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Revision of the Rhaphidophoridae (Orthoptera) of New Zealand.
Part XI—A New Species Belonging to the Genus *Gymnoplectron*
Hutton, 1897, from the Poor Knights Islands.

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Abstract

A new species of Rhaphidophoridae belonging to the genus *Gymnoplectron* Hutton, *Gymnoplectron giganteum* n. sp., is described. Attention is drawn to its very large size.

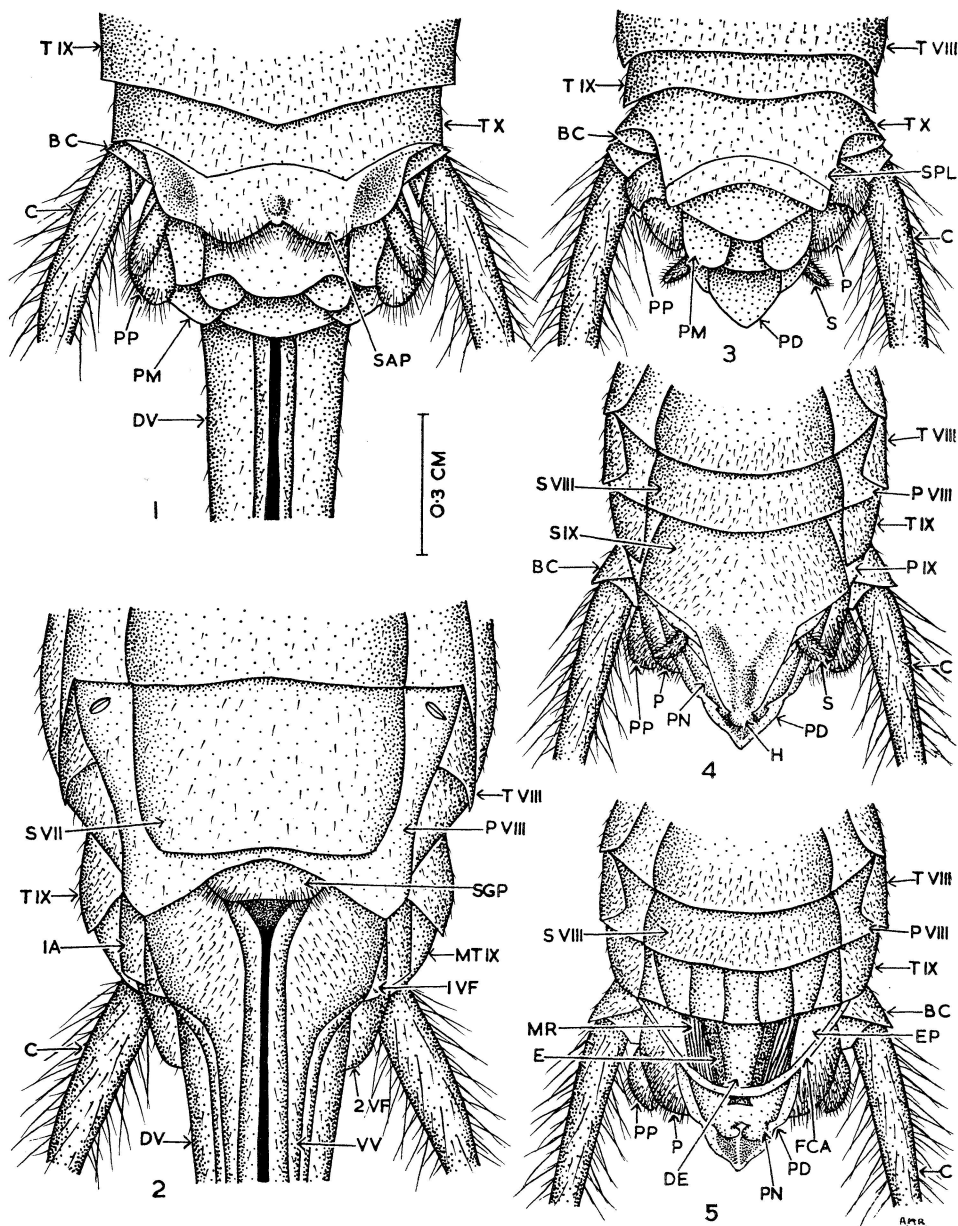
INTRODUCTION

THE POOR Knights Islands lie in a north-south line about sixteen miles off the coast of Northland, and due east of Tutukaka. There are two main islands, Tawhiti/Rahi and to the south of it Aorangi. Because of the general inaccessibility of the islands, very few people have visited them and little has been published on the flora and fauna.

This paper describes a new species of Rhaphidophoridae belonging to the genus *Gymnoplectron* Hutton which occurs in a cave on Tawhiti Rahi. In 1940, one adult male specimen was collected by Mr E. G. Turbott, and this specimen is now designated the Holotype. In December, 1955, an immature male and female were taken by Mr J. C. Watt. It was not till April, 1961, when Dr F. J. Newhook visited the island, that a representative series was collected, including two adult males and an adult female, thus making a description of the species possible.

I have named this species *giganteum* because it is the largest representative of the Macropathinae I have examined, an adult male reaching a length of 18 inches from the tip of its antennae to its hind tarsi. This increase in size is possibly due to isolation and the absence of predators and competitors. The giant tree weta, *Deinacrida fallai* Salmon (Fam. Deinacrididae) also occurs only on the Poor Knights.

Comparison of specimens has also shown (Richards, 1954) that with *Gymnoplectron edwardsii* (Scudder), a common cave-weta in the Nelson and Wellington districts, the largest specimens occur on Trio Island and Stephens Island. This is further evidence in support of the theory that island fauna is larger than that on the mainland.



TEXT-FIG. 1.—*Gymnoplectron giganteum* n. sp. Fig. 1—Female genitalia, dorsal view. Fig. 2—Female genitalia, ventral view. Fig. 3—Male genitalia, dorsal view. Fig. 4—Male genitalia, ventral view. Fig. 5—Male genitalia, ventral view, subgenital plate removed to expose structures beneath.

Genus GYMNOPECTRON Hutton, 1897

Trans. N.Z. Inst., 29: 2291897. *Pachyrhamma* (Brunner) Hutton, *Trans. N.Z. Inst.*, 29: 230–231.1954. *Macropathus* Walker. Richards, *Trans. Roy. Soc. N.Z.*, 82: 741.1958. *Pachyrhamma* Brunner. Richards, *Trans. Roy. Soc. N.Z.* 85: 466.§ **Gymnoplectron giganteum** n. sp. Plate 1, figs. 1, 2. Text-fig. 1, figs. 1–5.

COLOUR. Basic colour mid-brown, with anterior, lateral and posterior borders of pronotum, and lateral and posterior borders of mesonotum, metanotum and abdominal terga ochreous; pronotum bears two large ochreous marks; nota and abdominal terga irregularly mottled with light brown, femora and tibiae banded with light brown and ochreous, mid brown at junctions of femora and tibiae; tarsi ochreous; antennae mid brown; ovipositor deep reddish brown.

BODY. Length 42 mm in female; 48 mm in male. Ovipositor 0.8 as long as body. Maxillary palpi with third and fourth joints subequal in length. Fastigium twice as long as high, with a median vertical groove; base touching scape of antennae; pronotum margined anteriorly, laterally and posteriorly; mesonotum margined laterally and posteriorly.

ANTENNAE. As in generic description. Third segment narrower than pedicel; on dorsal aspect 1.2 times as long as pedicel in both male and female, on ventral aspect 0.8 as long in male and 0.9 as long in female; from fourth segment onwards segments unequal in length, although steadily decreasing in size; all segments thickly clothed with short setae. Sexual dimorphism present in antennae, male possessing longer, stouter antennae than female; approximately 44th and 58th segments from proximal end of flagellum of male armed with a short, sharply pointed prolateral spine; distally approximately next 25 segments unarmed; then, and at intervals of 4 segments, flagellum bears from 3–5 short blunt retrolateral spines; each spine is borne on a swelling on the upper part of its segment (Plate 1, fig. 2); female does not possess spines.

LEGS. Fore and middle legs subequal in length; with hind leg 1.8 as long as fore and middle legs in female, and approximately twice as long in male. Sexual dimorphism is shown by fore and middle legs of female being 0.8 as long as male, and hind legs of female 0.7 as long as male. Femora, tibiae and proximal two segments of hind tarsi armed with variable numbers of spines (Table I). No spines occur on fore or middle tarsi. Length of proximal segment of hind tarsus

INDEX TO TEXT-FIGURE

BC—basal segment or cercus.
C—cercus.
DE—ductus ejaculatorius.
DV—dorsal valve.
E—endapophysis.
EP—endoparamere.
FCA—feebly chitinised arch connecting rami.
H—subgenital plate, male.
IA—intersegmental apodeme.
MR—muscle attached to ramus.
MT IX—membrane of tergite IX.
P—paramere (ectoparamere).
P VIII, P IX—pleurite VIII, IX.

PD—pseudosternite.
PM—perianal membrane.
PN—penis.
PP—paraproct.
S—stylus.
S VII, S VIII, S IX—sternite VII, VIII, IX.
SAP—suranal plate, female.
SGP—subgenital plate, female.
SPL—suranal plate, male.
T VIII, T IX, T X—tergite VIII, IX, X.
1 VF—first valvifer.
2 VF—second valvifer.
VV—ventral valve.

TABLE I.
VARIABILITY IN NUMBER OF LINEAR SPINES ON THE LEGS OF 13
SPECIMENS OF *GYMNOPECTRON GIGANTEUM* n. sp.

		Arith. Mean		Std. Dev.		Range (or actual distribution)	
		L	R	L	R	L	R
Fore Femur	Pro.	9.6	9	2.8	1.7	7-14	7-12
Inf.	Retro	0.3	0.1	—	—	0(11), 1, 3	0(11), 1
Fore Tibia	Pro.	3	3	0	0	0	0
Inf.	Retro	3	3	0	0	0	0
Fore Tarsus	Pro.	0	0	0	0	0	0
	Retro	0	0	0	0	0	0
Mid Femur	Pro.	4.8	6.2	2.6	1.4	0-10	4-8
Inf.	Retro	18.2	16.4	6.3	5.2	0-24	7-23
Mid Tibia	Pro.	6.1	6.2	1.6	1.3	4-10	4-8
Sup.	Retro	3.2	3.1	0.9	1.0	2-4	2-5
Mid. Tibia	Pro.	3	3	0	0	0	0
Inf.	Retro	3	3	0	0	0	0
Mid Tarsus	Pro.	0	0	0	0	0	0
	Retro	0	0	0	0	0	0
Hind Femur	Pro.	14.6	13	2.7	3	9-20	7-9
Inf.	Retro	36.8	37.3	10.2	10.9	20-50	17-51
Hind Tibia	Pro.	37.2	38.8	2.2	3.1	34-42	33-43
Sup.	Retro	42.4	41.5	1.8	2.7	39-45	38-47
Hind Tarsus	Pro.	0	0	0	0	0	0
1 Sup.	Retro	1.7	1.8	0.7	0.5	0-3	1-3
Hind Tarsus	Pro.	0	0	0	0	0	0
2 Sup.	Retro	0	0	0	0	0	0

(Figures in parentheses represent number of specimens.)

INDEX TO TABLE

Arith. Mean—Arithmetic Mean.

Inf.—Inferior.

L.—Left Leg.

Mid.—Middle.

Std. Dev.—Standard Deviation.

Pro.—Prolateral.

R.—Right Leg.

Retro.—Retrolateral.

Sup.—Superior.

subequal with other three together. Ratio of length of legs to length of body: Fore leg, male 1.6:1; female 1.6:1. Middle leg, male 1.6:1; female 1.5:1. Hind leg, male 3.2:1; female 2.7:1.

GENITALIA. *Female:* Suranal plate, Fig. 1 (SAP) convex laterally, rounded and deeply notched medianly at distal margin; distal margin clothed with two groups of setae; postero-medianly the plate bears a tubercle. Subgenital plate, Fig. 2 (SGP) distal margin rounded and slightly emarginate medianly; distal margin clothed with two groups of setae. *Male:* Suranal plate, Fig. 3 (SPL), concave laterally and distally; whole plate sparsely clothed with short setae. Subgenital plate, Fig. 4 (H), triangulate, subequal in width to length; sides spreading proximally, tapering to concave distally with a rounded apex, glabrous on dorsal side, but with apical protuberance on ventral surface thickly clothed with short setae. Two styli, Figs. 3, 4 (S), thickly clothed with short setae, length of styli being 0.21 length of sternite IX (S IX). Parameres, Figs. 3, 4, 5 (P), attenuated, broad at base and tapering to a point, retrolateral side straight and prolateral side convex, twice as long as wide; distal portion of paramere thickly clothed with

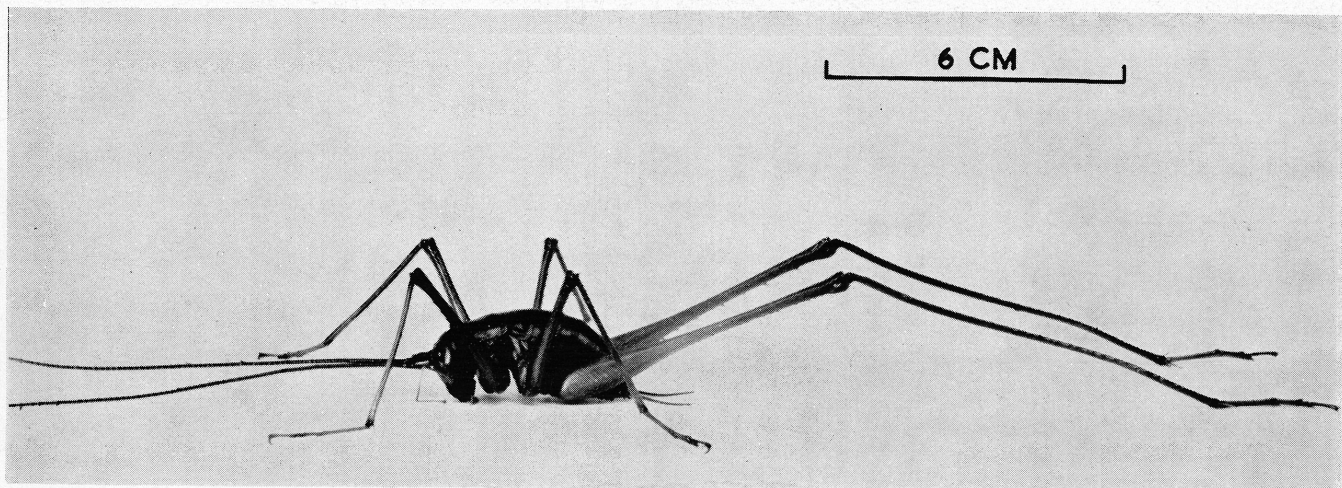


FIG. 1.—*Gymnoplectron giganteum* male, lateral view.

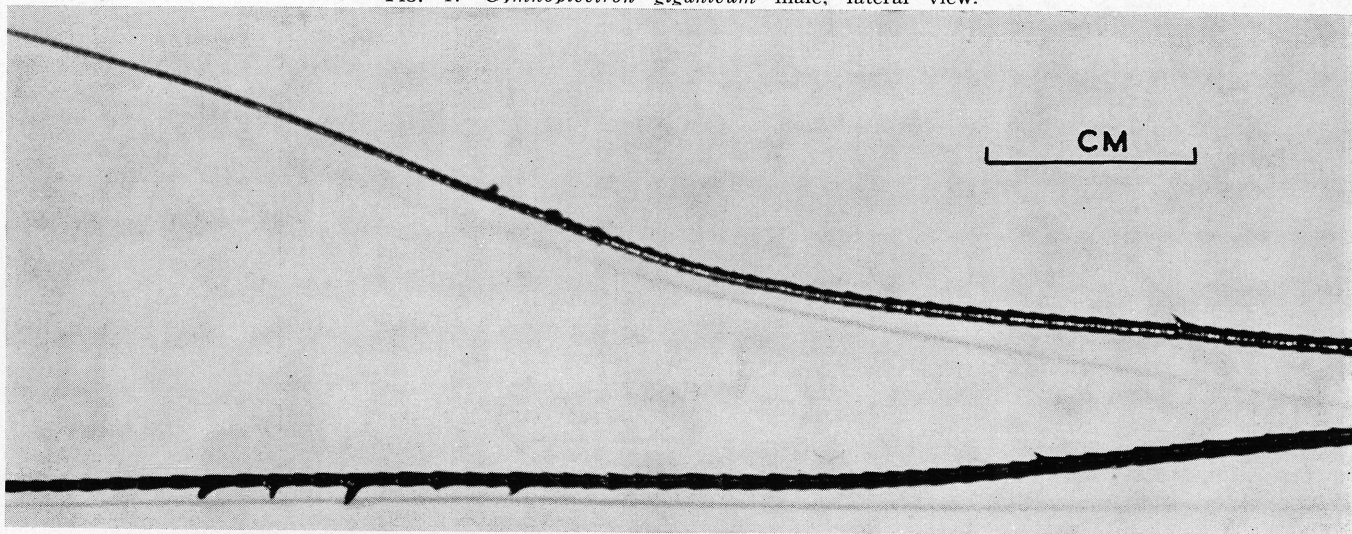


FIG. 2.—Portion of antennae of adult male *Gymnoplectron giganteum* showing spination of flagella.

Photos: S. A. Rumsey.

setae. Pseudosternite, Figs. 3, 4, 5 (PD), subequal in width to length, tapering to a point distally. Penis, Figs. 4, 5 (PN), two-lobed, each lobe twice as long as wide. Paraprocts, Figs. 3, 4, 5 (PP), crescent-shaped, elongate, 1.6 longer than broad, distal portion thickly clothed with setae.

LOCALITY. In cave, Tawhiti Rahi Island, Poor Knights Islands (type locality) coll. E. G. Turbott 1940, J. C. Watt 1955, F. J. Newhook 1961.

TYPES. Holotype male in Auckland Institute and Museum Collection, Auckland. Allotype female, Paratypes male, two male nymphs and one female nymph in Plant Diseases Division Collection, Auckland.

MATERIAL EXAMINED. Holotype male, Allotype female, Paratypes three males and one female, and four males and three females.

Gymnopletron giganteum is most closely related to *G. spinosa* Richards (Richards, 1962), but differs from it in:

1. The greater number of linear spines on fore, middle and hind femora.
2. The shape of the subgenital plate of the female.
3. The presence of a postero-median tubercle on the suranal plate of the female.
4. Much greater overall size.

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