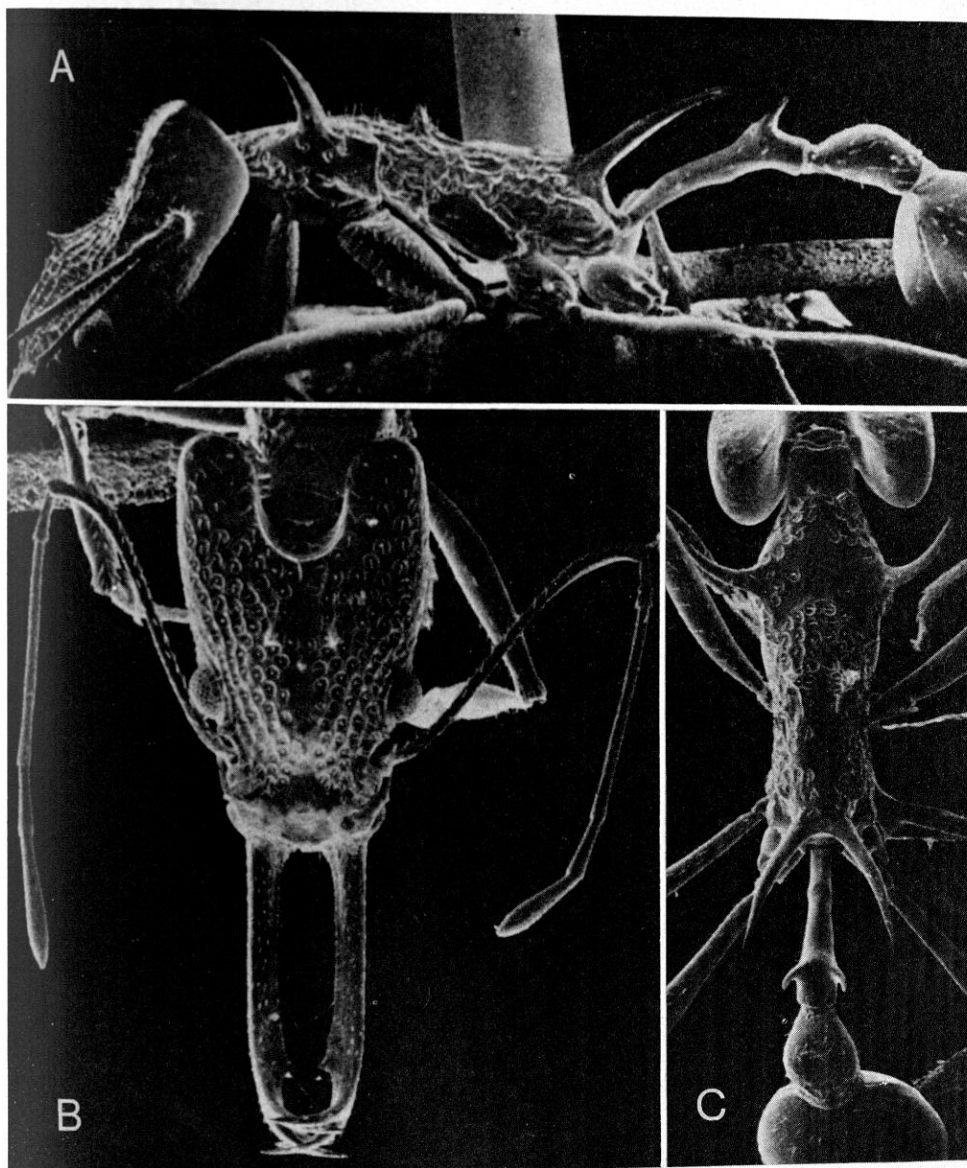


PLATE II

Orectognathus echinus sp. n., holotype worker: (A) thorax and nodes, lateral; (B) head, frontal; (C) thorax and nodes, dorsal. HW = 1.09 mm, ThL = 2.02 mm, PL = 0.82 mm.

Diagnosis.—General features as shown in Plate I. The specimen illustrated is the *holotype*. Its colour, now obscured by gold-palladium coating, was originally a clear golden-yellow, like that of a specially selected *paratype* mounted on the same pin.

A remarkable species, clearly characterised by the illustrations and dimensions given here. The mandibles, thoracic spines and petiole are proportionately much longer than in any other *Orectognathus* species. The frontal spines (horns) of the occipital lobes are unique, as is the almost total lack of sculpturation. This is represented at most by vague traces of large, well spaced, shallow foveolae which are clearly vestigial and are normally visible only under some angles of illumination. If we are correct in assuming this sculpture to be vestigial the species can be readily derived from stock with sculpture more typical of *Orectognathus*. Little variation apart from size is shown by the paratypes: full intensity of colour is seen in only a few specimens.

Orectognathus echinus sp. n.

(Plate II)

Type locality.—Black Cat Trail, 10 km east of Wau, N.E. New Guinea. The type nest series (queen plus 56 workers) was nesting in a wet soil bank adjacent to a rotting log, on the steep slope of a deep valley in montane rain forest (c. 1370 m., 6.i.1971, B. B. Lowery).

A second colony (queen plus 13 workers) was taken nesting under a small rock on a wet soil bank in a deep valley in rain forest 12.9 km west of Bulolo (c. 700 m., 22.xii.1970, B. B. Lowery).

The following description is based on the *holotype*, 56 *nidoparatypes*, and 13 *paratypes* from the second colony. The latter are largely nanitic and relatively small. Their indices however match those of the type colony.

Worker Diagnosis.—Dimensions as follows: (*Holotype* cited first, followed by *nidoparatypes*, then *paratypes* from the second colony): HL (max.) 1.84, 1.74-1.90, 1.64-1.76 mm; HL (mid.) 1.40, 1.30-1.42, 1.26-1.36 mm; HW 1.09, 1.02-1.10, 0.96-1.02 mm; CI 59, 57-62, 56-60; SL 1.51, 1.42-1.52, 1.36-1.40 mm; SI 138, 133-142, 133-143; ML 1.29, 1.26-1.38, 1.24-1.26 mm; MI 70, 69-76, 71-76; ThL 2.02, 1.88-2.04, 1.76-1.86 mm; PL 0.82, 0.78-0.90, 0.74-0.82 mm.

General features as shown in Plate II. An unusual species easily distinguished from its New Guinean congeners by many features clearly indicated in the accompanying plates and figures. The species is characterised within *Orectognathus* by the cephalic, thoracic and petiolar structure and proportions, and the presence of a pair of well developed frontal spines on the head. Other notable characteristics are the relatively convex and protrusive eyes, the deep, almost parallel-sided occipital emargination, and the long, sub-erect pronotal spines. *O. echinus* is the largest known *Orectognathus*; it is relatively strongly spined and has the foveolate sculpturation typical of the genus. Colour rich reddish-brown, legs pale yellow. The colour of the *holotype*, now obscured by gold-palladium coating, was originally like that of a specially selected *paratype* mounted with it.

Female Diagnosis.—A single dealate queen, collected with the type colony, differs from the workers in the usual characters. She has the following dimensions: HL (max.) 1.80 mm; HL (mid.) 1.38 mm; HW 1.12 mm; CI 62; SL 1.44 mm; SI 130; ML 1.28 mm; MI 70; ThL 2.10 mm; PL 0.90 mm. The specimen is deposited in the Australian National Insect Collection.

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