

ON THE SEXUAL ORGANS OF THE TUBIFICID WORM *AULODRILUS REMEX* STEPH.

By K. S. PADMANABHA AIYER, M.A., D.Sc.

(Plate VI).

This species was originally described by Stephenson in 1921 (4) from three specimens collected in the Central Provinces. Large numbers of the worm, mostly non-sexual, were found by me in tanks in Trivandrum in 1925 (1). In August, 1928 a sample of mud containing specimens of the worm was brought from Neyyur (34 miles south of Trivandrum) and kept in the laboratory for 3 months. Sexual specimens became available in this culture during the months of October and November. Six of these were sectioned longitudinally, four transversely, and several were examined alive under the microscope.

The present specimens measure 15-20mm. during life. The number of segments is usually more than 100. One of the largest specimens examined had 156 segments followed by a short setaless unsegmented region.

The prostomium is bluntly conical. The buccal cavity is globular and is confined to segment i. The pharynx is thick-walled and occupies segments ii and iii. Surrounding the pharynx are a number of pear-shaped cells, the basal ends of which are drawn out into long narrow ducts. The narrow oesophagus dilates into the intestine in segment vii or viii. In sexually mature specimens the dilatation is in segment ix.

Large clusters of pear-shaped gland-cells occur in segments iii, iv, and v close to the ventral bodywall on either side of the ventral nerve cord. The cells have finely reticulate cytoplasm and round nuclei and their narrow basal ends are attached to the bodywall.

On the ventral side of segment vii, in sexually mature specimens, is a narrow median longitudinal opening with a puckered margin.

The opening alternately widens and narrows to a slit as the body of the animal contracts and expands during progression. The opening leads into a cavity or depression formed by the invagination of the bodywall, which may be termed the 'genital fossa' since the male apertures open into it. Such a depression has been described by Mehra (3) in *A. kashi* and termed by him the 'spermiducal chamber.' I would prefer the term 'genital fossa.'

The Reproductive Organs.

The clitellum is conspicuous and extends over segment vii and the anterior half of segment viii (=1½ segments).

The testes were present in all the sectioned specimens. They are a pair of pear-shaped masses of cells in segment vi attached by the narrow base to the posterior face of septum 5/6. In all the specimens examined there is present in segment v and attached to septum 4/5

by their narrow bases a pair of structures similar to the testes in segment vi, but about half their size. These appear to be an anterior rudimentary and perhaps functionless pair of testes.

The sperm sac is single and occupies segment vii and may project into segment viii. Spermatozoa and sperm-morulae are seen in segment vi, in some specimens sparsely and in others abundantly.

The male funnels are placed on the anterior face of septum 6/7, one on each side of the oesophagus and a little below it. The funnels are almost equilateral in longitudinal section, and are 45-60 μ wide at the mouth, according as they are partially or fully open. The wall is composed of a single layer of narrow elongate columnar cells and is ciliated internally. Bundles of spermatozoa are seen at the mouth.

The vas deferens is 12 μ thick with a lumen about 5 μ in diameter. On passing into segment vii the vas deferens describes a broad loop, gradually rises upwards, and opens into the atrium at its anterior end. In a few sections the distal half of the duct is slightly coiled.

The atria are elongate ovoid sacs in segment vii with their long axis parallel to that of the body. Each atrium is 157 μ long, 67 μ wide at the broad anterior part, and 31 μ at the narrow rounded posterior end. The wall of the atrium is composed of three layers as in the other species of the genus. The inner epithelial lining consists of broad columnar cells with indistinct granules and basal nuclei. The nuclei alone stain with haematoxylin. The cells lining the anterior end of the atrium are smaller and are ciliated. The middle muscular coat is distinct and is 3.6 μ in thickness. The outer coelomic epithelium is rather indistinct in sections. Twisted bundles of spermatozoa are present in the lumen of the atrium.

From the ventral side of the rounded posterior end of each atrium the straight atrial duct is given off, which, passing downwards and inwards towards the middle line, opens along with its fellow into the genital fossa at about its middle. The duct is distinctly marked off from the atrium by a constriction and is 72 μ high and 30 μ thick. At the constriction it is only 18 μ thick. The columnar cells lining the lumen are of the same kind as those of the atrium. This epithelial layer is surrounded by a layer of circular muscle-fibres, which at the exterior opening of the duct form a distinct sphincter round it. The entire duct is enclosed in a muscular chamber composed of longitudinal muscle-fibres springing from the ventral bodywall.

Lying on the ventral side of each atrium is the prostate, a lobed mass composed of large pear-shaped gland-cells with finely-reticulate cytoplasm and small rounded nuclei. Both the reticulum and the nuclei stain deeply with haematoxylin. The prostate communicates with the atrium ventro-laterally at about the middle of its length where the muscular coat of the atrium is interrupted.

The ovaries are in segment vii attached to the ventral bodywall close behind septum 6/7. Each is broad and flat, about 160 μ in length and is composed of a large number of ova a few of which are sometimes larger in size than the rest.

The ovisac is in segment viii, sometimes projecting slightly into segment ix. It is a backward pouching of septum 7/8 and contains a

single large ovum composed of minute rounded yolk granules and having a conspicuous centrally-situated oval nucleus with a nucleolus.

A pair of spermathecae are situated in segment vi, and each consists of an ampulla and duct. The ampulla is an ovoid sac 247μ long, 54μ wide at its ental end, 67μ wide about the middle and 27μ ectally. The wall is composed of a single layer of cubical cells with a thin muscular layer closely adherent to it. The lumen of the ampulla is filled with a twisted mass of tightly packed spermatozoa. The duct is 45μ long and 18μ thick. The two ducts open close together in the mid-ventral line in the setal zone of the segment.

The coelomic cavity of segment vi.—Mehra (3) describes in detail a division of the coelomic cavity of segment vi in *A. kashi* into two parts, a large central portion enclosing all the organs of the segment and a more peripheral surrounding the former ventrally and laterally. I give below an account of the condition observed in the present species.

In one of the series of transverse sections (the best of the four prepared) the bodywall of segment vi is very much thickened laterally and ventrally (but not dorsally). The thickness is caused by the development of a new layer of circular muscle-fibres at some distance from the bodywall and the filling up of the space between the two by a spongy tissue composed of irregularly shaped cells with reticulate cytoplasm and round nuclei. Numerous spaces exist in this tissue. The spongy tissue, which is widest ventrally, gets narrower and narrower dorsalward till it completely disappears dorso-laterally where the new muscular wall joins the bodywall. In transverse sections the thickened part of the bodywall has thus the appearance of a crescent. In a few of the sections of this series the new muscular wall has, in certain places, severed itself almost completely from the bodywall, the only connection between the two being very thin protoplasmic strands, remnants of the spongy network, at wide intervals (see Pl. VI, fig. 7). The strands may also be broken or absent. Thus distinct peripheral spaces result. These spaces can be due to nothing else than the accidental tearing of the loose spongy network during the process of paraffin embedding.

In the remaining three of my transverse series an almost continuous peripheral cavity occurs laterally and ventrally. In these sections the spongy tissue is present only in the dorso-lateral corners just before the new circular muscle layer fuses with the bodywall. After having examined the condition in the first series described above I think that the apparently continuous peripheral cavity in these is also caused by the accidental tearing of the loose spongy network during the process of paraffin embedding, and the consequent separation of the new layer of circular muscle-fibres from the bodywall.

With regard to the origin of the spongy tissue and the development of the new circular layer of muscles in segment vi I am unable to give a definite explanation. It may, however, be mentioned that in the present species the thickening of the bodywall is not restricted to segment vi but extends slightly into the posterior part of segment v and into the anterior part of segment vii.

Penial setae.—In sexually mature specimens the ventral setae of segment vi are lost and those of segment vii are modified as the penial

setae. The penial setae are *one* only on each side in fully-mature individuals, though in less mature worms two setae are present in a bundle. The penial seta is 135–144 μ long and doubly curved and is without a nodulus. The distal fourth of the seta has a boat-like excavation on its concave side as in *A. pectinatus* (2).

Each penial seta passes through the central lumen of a setal gland situated external to the atrial duct of its side. The setal gland is 36 μ wide and is almost globular in shape. It is composed of a single layer of elongate cells having distinct outlines and basally situated nuclei. The cytoplasm does not stain with haematoxylin. The proximal part of the penial seta projects beyond the gland for a distance of about 36 μ . Investing the gland is a muscular layer which is continuous with the muscle bands of the setal sac.

Small compact pear-shaped masses of gland-cells occur in connection with each setal gland, as in *A. pectinatus* and *A. kashi*. The cells composing each pear-shaped mass are themselves pear-shaped and highly vacuolated. The long narrow stalk-like basal end of each mass (composed of the extremely long, thin and stalk-like basal ends of the individual cells) communicates with the setal gland. Communication is effected by the interruption of the muscle layer investing the setal gland. While the swollen parts of the cells stain deeply with haematoxylin, the narrow basal parts do not stain.

Parasites.—In two non-sexual specimens the body presented whitish blotches on each side except in the posterior segments. On examination it was seen that the whitish appearance was due to the presence, in the body-cavity of each segment, of two massive bundles, one on each side of the gut, of a species of bacterium. Each bacterium is 19 μ long, straight, and rod-like, with an ovoid spore (?) near the anterior end. This is the second time I have noticed bacterial infection in aquatic oligochaetes. Some months ago a specimen of *Aulophorus tonkinensis* was obtained with the entire body swollen and which presented a glistening white appearance due to masses of bacteria in the body-cavity.

Remarks.—The presence of two pairs of testes in the present species is interesting. The anterior pair have apparently lost their function as is indicated by their small size and by the absence of an anterior pair of male funnels and of an anterior sperm-sac. In other respects the present species agrees very closely with *A. kashi*. Among minor differences may be mentioned the following:—

- (1) The atrial duct in *A. remex* is straight and not convoluted.
- (2) The spermathecal openings in *A. remex* are *ventral*, close to the mid-ventral line and not ventro-lateral as in *A. kashi*.

REFERENCES TO LITERATURE.

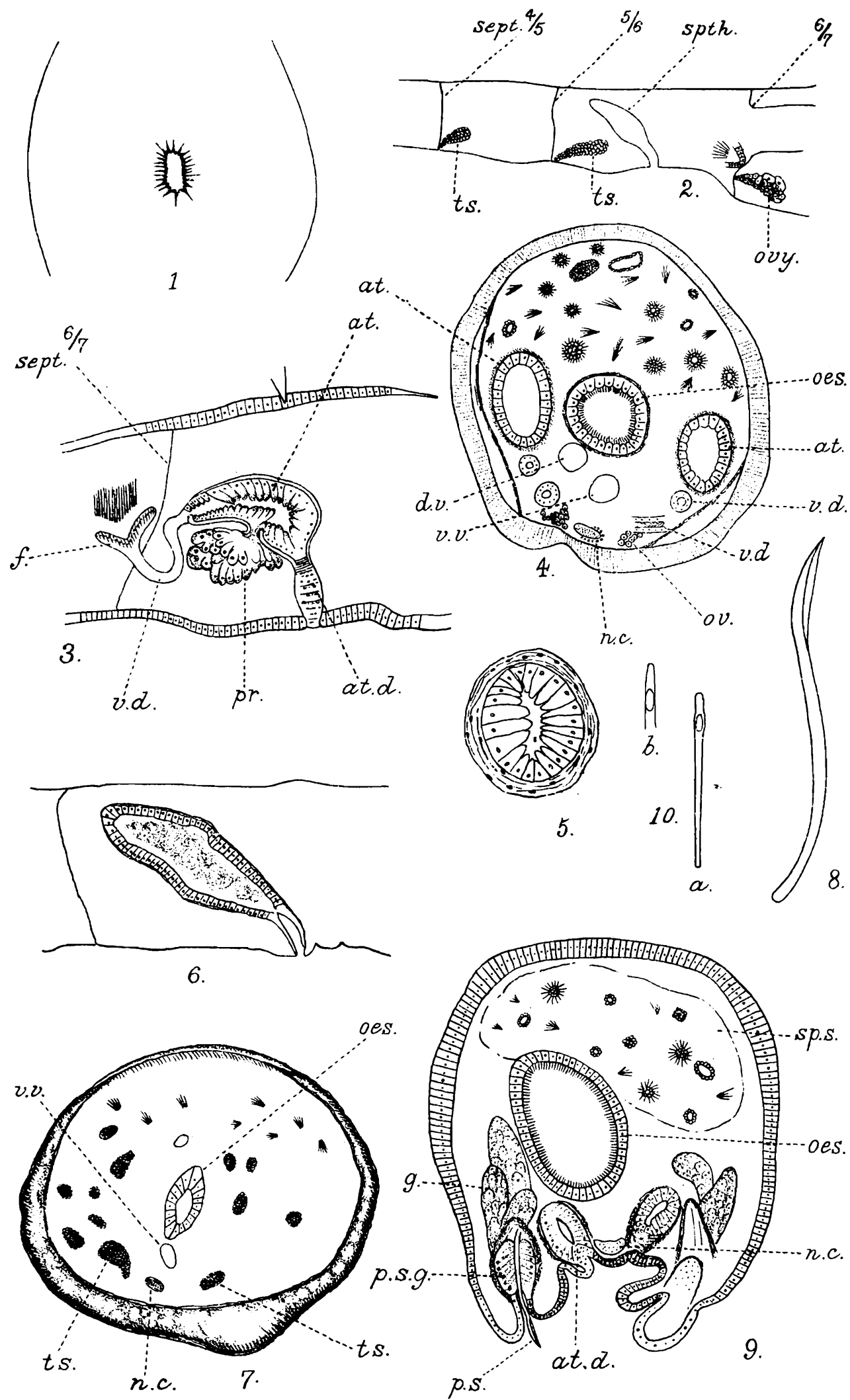
1. Aiyer, K. S. Padmanabha.—Notes on the Aquatic Oligochaeta of Travancore, I. *Ann. Mag. Nat. Hist.*, (Ser. 9), Vol. XV (1925).
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3. Mehra, H. R.—Two New Indian species of the genus *Aulodrilus* Bretscher. *Proc. Zool. Soc. London* (1922).

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EXPLANATION OF PLATE VI.

Aulodrilus remex Steph.

- FIG. 1.—Genital fossa on the ventral side of segment VII.
- FIG. 2.—Testes, ovaries and spermathecae. *t*, testes, *ovy*, ovary; *spth*, spermatheca.
- FIG. 3.—Male deferent apparatus, diagrammatic. *at*, atrium; *at. d.* atrial duct; *f*, funnel; *pr*, prostate; *vd*, vas deferens.
- FIG. 4.—Transverse section through atrium in segment VII before vas deferens opens into it. *oes*, oesophagus; *at*, atrium; *d.v*, dorsal vessel; *nc*, nerve cord; *vd*, vas deferens; *v. v*, ventral vessel.
- FIG. 5.—Transverse section through atrial duct.
- FIG. 6.—Spermatheca.
- FIG. 7.—Transverse section through segment VI. *oes*, oesophagus; *n. c*, nerve cord; *t*, testes., *v. v*, ventral vessel.
- FIG. 8.—Penial seta.
- FIG. 9.—Transverse section through the middle of segment VII passing through the atrial ducts and the penial setal glands.
at. d., atrial duct; *g*, masses of gland cells; *p. s. g.* penial setal gland; *ps*, penial seta; *n. c*, nerve cord; *sp. s*, sperm-sac.
- FIG. 10.—Bacterium. *a*, entire bacterium; *b*, anterior end, more magnified.



TWO NEW SPECIES OF NEMATODES FROM INDIAN HOSTS.

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(From the Hookworm Research Laboratory, School of Tropical Medicine and Hygiene, Calcutta. Financed by the Indian Jute Mills Association).

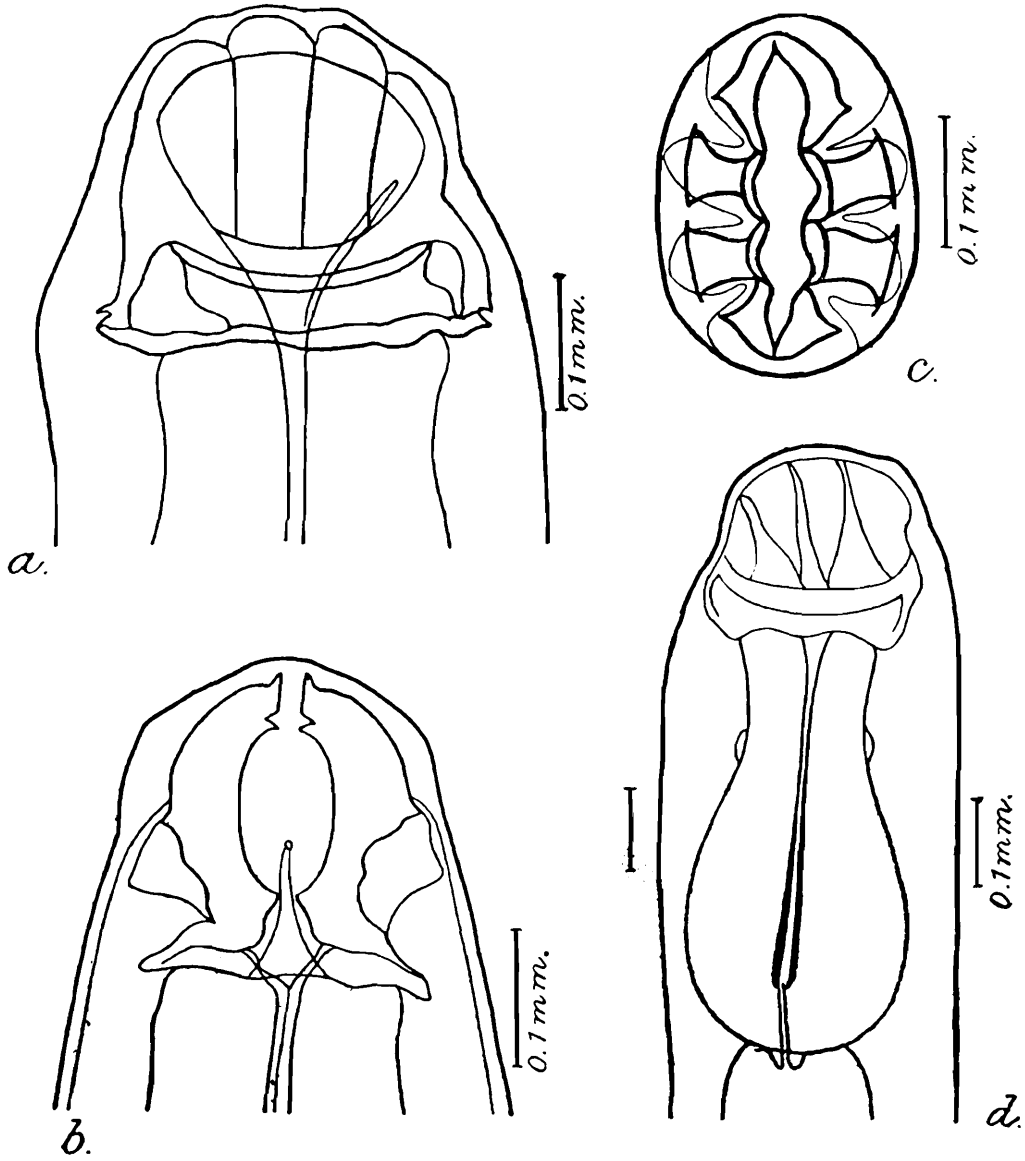
Kalicephalus bengalensis, n. sp.

Host.—*Zamenis mucosus* (Rat-Snake).

Locality.—India.

Site.—Intestine.

Material available for study. Three males and ten females.



TEXT-FIG. 1.—*Kalicephalus bengalensis*, n. sp.

a. Head, lateral view. Deep focus to show grooves in the capsule wall.

b. Head, dorso-ventral view.

c. Head, end on view. Deep focus to show structure of buccal capsule. (Papillae superimposed).

d. Head, lateral view. Superficial focus to show papillae.

These worms were obtained from two specimens of the rat-snake which died in the Calcutta Zoological Gardens.

The body tapers gradually from before backwards, the head being relatively broad in the dorso-ventral diameter. The mouth is in the form of a dorso-ventral slit looking straight forwards and it is bounded by two broadly-rounded lateral lips (figs. 1*a*, *c*, *d*). Each lip bears three papillae (fig. 1*d*). The papillae of each lip overlie three deep longitudinal grooves in the buccal capsule, which extend almost through its whole thickness (fig. 1*c*). Dorso-ventrally, in optical section, the cavity of the capsule is oval, and there is a groove on its inner surface towards the anterior, where the lateral walls come together (fig. 1*b*). The duct of the dorsal oesophageal gland opens about half way up the depth of the capsule. At its junction with the oesophagus the buccal capsule is reinforced by triangular plates and transverse bars of chitin (figs. 1*a*, *b*).

The oesophagus is short, thick, and flask-shaped, and the maximum diameter of its bulb is equal to about half its length, its lumen is lined by chitin for the greater part of its length, and this lining becomes gradually thicker from before backwards. The nerve-ring surrounds the oesophagus at its narrowest part, which is at about the junction of the anterior and middle thirds (fig. 1*d*).

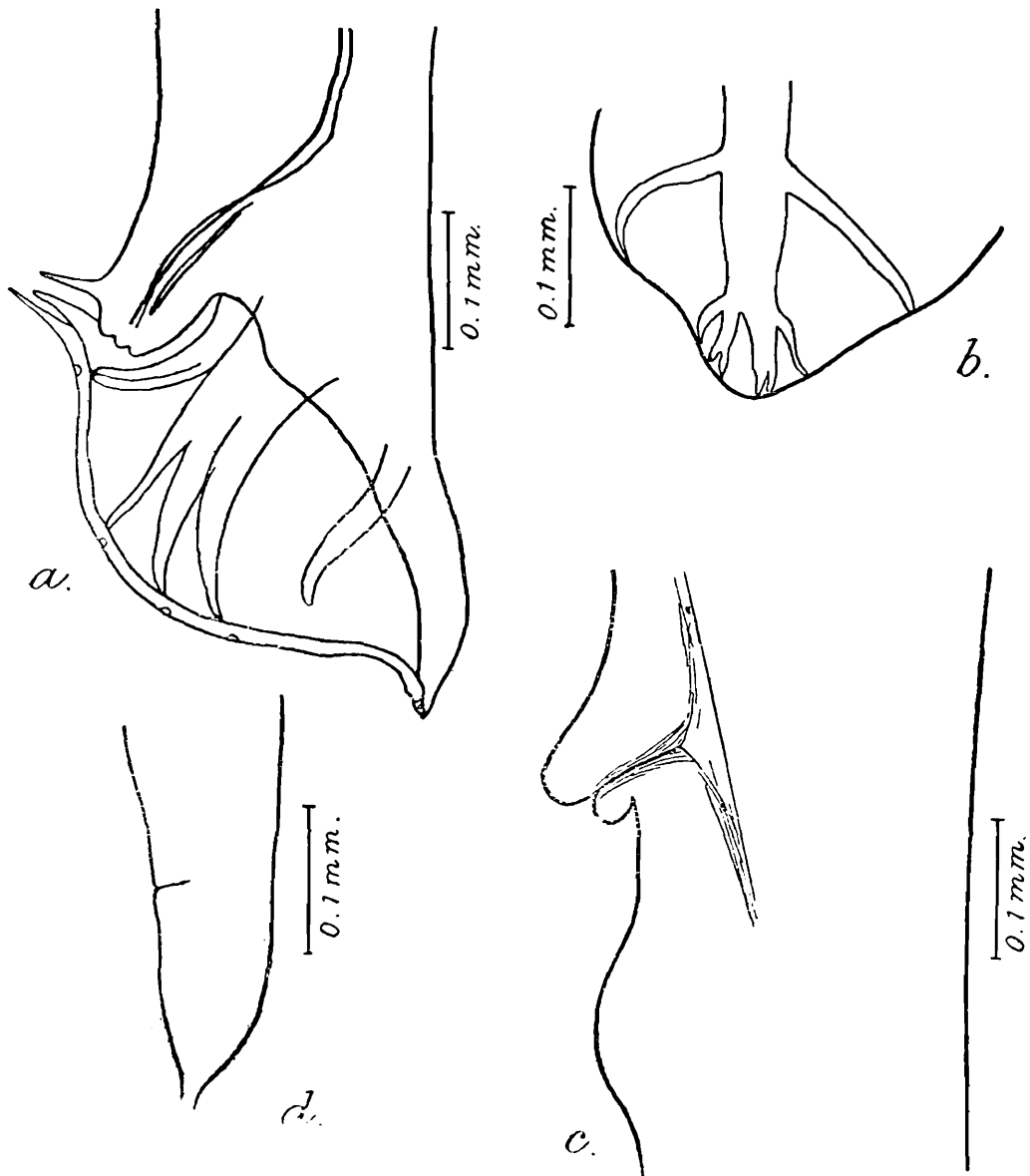
Male.—The rays of the male bursa are very similar to those of other members of the genus, the only special characters noted being that the bursa ends in two sharp points ventrally, and that from each side of the genital cone a relatively long, pointed pre-bursal papilla arises (figs. 2*a*, *b*). The spicules are long, equal and thin, they are only slightly thicker at their bases than at their faintly alate tips. About the middle of their length they take a broad curve towards the ventral surface of the worm. A gubernaculum is present, it is in the form of a long delicate rod of chitin (fig. 2*a*).

Female.—The vulva opens on a prominent cone consisting of two lips, and just behind this cone there is a distinct bulbar enlargement (fig. 2*c*). Immediately posterior to this the worm becomes distinctly narrower, and from this point it gradually tapers to the tail, which is in the form of a sharp cuticular spike (fig. 2*d*). The short vagina runs directly inwards and ends in two ovijectors, which run straight backwards and forwards respectively. About halfway between the vulva and anus the posterior ovijector turns forwards into the uterus which runs forwards parallel to the uterine branch arising from the anterior ovijector.

Measurements.

Male, length	..	..	..	..	6—7 mm.
„ maximum breadth	..	..	..	..	0.26 mm.
Female, length	..	..	..	..	7—9 mm.
„ maximum breadth	..	..	..	..	0.36 mm.
Oesophagus	..	..	..	..	0.34 mm.
Nerve-ring from ant. end of oesophagus	..	..	..	..	0.15 mm.
Spicules, length	..	..	..	..	0.35 mm.
Gubernaculum	..	..	..	..	0.12 mm.
Vulva from tip of tail	..	..	..	..	2.08 mm.
Divides worm approximately	..	..	..	..	1.4.
Anus from tip of tail (female)	..	..	..	..	0.16 mm.
Eggs	..	..	..	0.066 0.070 × 0.040	mm.

In size this worm is almost identical with *Kalicephalus indicus* Ortlepp¹ (1923), which was found in the same host; but there are several points of difference in the anatomy which, in the writer's opinion, justify the creation of a new species. In the male the sharp points in which the bursa ends ventrally, and the pre-bursal papillae are absent in *K. indicus*. In the female the vulva opens between prominent lips and there is a post-vulvar enlargement in *K. bengalensis*, whereas these structures are absent in *K. indicus*; the diminution in diameter posterior to the vulva is not nearly so marked in the former as it is in the latter species; the



TEXT-FIG. 2.—*Kalicephalus bengalensis*, n. sp.

a. Male bursa, lateral view.
b. Male bursa, dorsal lobe.

c. Female, region of vulva.
d. Female tail.

ovijectors definitely diverge for a considerable distance and the eggs are larger in the former species than they are in *K. indicus*.

¹ Ortlepp, R. J. (1923). Observations on the Nematode Genera *Kalicephalus*, *Diaphanocephalus*, and *Occipitodontus* g. n., and on the larval development of *Kalicephalus philodryadus* sp. n. *Journ. of Helminthology*, Vol. I, p. 165.

According to the descriptions given by Ortlepp (1923) this worm differs markedly from all other species of the genus.

Type-specimens have been placed in the Indian Museum, Calcutta.

***Habronema indica*, n. sp.**

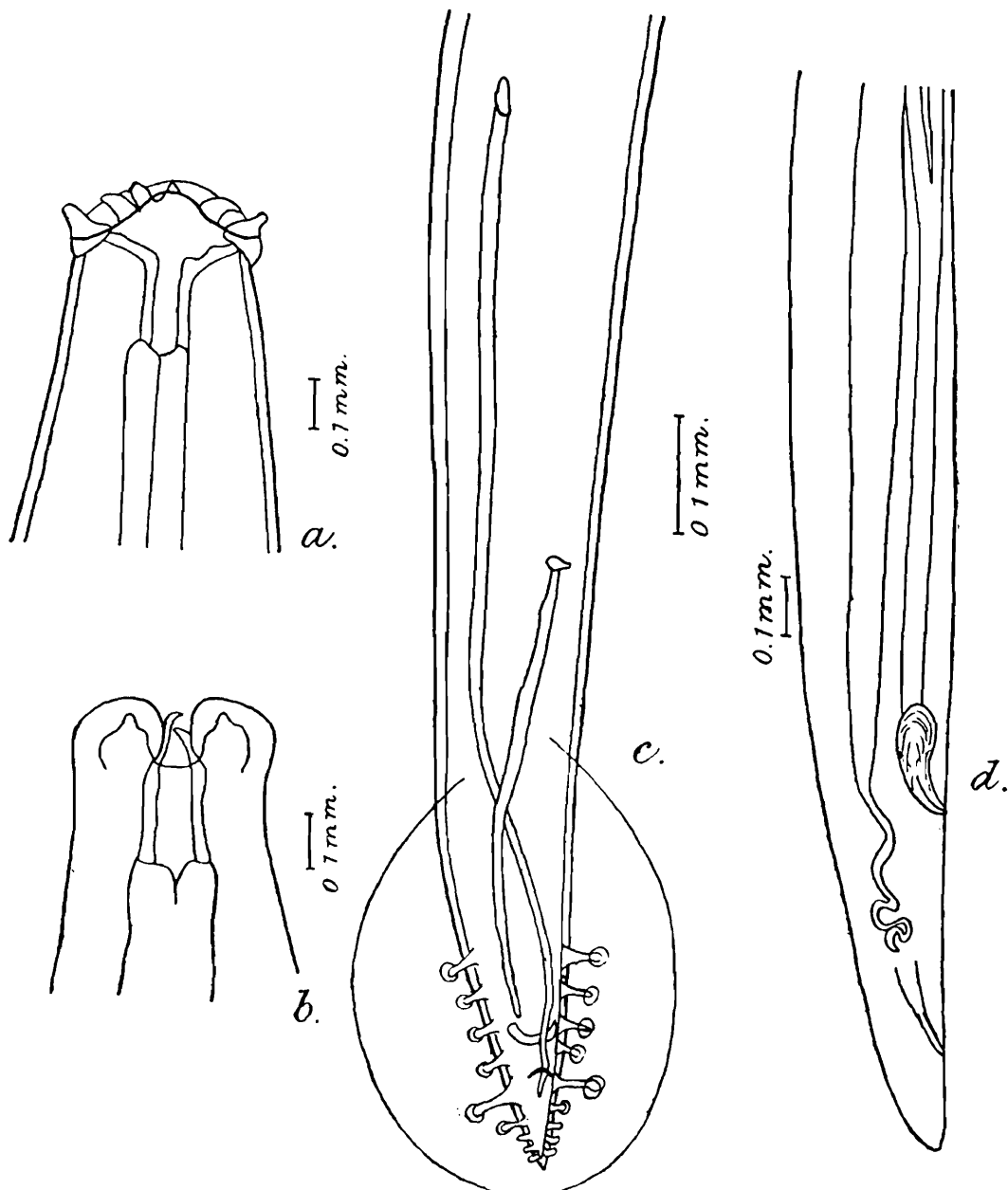
Host.—*Coracias indica* (Indian Roller).

Locality.—India.

Site.—Gizzard.

Material available for study. One male and three females.

These worms were obtained from a bird that died in the Calcutta Zoological Gardens.



TEXT-FIG. 3.—*Habronema indica*, n. sp.

a. Head, lateral view.

b. Head, dorso-ventral view.

c. Posterior extremity, male, ventral view.

d. Posterior extremity, female, lateral view.

The head is fairly small, being only about one-third of the maximum diameter of the body. The cuticle has two sets of transverse striations ;

a set of fine striations about 3μ apart and a set of coarser striations about 18μ apart. The mouth is in the form of a dorso-ventral slit, and it is bounded by two thick lateral lips each of which bears a large pointed sub-dorsal and sub-ventral papilla. On the inner surface of each lip there are four chitinous teeth which lightly interlock with those of the opposite side (fig. 3a, b). The vestibule is strongly chitinated and in the anterior portion it rapidly expands dorsally and ventrally (fig. 3a). It is produced anteriorly as a thin chitinous plate, the serrated border of which forms the teeth. The oesophagus is long and thin and it is divided into a short anterior muscular portion and a longer posterior glandular portion.

Male.—The tail is straight and it bears broad caudal alae, which unite behind the tip of the tail; the alae are slightly asymmetrical, that on the left side extending a little further forward than that on the right side, and their ventral surfaces are marked by transverse striations. There are nine pairs of pedunculated papillae supporting the caudal alae; four pairs of these are in front of the cloaca, one longer pair is opposite the cloaca, and four pairs, which diminish in length from before backwards lie behind the cloaca. The spicules are long, thin, and unequal; the right spicule is about twice as long as the left, and in the single male available they cross about the middle of the shorter spicule. There is a boat-shaped gubernaculum (fig. 3c).

Female.—The tail ends in a bluntly rounded tip. The vulva opens a little in front of the anus into a flask-shaped muscular ovijector, a long unpaired tube passes forwards from this structure eventually dividing into two uterine branches (fig. 3d). Both uterine branches run forwards to about the middle of the worm, at this point one branch bends backwards and ends in a coiled tubular ovary about halfway between the vulva and anus; the other uterine branch continues an anterior course and ends in an ovary about 0.8 mm. from the anterior end of the worm. Both branches of the uterus are filled with eggs containing embryos.

Measurements.

Male—

Length ..	..	..	..	..	7.1 mm.
Maximum breadth ..	..	..	..	..	0.2 mm.
Head, diameter ..	..	..	..	..	0.084 mm.
Depth of buccal capsule ..	..	..	..	..	0.08 mm.
Oesophagus, muscular ..	..	..	..	..	0.3 mm.
„ glandular ..	..	..	..	..	1.1 mm.
Spicule, right ..	..	..	..	..	0.694 mm.
„ left ..	..	..	..	..	0.357 mm.

Female—

Length ..	..	..	..	..	10.75 mm.
Maximum breadth ..	..	..	..	..	0.35 mm.
Diameter of head ..	..	..	..	..	0.19 mm.
Anus to tip of tail ..	..	..	..	..	0.16 mm.
Vulva to tip of tail ..	..	..	..	..	0.59 mm.
Ovijector, length ..	..	..	..	..	0.175 mm.
Unpaired trunk ..	..	..	..	..	0.89 mm.
Eggs	..	..	..	..	0.040–0.042 $\times$ 0.020–0.022 mm.

Comparison of this worm with the descriptions of the complete list of *Habronema* of birds given by Cram¹ (1927) shows that it is quite distinct from all the known species. The most striking character is the extreme posterior position of the vulva, for in the majority of the species the vulva is situated in front of or near the middle of the body; in only three of the species viz. *H. longestriata*, *H. seurati*, and *H. unilateralis* is it found in a definitely posterior position, and in none of these is it apparently as far back as in the present instance.

Type-specimens are in the Calcutta School of Tropical Medicine.

¹ Cram, E. B. (1927). Bird Parasites of the Nematode Suborders Strongylata, Ascaridata, and Spirurata. *U. S. Nat. Mus. Bull.*, No. 140.

THYSANOPTERA FROM INDIA.

By DUDLEY MOULTON, *San Francisco, California.*

I am indebted to Dr. Hem Singh Pruthi, Assistant Superintendent, Zoological Survey of India, Indian Museum, Calcutta, for the privilege of reviewing and classifying this series of Thysanoptera from India, some of which have been in the collection of the Museum for many years, and I wish to express my appreciation to Dr. Pruthi and to those others who have made the collections in the field. This paper includes a description of two new genera and five new species, together with a record of ten species already described.

TEREBRANTIA Haliday.

Family THRIPIDAE, Uzel.

Subfamily *THRIPINAE*.

1. **Frankliniella sulphurea** Schmutz.

Two specimens (♀♀) collected in flowers of *Datura fastuosa* at Barkuda Island, Chilka Lake, Ganjam District, Madras Presidency, 3-X-22 (*N. Annandale*). (Moulton No. 1997).

Genus **Monilothrips**, gen. nov.

(*Monilae*=collar.)

Head somewhat wider than long, with a conspicuous reticulated collar-like band along the posterior margin, but anterior to this the vertex is without conspicuous lines or markings. Prothorax much wider than long, without reticulation. There are two conspicuous closely-placed spines at each anterior angle, one directed forward, the other outward and backward, and a pair at each posterior angle the outer of which is about twice as long as the inner one. Mesonotal plate with net-like reticulation in front which changes gradually to cross striations behind, metanotum distinctly reticulate. Abdomen broadly ovate with tenth segment small and conical, with net-like reticulation on all segments except the first and the last two. Antenna 8-segmented, segments 3 and 4 vase-shaped and with forked trichomes. Style with 2 segments, the second is about three times longer than the first and together they are about twice as long as segment 6. Maxillary palpus with 3 segments. Fore tarsi unarmed. Wings long and pointed, with two longitudinal veins which, though distinct, are placed near the anterior and posterior margins and at first glance would appear to be fused with the marginal veins. All wing spines unusually long, those on costa being about twice as long as width of wing, spines on longitudinal veins evenly placed over their entire length.

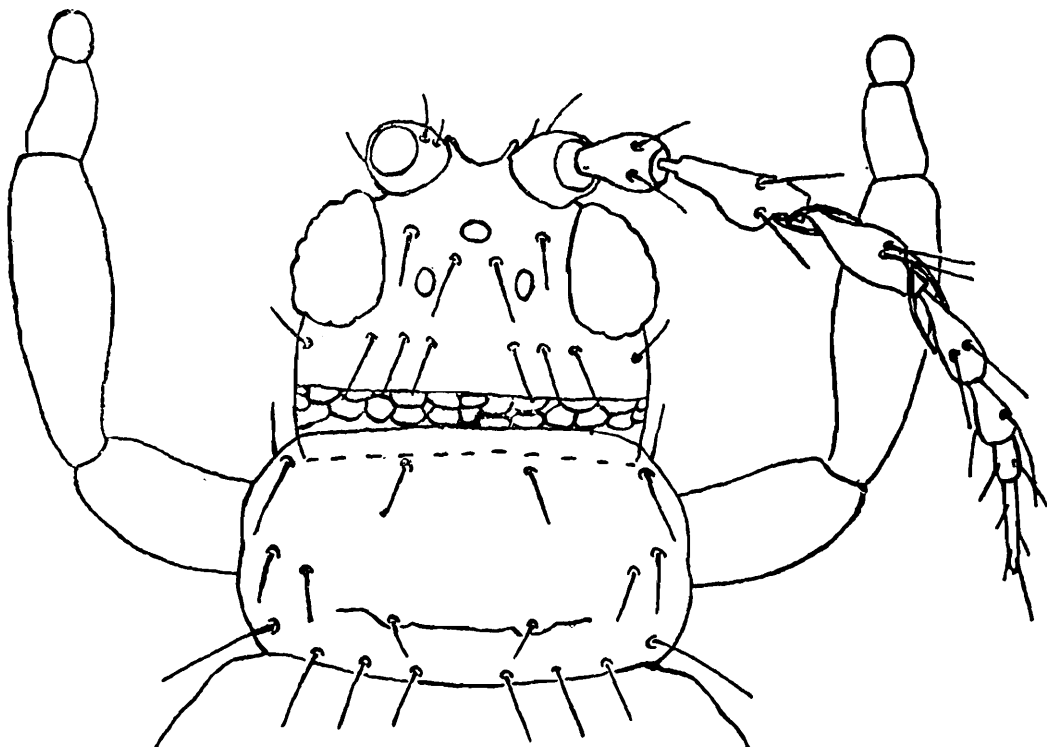
This genus would seem to be most closely related to *Ayyaria*, Karny, but is at once separated by the small sixth segment of antenna and unusually long style, also by its 3-segmented labial palpus. The chaetotaxy is much the same as in *Ayyaria*.

2. *Monilothrips kempi*, sp. n.

Female holotype.—Colour uniformly orange brown. Antennal segments 1 to 4 and base of 5 whitish-yellow, others coloured like the body. Legs yellow with slight shading of orange brown in middle of all femora and middle and hind tibia. Wings uniformly whitish-yellow.

Total body length 1.5 mm.; head length .16 mm., width .20 mm.; prothorax length .116 mm., width .25 mm.; mesothorax width .36 mm.; abdomen width .61 mm. Antennae: length (width) i, 15 (33); ii, 45? (36); iii, 90 (27); iv, 78 (27); v, 60 (27); vi, 36 (24); vii, 21 (13); viii, 54; total length 390 m. Length of spines: Interocellars 30 m., postoculars 39 m., the forward directed spines of pair at anterior angles of prothorax 45 m., the posteriorly directed ones 54 m., pair along anterior margin 30 m., median lateral 36 m., pair at posterior angles, outer 84, inner 36 m., at posterior angles and margin of ninth abdominal segment 150, on tenth 90 m.

Head one-fourth wider than long and projecting in front between basal segments of antenna, this projection with a distinct concave anterior margin; cheeks slightly arched. Two spines in front of and three behind each posterior ocellus. Back of head with a distinct transverse reticulated band near posterior margin. Eyes large with coarse facets.



TEXT-FIG 1.—*Monilothrips kempi*, gen. et sp. nov. Head and prothorax of ♀.

Ocelli small. Mouth-cone broad and strong, maxillary palpus with three segments. Antenna slender, 2.5 times as long as head, segment 1

short and broad, segments 3 and 4 vase-shaped, each conspicuously and abruptly narrowed at base of forked trichomes, 5 elongate-clavate, 6 short, style with second segment three times as long as first and together twice as long as segment 6.

Prothorax transverse, with spines as follows : a pair at each anterior angle, one of which is curved and directed forward, the second directed backward, the inner spine of the pair at posterior angle is not more than half as long as the outer one, and is of about equal length with the pair on either side along posterior margin. Prothorax without conspicuous markings or reticulations. Meso- and metanotum clearly reticulated. Legs moderately stout, fore tarsi unarmed. Wings long and strong with two longitudinal veins which are distinct but are placed close to the anterior and posterior margins. All spines unusually long and evenly placed as follows : costa 33, fore vein 16, hind vein 18. Microscopic setae covering surface of wing also unusually long.

Abdomen broadly ovate with terminal segment short and connate. Tergites two to eight inclusive clearly reticulated, second with a distinct dark brown line along anterior margin, which is placed away from the margin on segments two to eight, the surface anterior to these lines is without markings but is clearly reticulated behind them. The dark line on segment one is semi-circular in outline. The spines at the posterior angles and margin of segment 9 are long, extending far beyond the tip, those on segment 10 are short, segment 10 has a complete dorsal suture.

Type-material.—Female holotype taken from an unknown host plant on May 4, 1917 (*S. W. Kemp*). Type deposited with Indian Museum. (Moulton No. 1998). Named in honour of the collector.

Type-locality.—Sureil, Nangphu, Darjiling District, East Himalayas, elevation 5,000 feet.

3. *Taeniothrips longistylus* Karny.

Two specimens (♀♀) taken at Buldana, Berar, Central Provinces, in February, 1923 (*H. S. Rao*). Host-plant unknown. (Moulton No. 1992).

4. *Taeniothrips lefroyi* Bagnall.

One specimen (♀) taken at Sitong, Darjiling District, East Himalayas, elevation about 2,500 feet, 28-X-17 (*N. Annandale* and *F. H. Gravelly*). Host-plant unknown. (Moulton No. 1994).

5. *Taeniothrips flavidulus* Bagnall.

One specimen (♀) taken on Pine trees at Phagu, Simla Hills, East Himalayas, elevation 9,000 feet, 21-X-16 (*N. Annandale* and *S. W. Kemp*). (Moulton No. 1995).

Projectothrips, gen. nov.

(*Projectus*=projection.)

With many characters of the genus *Taeniothrips*. Antennae inserted on the anterior ventral side of the head so that the first segments are

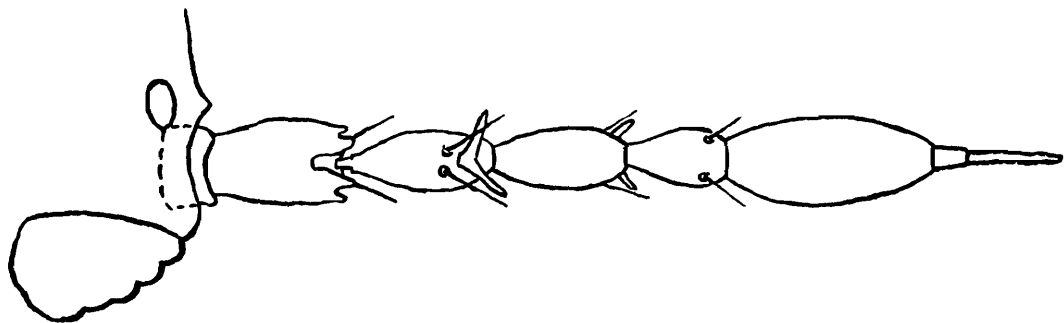
largely obscured, second segment with two blunt lobe-like projections on dorsal end at tip, each of which bears a short spine, sixth segment largest of all, elongate-ovate, style with first segment short and end segment very long and cylindrical in shape, six times as long as preceding segment. Chaetotaxy mostly as in *Taeniothrips*. Comb arrangement of spines on posterior margin of eighth abdominal segment complete, but there is a similar arrangement of spines on the posterior margin of abdominal segments beyond the second, these are present but short on the seventh segment, less conspicuous on the sixth and gradually disappear in the centre of other more anterior segments. Wings broad at the base and reduced gradually to a pointed tip. Fore vein with a broken series of spines, those on hind vein regularly placed.

6. *Projectothrips pruthi*, sp. n.

Female holotype.—Body colour uniformly orange brown, legs light yellowish-brown, wings uniformly brown, lighter at the base. Antennal segments 1 and 2 concolorous with head, 3 and 4 clear yellow, 5 to 8 uniformly light brown. Crescents of ocelli orange-red.

Total body length (specimen contracted) 83 mm.; head length .09 mm., width .15 mm.; prothorax length .15 mm., width .189 mm.; pterothorax width .24 mm.; abdomen width .31 mm. Antennae: length (width) i, 12 (30); ii, 30 (27); iii, 36 (?); iv, 36 (21); v, 30 (16); vi, 45 (24); vii, 6; viii, 36; total length 225 m. Length of spines: at posterior angles of prothorax, outer 36 m., inner 18 m., on posterior angles and margin of ninth abdominal segment 120 m., on tenth 135 m., interocellar spines 21 microns.

Head clearly transverse, roundly flattened in front; cheeks slightly arched, interocellar spines moderately short and placed in front of posterior ocelli and mid-way on a line connecting each of them with anterior ocellus. Back of head with numerous transverse wavy lines. Eyes large. Ocelli well developed. Mouth-cone short and narrow, maxillary palpus 3-segmented, labial palpus with one segment, if with two segments the first is so small that it cannot be observed. The apparent single segment is long and finger-like. Antenna arising from the anterior



TEXT-FIG. 2.—*Projectothrips pruthi*, gen. et sp. nov. Right antenna.

lower surface of the head so that the first segments are hardly visible, 2.5 times longer than head. Second antennal segment with two prominent dorsal lobes at tip, each of which bears a spine at the end, segment 5 small, segment 6 large with sides evenly rounded from the base to tip. The two segments of style are of even width but the first is

very small and the second long, approximately six times longer than the first. Forked sense-cones on segments 3 and 4 reasonably short and stout.

Prothorax slightly wider than long, without spines on anterior angles, the outer spine at the posterior angles is approximately twice as long as the inner one, a series of three on either side along posterior margin. Legs normal. Wings fully developed, broad at base, gradually narrowed to a pointed tip with two longitudinal veins. Spines as follows : costa 28, fore vein 3—10 in basal two-thirds and 1—2 at tip, hind vein 12.

Abdominal segments 1 to 8 broadly ovate, 9 and 10 triangularly connate. Normal spines on ninth and tenth segments long and strong, tenth segment with a complete dorsal suture. Comb-like arrangement of hairs on posterior margin of eighth segment complete and rather long. Posterior side margins of segments 3 to 7 also with a similar arrangement, these are wanting in the middle of the first segments but their development gradually increasing to almost a complete comb on the seventh segment.

Characters as specified of antennal segments 2 and 6 to 8 and the comb-like arrangement of spines on posterior margins of abdominal segments are so distinct that I cannot place this species within the genus *Taeniothrips*. These characters also set it apart from any species in that genus.

Type-material.—Female holotype, six ♀ paratypes taken on *Pandanus*, 1-I-22 (*H. S. Rao*). Holotype and five paratypes deposited in Indian Museum, Calcutta. (Moulton No. 1996). This species is named in honor of Dr. Hem Singh Pruthi of the Indian Museum.

Type-locality.—Sibpore near Calcutta, Bengal.

7. *Thrips setosus*, sp. n.

Female holotype.—Colour whitish-yellow, first antennal segment colourless, 2 shading to pale yellow, 3 pale yellow at base shading to light greyish-brown, 4 and 5 pale yellow at base shading to greyish-brown in distal half, 6 and 7 grey-brown, with 6 somewhat lighter at base. Wings almost colourless. Crescents of ocelli deep orange.

Total body length .92 mm. ; head length .075 mm., width .114 mm. ; prothorax length .105 mm., width .135 mm. ; pterothorax width .19 mm. Antennae beyond second segment : iii, 36 (16) ; iv, 33 (16) ; v, 30 (15) ; vi, 39 (15) ; vii, 9 ; total length 180 m. Length of spines : on posterior angles of prothorax 21 m., on posterior angles and margin of ninth abdominal segment 60 m. and 51 m. respectively, on tenth 60 m.

Head transverse, with numerous transverse striations ; cheeks arched, interocellar and other spines small. Eyes prominent, somewhat protruding. Ocelli small, each the size of a single eye facet. Antenna 2.4 times longer than head.

Prothorax clearly wider than long and densely covered with short (15 m.) conspicuous setae. A pair of spines at posterior angles also very short, inward from these a series of four short setae on either side. Median pair of spines on metanotum placed approximately 12 m. back from anterior margin. Legs normal. Wings fully developed, with spines

as follows : costa 31, fore vein 4-3 at base, 1 (or 2) in the middle, 2 at tip, hind vein 15.

Abdomen normal.

Type-material.—Female holotype taken from an unknown host plant, 16—20-VIII-11 (N. Annandale and F. H. Gravely). Type deposited in Indian Museum. (Moulton No. 2002).

Type-locality.—Balighai near Puri, Orissa.

This species is rather closely related to *T. pallidulus* Bagnall, but is easily separated from this species as follows : the fore wings of *pallidulus* are brownish except at base, costa of fore wings has 15—18 and hind vein 7—9 spines, and spines at posterior angles of prothorax are about .5 as long as median length of pronotum. In this new species the wings are almost colourless, wing spines more numerous and those at the posterior angles of prothorax are much shorter, not more than .25 median length of pronotum, also pronotum is densely covered with small setae.

8. *Thrips florum* Schmutz.

Four specimens (♀♀) taken at Buldana, Berar, Central Provinces, in February, 1923 (H. S. Rao). Host-plant unknown. (Moulton No. 1992).

9. *Selenothrips rubrocinctus* Giard.

One specimen (♀) taken on *Aporosa roxburghii* at Durgapurs, Salt Lakes, near Calcutta, Bengal, 8-III-14 (Moulton No. 2000), and six females, two males and two larvae taken in *Gardinia* flowers at Museum Compound, Calcutta, 8-VII-14 (F. H. Gravely). (Moulton No. 2001).

TUBULIFERA.

Family PHLOETHRIPIDAE Hood.

Subfamily PHLOETHRIPINAE Priesner.

10. *Haplothrips ceylonicus* Schmutz.

One specimen (♀) taken at Buldana, Berar, Central Provinces, February, 1923 (H. S. Rao). Host-plant unknown. (Moulton No. 1992).

11. *Gynaikothrips flaviantennatus*, sp. n.

Female holotype.—Colour deep chestnut brown. Antennal segments 1 and 2 concolorous with head, 2 shading lighter toward the tip, 3 to 8 uniformly clear yellow. All femora, middle and hind tibia dark brown, fore tibia light yellowish-brown shading to clear yellow at tip, all tarsi clear yellow. Prominent body spines brown. Fore wings light grey-brown with a darker streak in the center, hind wings almost clear but with a darker median line.

Total body length 2.25 mm. ; head length .28 mm., width .19 mm. ; prothorax length .183 mm., width including coxae .36 mm. ; pterothorax width .40 mm. ; tube length .20 mm., width at base .083 mm. Antennae : length (width) i, 36 (42) ; ii, 57 (33) ; iii, 69 (33) ; iv, 69 (36) ; v, 69 (33) ; vi, 72 (30) ; vii, 51 (27) ; viii, 33 ; total length 465 m. Length of spines :

postoculars 78 m., median dorsal inward from postoculars 21 m., on anterior angles of prothorax 57 m., anterior margin 45 m., mid-laterals 31 m., pair on posterior angles subequal, 120 m., on ninth abdominal segment 155 m., at tip of tube 165 m.

Head 1.5 times longer than wide ; cheeks straight and almost parallel with a constriction at the base which is hardly noticeable. Back of head with numerous closely placed wavy lines. Postocular spines long and strong with dilated tips. Eyes normal with small facets. Ocelli large. Mouth-cone short and broadly rounded at the tip. Antenna 1.65 times longer than head, intermediate segments elongate clavate.

Prothorax, including coxae, twice as long as median dorsal length of pronotum and .66 as long as head. All normal spines strong and with dilated tips. Pterothorax subquadrate. Fore femora somewhat enlarged, each fore tibia armed with a stout broad-seated tooth. Wings fully developed, with 7—8 double fringe hairs along posterior margin, 3 basal wing spines arranged in a straight line along anterior margin, stout with dilated tips.

Abdomen with all normal spines strongly developed, dark brown in colour except only those on segment 9 and tube which are yellowish.

Male allotype.—Shaped and coloured like the female but smaller in size, 1.63 mm., and with spines at posterior angles of ninth abdominal segment reduced to spurs which are 45 m. long.

Type-material.—Female holotype, male allotype and 13 female paratypes taken from an unknown host plant, 16—20-VIII-11 (*N. Annandale* and *F. H. Gravely*). Holotype, allotype and 9 paratypes deposited in Indian Museum, Calcutta. (Moulton No. 2002).

Type-locality.—Balighai, near Puri, Orissa.

This species would seem to approach *G. heptapleuri* Karny from Java, but is distinguished from it by the clearly shorter tube.

12. *Gynaikothrips flavitibia*, sp. n.

Female holotype.—Colour orange brown, including all femora, first antennal segment and basal half of second. All tibia, tarsi and antennal segments 2 to 8 clear yellow. Wings transparent. Prominent body spines clear to yellowish.

Total body length 2.5 mm. ; head length .28 mm., width .25 mm. ; prothorax length .19 mm., width including coxae .38 mm. ; pterothorax width .43 mm. ; tube length .31 mm., width at base .08 mm. Antennae : length (width) i, 30 (36) ; ii, 51 (34) ; iii, 78 (30) ; iv, 75 (36) ; v, 75 (33) ; vi, 78 (31) ; vii, 60 (24) ; viii, 39 ; total length 495 microns. Length of spines : postoculars 54 m., a second pair inward from these and in almost a straight line between them 66 m. On anterior angles of prothorax and anterior margins 54—60 m., mid-laterals 60, pair on posterior angle, outer 114, inner 84 m., on ninth abdominal segment 280—300 m., at tip of tube 240 m.

Head subquadrate, 1.2 times longer than wide ; cheeks straight and parallel. Frons arched and bearing forward directed anterior ocellus at tip. Back of head sculptured with numerous wavy confluent lines. Eyes large with small facets. Ocelli well developed, fully three times larger than facets of eyes. Postocular spines well developed, with

dilated tips and a second pair of similar spines but somewhat longer are placed in an almost straight line between the postoculars, all four are separated by equal distances. Mouth-cone broadly rounded, labrum more or less angular and pointed. Antenna 1.75 longer than head, moderately slender.

Prothorax transverse, pronotum sculptured like the back of the head. All normal spines well developed and with dilated tips. Pterothorax with even sides, slightly converging towards the posterior. Legs normal, each fore tarsus armed with a broad seated tooth. Wings normal, with 15 double fringe hairs along posterior margin. Abdomen long and slender, reduced gradually from second to eighth segment. Tube slender, almost four times longer than width at base and about 1.1 times longer than head. Spines on ninth abdominal segment almost as long as tube.

Male allotype.—Coloured as in the female but somewhat lighter, shaped as in the female but with the abdominal segments reduced more gradually toward the end. Fore tarsi armed as in female. Total body length 2.2 mm.; head length .25 mm., width .21 mm.; tube length .25 mm. Spines on posterior angles of ninth abdominal segment greatly reduced, only 30 m. long as compared with those along the posterior margin which are 225 m.

Type-material.—Female holotype, male allotype, nine female and six male paratypes collected 8-VIII-14 (*E. Rose*). Holotype, allotype and paratypes deposited with Indian Museum. (Moulton No. 2004).

Type-locality.—Calcutta, Bengal.

This species can be compared with *G. interlocatus* Karny from India, but is easily separated from that species which has the terminal antennal segments brown, postocular spines short and black and fore tarsi unarmed. This species also resembles *G. uzeli* Zimmermann somewhat closely, but is easily distinguished from it by the clear colour of the middle and hind tibia and the chaetotaxy of the prothorax.

13. *Gynaikothrips uzeli* Zimmermann.

Six female and two male specimens taken on leaves of *Ficus obtusa* on Barkuda Island, Chilka Lake, Ganjam District, Madras Presidency, 3-X-22 (*N. Annandale*). (Moulton No. 2003).

14. *Gigantothrips elegans* Zimmermann.

Numerous specimens (♂♂, ♀♀, larva) taken on *Ficus glomarata* at Pusa, Bihar, 5—10-XI-15 (*F. H. Gravely*). (Moulton No. 1999). One specimen (♀) taken on leaves of *Ficus obtusa* on Barkuda Island, Chilka Lake, Ganjam District, Madras Presidency, 3-X-22 (*N. Annandale*). (Moulton No. 2003).

Subfamily MEGATHRIPINAE.

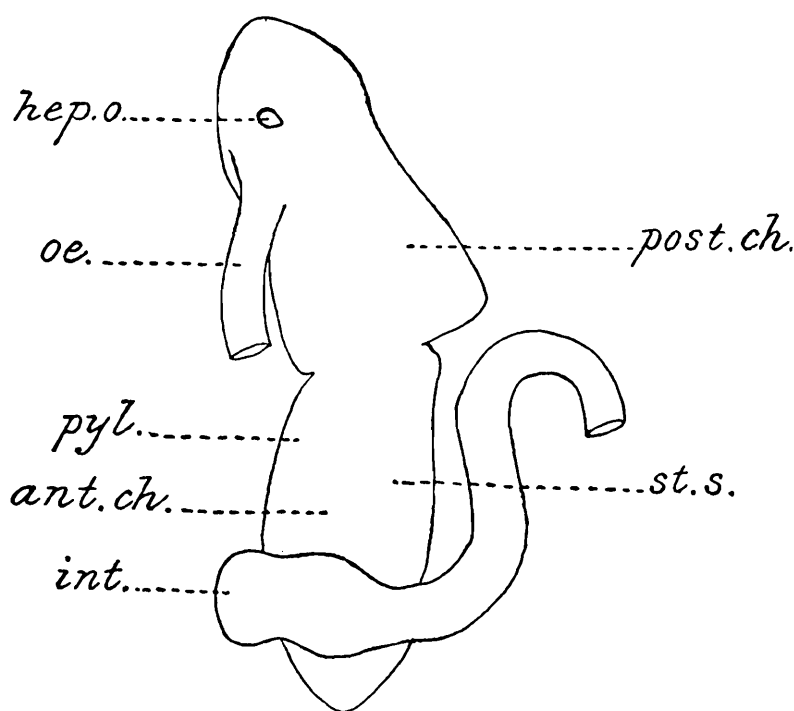
15. *Dinothrips sumatrensis* Bagnall.

Twelve specimens, (eight ♀♀, one ♂ and three larvae) taken at Port Blair, Andaman Islands, 15-II—III-15 (*S. W. Kemp*). Host-plant unknown. (Moulton No. 1993).

THE STYLE-SAC OF SOME FRESHWATER GASTROPODS.

By R. V SESHAIYA, M.A., *Mahant's High School,
Tirupati, South India.*

In a recent paper (6) I showed that the stomach of *Paludomus* is interesting owing to the possession of a much restricted communication between the style-sac and the pyloric part of the stomach. The present note deals with the style-sacs of *Melanoides*, *Mysorella* and *Amnicola* (*Alocinma*). A comprehensive account of the style-sacs of Gastropods was published by Robson (5) and Mackintosh (2), but none of the genera which form the subject of this note are mentioned by them. Even in the closely allied genera *Bithynia* and *Melania*, which are known to possess a style-sac, the relation of the style-sac to the intestine has not been properly investigated. *Melania* is said to possess a style-sac completely separated from the intestine, but from my observations on the stomach of *Melanoides* and *Paludomus* I am of opinion that the stomach of *Melania* needs reinvestigation. In *Bithynia* nothing is known except that a style-sac is present.



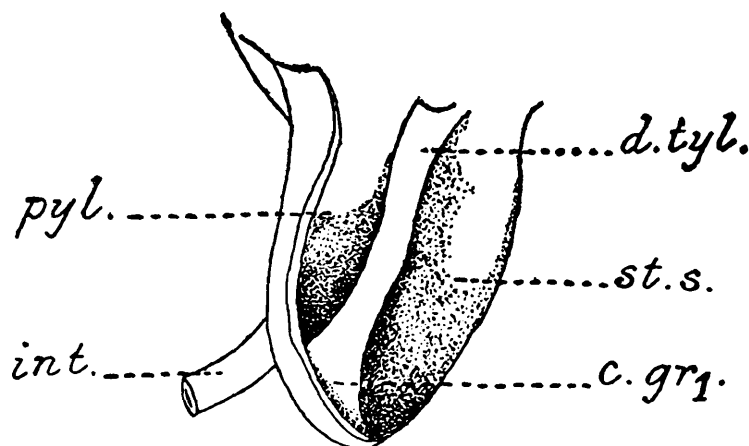
Text-fig. 1.—Stomach of *Mysorella* as seen from the ventral side.

ant. ch., anterior chamber; *hep. o.*, opening of the hepatopancreatic duct; *int.*, intestine; *oe.*, oesophagus; *post. ch.*, posterior chamber; *pyl.*, pylorus; *st. s.*, style-sac.

The style-sac of *Melanoides* bears a close resemblance to that of *Paludomus* in its disposition, structure, and relationship to the intestine. Externally the style-sac appears to be independent of the intestine, but a closer examination of the junction of the style-sac with the stomach proper shows a distinct, though short, communication between

the style-sac and the short pylorus by means of a transverse slit measuring about 0.65 mm. long and about 0.05 mm. wide. It would, therefore, be incorrect to state that the style-sac and the pyloric element of the stomach are quite distinct in a form like *Melanoides*. The slit-like connection between the pylorus and the style-sac extends for a distance of 0.14 mm. in a medium sized individual in which the style-sac has a cavity about 1.85 mm. long.

As in the case of *Paludomus* the slit-like communication between the pylorus and the style-sac is continued as a longitudinal ciliated groove on the left or the pyloric side of the style-sac, while at its anterior end the style-sac has a circular termination, in which the crystalline style appears to be held. The longitudinal ciliated groove is wider than in *Paludomus* and its diameter is not uniform throughout its course. The cells lining the ciliated groove are shorter than those of the style-sac epithelium. On the sides of the groove the cells have well developed cilia, while those at the bottom of the groove show sparse ciliation and are sometimes without any cilia. Where the style-sac epithelium becomes continuous with that of the right side of the ciliated groove the cells are narrow, long and crowded together. The style-sac epithelium shows the usual structure. The cilia form an uniform coating on the cells of sac and are about one-third the length of the cells. The nuclei are large and rounded and are situated about the middle. The cytoplasm near the free ends of the cells possesses a greenish-brown pigment. In general features the style also resembles that of *Paludomus*.

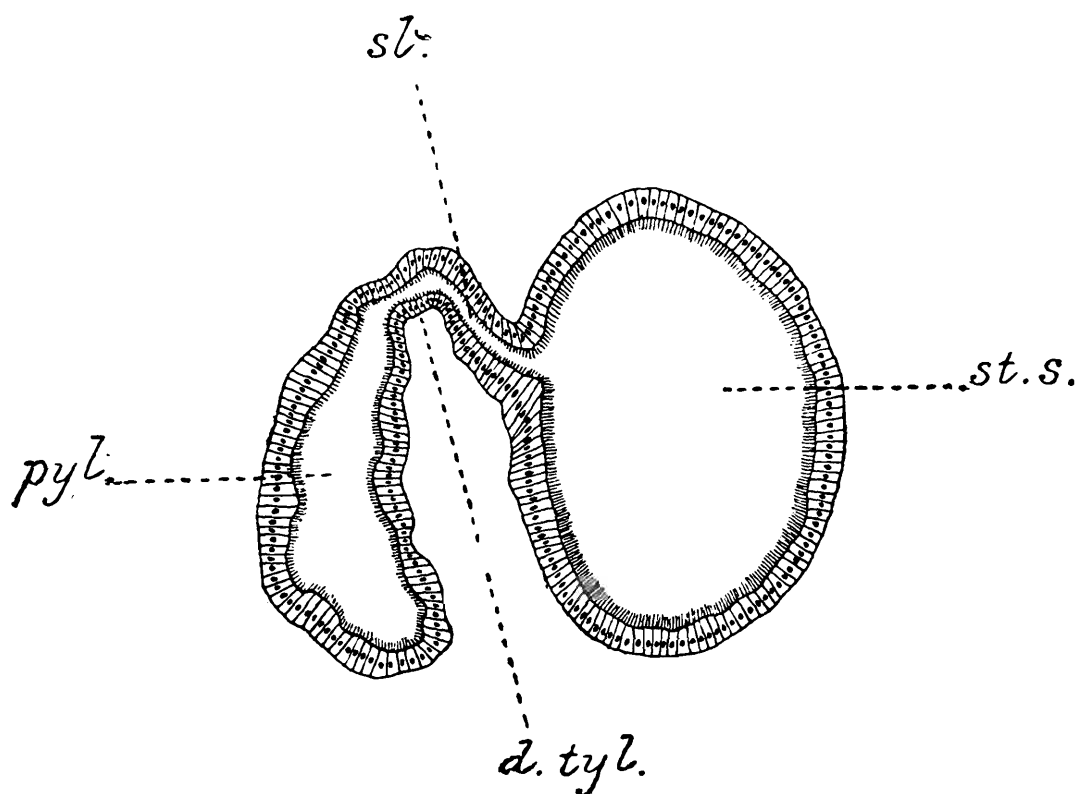


Text-fig. 2.—Anterior chamber of the stomach of *Mysorella* with the ventral wall removed.

c. gr₁, portion of the anterior chamber which appears as the ciliated groove in section ; *d. tyl.*, typhlosole of the dorsal wall between the pylorus and style-sac ; *int.*, intestine ; *pyl.*, pylorus ; *st. s.*, style-sac.

The style-sac of *Mysorella* differs from that of *Melanoides*, and resembles more that of *Hypsobia* and *Paludestrina* as described by Robson (3, 4). The stomach of *Mysorella*, like that of forms with a style, is divisible into an anterior and a posterior portion, the latter constituting the gastric portion. On opening the anterior portion of the stomach of *Mysorella*, two cavities are noticed, a right tubular cavity which is the style-sac, and a shorter, narrower, obliquely-disposed cavity on the left, which is the pylorus. The pylorus at a distance of about two-thirds the length of the anterior portion of the stomach passes into the

intestine. Throughout its length, about 1.21 mm., the pylorus communicates with the style-sac by a longitudinal slit, which is about 0.34 mm. by 0.03 mm. In transverse sections of the anterior chamber, anterior to the origin of the intestine from the pylorus, the style-sac has a groove on the pyloric side. Robson (4) has recorded a groove in *Paludestrina*, but he does not make any definite mention about the portion of the style-sac which exhibits this groove on the pyloric side. Judging from what I have observed in *Mysorella*, the groove in *Paludestrina* also must be anterior to the termination of the pyloric chamber. Serial sections and a careful dissection of the anterior chamber show that after the pylorus gives rise to the intestine the slit-like communication between the style-sac and the pylorus is continued to the free end of the anterior chamber and appears as the groove of the style-sac. The groove, thus, has essentially the same structure, and arises in the same way as in *Palu-*



Text-fig. 3.—Transverse section from the middle of the anterior chamber of the stomach of *Mysorella* showing the relations of the style-sac to the pylorus.

d. tyl., typhlosole of the dorsal wall between the pylorus and style-sac; *pyl.*, pylorus; *sl.*, slit of communication between style-sac and pylorus; *st. s.*, style-sac.

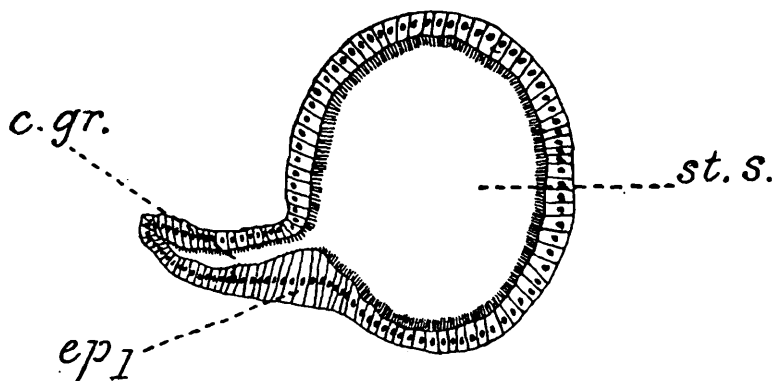
domus and *Melanoides*, and the difference lies in the much longer pyloric connection and a consequently short groove. The following measurements will give an idea of the different portions of the pylorus, style-sac, etc. of *Mysorella* :—

Length of style-sac	1.47 mm.
Total length of the pyloric chamber	1.21 mm.
Origin of the intestine	Extending from 0.89 mm. to 1.21 mm. of the pylorus.
Portion of the style-sac anterior to the termination of the pylorus and showing the ciliated groove	0.26 mm.

The cavity of the style-sac is roughly tubular, though somewhat flattened laterally. In transverse section it is 0.46 mm. by 0.41 mm. The pyloric cavity is narrower and is much compressed. In transverse section it is 0.45 mm. by 0.17 mm. The ciliation and the epithelium of the style-sac present the usual features, and do not call for any further remarks. No pigment was detected in the cytoplasm of the cells. The pyloric epithelium is also ciliated but the cilia do not form an even coating as in the case of the cells of the style-sac. The cells lining the right and left sides of the slit are also ciliated. In the groove the cells on the right side are long, narrow and crowded, and show very few cilia. The style is cylindrical and longer than the style-sac.

The style-sac of *Amnicola* (*Alocinma*) is similar to that of *Mysorella* and needs no special description.

A comparison of the style-sacs of *Paludomus*, *Melanoides*, *Mysorella* and *Amnicola* clearly indicates the morphological significance of the longitudinal groove of the style-sac, as I have discussed at length in my paper on the stomach of *Paludomus* (6). A comparison of these forms with Lamellibranchs like *Mya* shows that the groove in the two groups, Gastropods and Lamellibranchs, is homologous.



Text-fig. 4.—Transverse section of the anterior chamber of the stomach of *Mysorella* anterior to the termination of the pylorus.

c. gr., ciliated groove; *ep₁*, long cells on the right side of the ciliated groove; *st. s.*, style-sac.

It has been suggested by Ghosh (1) that the style-sac might have evolved as an outgrowth of the stomach and that the course of evolution might be from an original separation to union between the pylorus and the style-sac in the more highly evolved forms. The structure of the style-sacs in the forms mentioned above does not lend any support to this view, as it does not offer any satisfactory explanation for the longitudinal ciliated groove, whose nature as a vestige of a former pyloric connection is so clearly indicated in *Mysorella* by its presence on the pyloric side of the sac, anterior to the termination of the pylorus and in continuation of the pyloric communication of the style-sac.

In conclusion I have to acknowledge my great indebtedness to Dr. Baini Prashad for encouragement and for the interest he has taken in the progress of my work.

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ON A COLLECTION OF INDIAN PALPATORES (PHALANGIIDAE)
WITH A REVISION OF THE CONTINENTAL GENERA AND
SPECIES OF THE SUB-FAMILY GAGRELLINAE THORELL.

By C. FR. ROEWER, *Bremen*.

In 1924 I received for identification a large collection of Opilionids or Phalangids, consisting of roughly a thousand specimens, from the Zoological Survey of India, Indian Museum, Calcutta, through Dr. Bains Prashad. About 50 specimens of this collection, which belonged to the suborder Laniatores, have already been dealt with by me in a paper¹ on the African, Malayan and Australian species of the suborder from the collections of the late Dr. E. Simon of the Museum d'Histoire Naturelle, Paris, Professor K. Dammerman of Buitenzorg, the late Dr. Fuller Baker of Los Banos, Philippines and the late Mr. L. Fea of the Museo Civico di Storia Naturale, Genova. This paper deals with the remainder of the collection consisting of forms belonging to the suborder Palpatores. In this communication I have also included an account of a collection of about 130 Opilionids, which were sent to me for determination by Dr. F. H. Gravely, Superintendent of the Government Museum, Madras; about 20 specimens in this collection belonged to the suborder Laniatores and have been included in the paper cited above. I take this opportunity of tendering my best thanks to Dr. Bains Prashad and Dr. F. H. Gravely for sending me these rich collections for study.

The collections sent to me for determination were mostly made by Dr. F. H. Gravely and Dr. S. W. Kemp, while a few specimens were also collected by the late Lord Carmichael, Mr. E. Barnes and Mr. R. H. Hodgart. The greater part of the collection consists of specimens from the Darjeeling District, Eastern Himalayas, Palni Hills and Cochin State, Southern India, while a few specimens are from the Satara District, Bombay Presidency; Portuguese India; Bihar and Orissa, Courtalem, Nilgiris, Madras Presidency; Nepal; Ceylon; Paulo Penang and Singapore.

In connection with the Laniatores of the two collections, which have already been dealt with in the paper cited above, it is of interest to note that practically all the specimens, leaving out of consideration the forms of the genus *Pelitus* of the family Oncopodidae from Paulo Penang, belong to the families Phalangodidae and Assamiidae, both of which have a wide distribution in the Indo-Malay Region.

The Palpatores of the collections, which are dealt with in the following pages, contained four immature² specimens from the Kashmir Valley, Central Gilgit and Mount Godwin-Austen, all in the upper regions of the Himalayas. These specimens unfortunately cannot be definitely

¹ Roewer, C. Fr.—*Weitere Weberknechte I., I Ergänzung der "Weberknechte der Erde"* (Jena, 1923) in *Abhandl. Nat. Ver. Bremen*, XXVI, pp. 261—402, pl. i (1927).

² Following the terminology suggested by me in my Monograph, *Die Weberknechte der Erde*, p. 39 (Jena, 1923), I refer to the immature forms as *pulli* in the following pages.

identified, but they appear to belong to the Palaearctic types of Phalanginae, and may represent the furthestmost extensions of the Palaearctic forms into the Indian area. The question, however, cannot be definitely settled till further collections of full-grown adults are available.

The working out of the rich collections from the Indian area has induced me to bring together in this paper all the information about the various genera and species of the sub-family Gagrellinae, but I have not included the insular species in this account.

For the separation of the different genera of the sub-family Gagrellinae I have employed the same characters as the ones used by me in my Monograph, cited already. I attach special importance to the number and the distribution of the noduli on the femora of the four legs. These noduli, as I am able to state with confidence from my examination of thousands of specimens, are found on the femora of the Gagrellinae only. The numbers and distribution of the noduli, further, are almost always constant in the different species, as I have found on examination of hundreds of specimens of the same species; and from the present collections alone one may cite as examples *Gagrella parva*, *Aurivilliola shanica*, *Strandina aurantiaca*, *Zalpetus sulphureus*, *Cerato-bunus annulatus*, etc. During my work on the Gagrellinae, which has extended over many years, I have only in very exceptional cases found any deviation from the normal number of noduli, and I have, therefore, employed the numbers and distribution of the noduli as distinguishing characters for the separation of the different genera of this sub-family. If these characters and the sculpture and granulation of the scutum and the ocular tubercle are not taken into consideration, as With¹ suggested, it will not be possible to divide into genera several hundreds of species, all of which will have to be included in the genus *Gagrella* Stoliczka.

For the genera and species already known I have given references only to the original diagnoses and to the account in my recent Monograph, cited already; the remaining references to the literature on these forms will be found in my Monograph. The species represented in the present collections are marked with an asterisk.

Subfamily GAGRELLINAE Thor.

1889. Gagrellinae, Thorell, *Ann. Civ. Stor. Nat. Genova*, XXVII, p. 521.

1923. Gagrellinae, Roewer, *Weberknechte der Erde*, p. 924.

Key to the subfamily Gagrellinae.

- | | |
|---|------------------------|
| 1. Scutum medially armed with one or more blunt humps or spines | 2 |
| Scutum entirely smooth, unarmed | 37 |
| 2. Scutum medially armed with a longitudinal row of 3—5 spines or blunt humps | 3 |
| Scutum medially armed with one (seldom two) spine or hump or column | 6 |
| 3. Scutum with a median longitudinal row of 3—5 spines | 4 |
| Scutum with a median longitudinal row of 5 blunt humps; number of noduli on 1st to 4th femora 0-2-0-0 | <i>Hehoa</i> , p. 111. |

¹ With,—*Journ. Linn. Soc., London, Zool.* XXVIII, pp. 465—509 (1903).

4. Scutum with a median longitudinal row of 5 spines; number of noduli on 1st to 4th femora 0-1-0-0	<i>Systemocentrus</i> , p. 112.	
Scutum with a median longitudinal row of 3-4 spines		5
5. Ocular tubercle toothed basally under the eyes	<i>Salaria</i> , p. 112.	
Ocular tubercle unarmed basally	<i>Syleus</i> , p. 114.	
6. Number of noduli on 1st to 4th femora 0-1-0-0		7
Number of noduli on 1st to 4th femora different		15
7. 2nd femur clavate	<i>Akalpia</i> , p. 114.	
2nd femur not clavate, thin		8
8. Ocular tubercle smooth or granulated, without large spines		9
Ocular tubercle with large spines or humps		13
9. Scutum armed with one or two median spines		10
Scutum armed with one blunt hump or thick column		11
10. 1st femur shorter or as long as the body, 2nd femur not twice the length of the body	<i>Melanopa</i> , p. 114.	
1st femur $1\frac{1}{2}$ times longer than the body or even longer, 2nd femur more than double the length of the body	<i>Gagrella</i> , p. 117.	
11. 1st area of the scutum with a blunt median hump; 1st to 4th femora shorter than the body	<i>Scotomenia</i> , p. 127.	
2nd area of the scutum with one thick, blunt or pointed median cone or column or one small and low blunt hump		12
12. 2nd area of the scutum with one thick, blunt or pointed median cone or column	<i>Marthana</i> , p. 127.	
2nd area of the scutum with one small and low, blunt hump	<i>Palniella</i> , p. 128.	
13. Scutum with two median spines on 1st and 2nd areas	<i>Dentobunus</i> , p. 128.	
Scutum with one median spine on the 2nd area only		14
14. Ocular tubercle as long as broad and high (Island of Hainan)	(<i>Prodentobunus</i>).	
Ocular tubercle as long as broad, but twice as high as broad. (Formosa and Philippines)	(<i>Altobunus</i>).	
15. Number of noduli on 1st to 4th femora 0-2-0-0		16
Number of noduli on 1st to 4th femora different		18
16. Ocular tubercle smooth or granulated, but without large spines		17
Ocular tubercle above with two anterior spines (Formosa)	(<i>Metadentobunus</i>).	
17. 1st femur shorter or as long as the body, 2nd femur not twice the length of the body	<i>Melanopula</i> , p. 130.	
1st femur $1\frac{1}{2}$ times longer, or even still longer, than the body, 2nd femur more than twice the length of the body	<i>Metagagrella</i> , p. 131	
18. 2nd femur with 3 noduli		19
2nd femur with more than 3 noduli		27
19. Number of noduli on 1st to 4th femora 0-3-0-0		20
Number of noduli on 1st to 4th femora 0-3-0-1 or 1-3-1-1		24
20. Ocular tubercle toothed basally under the eyes	<i>Strandia</i> , p. 132.	
Ocular tubercle not armed with teeth basally under the eyes		21
21. Scutum armed with one thick triangular projection, which is one or two pointed at the appx.		22
Scutum armed with one or two slender spines		23
22. Scutum armed with one thick and large hump, bearing two median spines (Borneo)	(<i>Eumarthana</i>).	
Scutum armed with one basally very thick, but apically pointed cone	<i>Crassicippus</i> , p. 135.	
23. 1st femur shorter or as long as the body, 2nd femur not twice the length of the body	<i>Aurivilliola</i> , p. 136.	
1st femur $1\frac{1}{2}$ times longer, or even still longer than the body, 2nd femur more than twice the length of the body	<i>Gagrellula</i> , p. 138	

24. Number of noduli on 1st to 4th femora 0-3-0-1 ..	25
Number of noduli on 1st to 4th femora 1-3-1-1 ..	27
25. Ocular tubercle above with two anteriorly placed, finely toothed humps	<i>Paradentobunus</i> , p. 141.
Ocular tubercle smooth or toothed, but without large humps or spines	26
26. Scutum with one thick, pointed cone or one column rounded at the apex	<i>Marthanella</i> , p. 141.
Scutum with one slender median spine (Sumatra)..	(<i>Paragagrella</i> .)
27. Scutum with one thick but pointed cone (Sumatra)	(<i>Metamarthana</i>).
Scutum with one high and bluntly rounded column (Palawan Islands)	(<i>Heteromarthana</i>).
28. 2nd femur with 4 noduli	29
2nd femur with more than 4 noduli	32
29. Number of noduli on 1st to 4th femora 0-4-0-0 ..	<i>Eugagrella</i> , p. 141.
Number of noduli on 1st to 4th femora 1-4-1-1 or 1-4-1-2	30
30. Number of noduli on 1st to 4th femora 1-4-1-1 ..	31
Number of noduli on 1st to 4th femora 1-4-1-2 ..	<i>Neogagrella</i> , p. 143.
31. Ocular tubercle without large spines	<i>Gagrellenna</i> , p. 144.
Ocular tubercle with two anteriorly placed large spines	<i>Coonoora</i> , p. 145.
32. 2nd femur with 5 noduli	33
2nd femur with more than 5 noduli	35
33. Number of noduli on 1st to 4th femora 0-5-0-0 ..	<i>Hologagrella</i> , p. 146.
Number of noduli on 1st to 4th femora 0-5-0-1 or 2-5-1-2	34
34. Number of noduli on 1st to 4th femora 0-5-0-1 (Celebes)	(<i>Sarasinia</i>).
Number of noduli on 1st to 4th femora 2-5-1-2 (Celebes)	(<i>Bonthainia</i>).
35. Number of noduli on 1st to 4th femora 0-6-0-1 or 1-6-1-3	36
Number of noduli on 1st to 4th femora 2-7-2-3 ..	<i>Nilgirisia</i> , p. 146.
36. Number of noduli on 1st to 4th femora 0-6-0-1 (Celebes)	(<i>Gagrellina</i>).
Number of noduli on 1st to 4th femora 1-6-1-3 (Celebes)	(<i>Syngagrella</i>).
37. Number of noduli on 1st to 4th femora 0-1-0-0 ..	38
Number of noduli on 1st to 4th femora different	41
38. Ocular tubercle smooth or toothed, but without larger thorns or spines	<i>Zaleptus</i> , p. 147
Ocular tubercle armed with large thorns or spines	39
39. Ocular tubercle twice as high as long, armed with several spines in front, above and behind. (Java)	(<i>Echinobunus</i>).
Ocular tubercle above with an anterior and a posterior pair of spines.. ..	40
40. 1st femur shorter or as long as the body, 2nd femur not double the length of the body	<i>Ceratobunellus</i> , p. 150.
1st femur $1\frac{1}{2}$ —3 times longer than the body, 2nd femur more than 5 times longer than the body. (Sumatra)	(<i>Ceratobunoides</i>).
41. Number of noduli on 1st to 4th femora 0-2-0-0 ..	42
Number of noduli on 1st to 4th femora different..	46
42. Ocular tubercle smooth or toothed, but without large spines	43
Ocular tubercle armed with large spines	44
43. Ocular tubercle smooth or granulated	<i>Verpulus</i> , p. 150.
Ocular tubercle on each side of the longitudinal furrow with a row of small teeth or toothed around each eye	<i>Hypsibunus</i> , p. 151.
44. Ocular tubercle above with an anterior and a posterior pair of spines	<i>Tetraceratobunus</i> , p. 151.
Ocular tubercle above only with two large spines ..	45

45. Ocular tubercle above with two divergent spines in a median row	<i>Euceratobunus</i> , p. 151.	
Ocular tubercle above with two large spines situated next to the longitudinal furrow ..	<i>Kempina</i> , p. 151.	
46. Number of noduli on 1st to 4th femora 0-3-0-0 or 0-3-0-1		47
Number of noduli on 1st to 4th femora different..		49
47. Number of noduli on 1st to 4th femora 0-3-0-0 ..		48
Number of noduli on 1st to 4th femora 0-3-0-1 ..	<i>Euzaleptus</i> , p. 152.	
48. Ocular tubercle smooth or granulated, but without large spines	<i>Zaleptanus</i> , p. 153.	
Ocular tubercle above with an anterior and a posterior pair of large spines	<i>Cervibunus</i> , p. 154.	
49. 2nd femur with 4 noduli		50
2nd femur with more than 4 noduli		52
50. Number of noduli on 1st to 4th femora 0-4-0-0 ..	<i>Metazaleptus</i> , p. 155.	
Number of noduli on 1st to 4th femora 0-4-0-1 or 1-4-1-1		51
51. Number of noduli on 1st to 4th femora 0-4-0-1 ..	<i>Metaverpulus</i> , p. 155.	
Number of noduli on 1st to 4th femora 1-4-1-1 ..	<i>Harmanda</i> , p. 156.	
52. 2nd femur with 6 noduli		53
2nd femur with 7 noduli, number of noduli on 1st to 4th femora 1-7-1-2	<i>Carmichaelus</i> , p. 157.	
53. Number of noduli on 1st to 4th femora 0-6-0-0 ..	<i>Ceratobunus</i> , p. 158.	
Number of noduli on 1st to 4th femora 0-6-0-1 or 1-6-1-1		54
54. Number of noduli on 1st to 4th femora 0-6-0-1 ..	<i>Bastia</i> , p. 159.	
Number of noduli on 1st to 4th femora 1-6-1-1 (Philippines)	(<i>Bullobunus</i>).	

Hehoa gen. nov.

Ocular tubercle as long as broad, as high, without large thorns or teeth. Scutum on 1st to 5th area with a median longitudinal row of five low and blunt humps (fig. 1). Legs rather short; 1st femur much shorter than body; 2nd femur at most as long as body; number of noduli on 1st to 4th femora 0-2-0-0.

This genus is allied to *Syleus*, but the armature of the scutum is different.

* **Hehoa bunigera**, sp. nov.

(Fig. 1).

Length of body 6, 1st to 4th femora 3, 4.5, 3.5, 4, 1st to 4th legs 13, 20, 14, 17 mm.

Surface of carapace, scutum and free tergites of the abdomen uniformly and very coarsely granulated; scutum with a median longitudinal row of five equally polished and blunt humps (fig. 1). Ocular tubercle

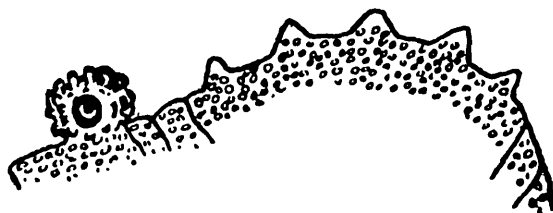


FIG. 1.—*Hehoa bunigera*, gen. et sp. nov.—Left lateral view of the dorsum of the body.

throughout, also along the area beneath the eyes, covered with still coarser granules. Free sternites of abdomen shagreened; surface of

1st to 4th coxae densely and coarsely granulated ; edge of small humps of marginal rows of coxae straightly blunted. First article of chelicerae dorsally granulated. Palps : femur ventrally denticulated, dorsally only granulated, patella without an inner apophysis and with tibia dorsally granulated, length of tibia double its diameter ; tarsus of male with a ventral longitudinal row of small granules. Legs rather short ; 1st to 4th femora granulated in longitudinal rows ; number of the noduli on 1st to 4th femora 0-2-0-0.

Colour of the whole body, of chelicerae, palps and legs ferruginous-brown ; surface of the carapace covered with white secretions of skin on the frontal border.

Locality.—S. Shan States : Heho River, Yawngphwe State (ca. 3,500 feet), 1 male, 1 female collected by Dr. F. H. Gravely.

Type-specimens.—No. $\frac{1033}{18}$ in the Zoological Survey of India (Indian Museum), Calcutta.

Systemocentrus Simon.

1886. *Systemocentrus*, Simon, *Act. Soc. Linn. Bordeaux*, XL, p. 164.

1923. *Systemocentrus*, Roewer, *Weberknechte der Erde*, p. 928.

Only two of the four known species belong to the Indian fauna.

Key to the Indian species of the genus *Systemocentrus*.

Length of the body 6 mm. ; chelicerae and 2nd tibia uniformly black. (Siam and Burma)	..	<i>S. quinquedentatus</i> .
Length of the body 2—3 mm. ; chelicerae pale, 2nd tibia apically with a broad white ring. (Burma)		<i>S. galeatus</i> .

Systemocentrus quinquedentatus Simon.

1886. *Systemocentrus quinquedentatus*, Simon, *Act. Soc. Linn. Bordeaux*, XL, p. 164.

1923. *Systemocentrus quinquedentatus*, Roewer, *Weberknechte der Erde*, p. 929.

Distribution.—Kanbuni, Siam ; Myawadi, Amherst District, Burma.

Systemocentrus galeatus (Thorell).

1889. *Oncobunus galeatus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 667.

1923. *Systemocentrus galeatus*, Roewer, *Weberknechte der Erde*, p. 929.

Distribution.—Schwegu, Upper Burma.

Sataria Rwt.

1914. *Sataria*, Roewer, *Arch. Naturg.* LXXX, fasc. 9, p. 107.

1923. *Sataria*, Roewer, *Weberknechte der Erde*, p. 930.

Only three species of this genus are found in Western Deccan. These can be distinguished by the help of the following key :—

1. 1st and 2nd thoracic tergites, each with one small median thorn *S. maculata*.
- 1st and 2nd thoracic tergites unarmed.. .. .

2. Body uniformly black-brown, ocular tubercle on each side above with 3 small thorns but without a median thorn *S. unicolor*.
 Body ferruginous, mottled paler; ocular tubercle above with 3 long thorns arranged in a triangle (fig. 2) *S. coronata*.

***Sataria unicolor* Rwr.**

1914. *Sataria unicolor*, Roewer, *Arch. Naturg.* LXXX, fasc. 9, p. 109.

1923. *Sataria unicolor*, Roewer, *Weberknechte der Erde*, p. 931.

Distribution.—Helvak, Koyna Hills, Satara-District; Deccan.

*** *Sataria maculata* Rwr.**

1914. *Sataria maculata*, Roewer, *Arch. Naturg.* LXXX, fasc. 9, p. 108, fig. 1.

1923. *Sataria maculata*, Roewer, *Weberknechte der Erde*, p. 930, fig. 1073.

Distribution.—Khandala, 2,500 feet, Bombay District; 1 female, N. Annandale leg., Zoological Survey of India (Ind. Mus.), Calcutta.

*** *Sataria coronata*, sp. nov.**

(Fig. 2).

Length of body 3, 1st to 4th femora 3, 7, 5, 6, 1st to 4th legs 15, 31, 14, 21 mm.

Surface of carapace, scutum and free tergites of abdomen coarsely and densely granulated; ocular tubercle in front and behind and also basally covered with fine teeth and above with three long thorns arranged in a triangle (fig. 2); 1st to 4th areas of scutum with a longitudinal row of four long and recurved spines (fig. 2). Surface of free sternites of abdomen almost smooth, of coxae densely granulated; edge of the small

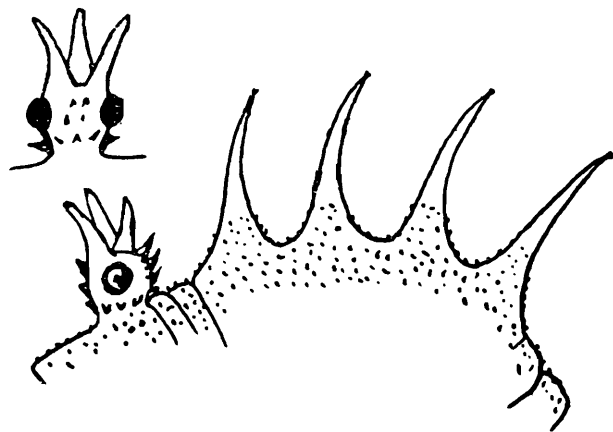


FIG. 2.—*Sataria coronata*, sp. nov. —Left lateral view of the body and frontal view of ocular tubercle.

humps of marginal rows with a very small point in the middle. First article of chelicerae dorsally granulated. Palps: trochanter, femur, patella and tibia densely and acutely granulated all round, patella apically with a densely toothed apophysis; tibia $2\frac{1}{2}$ times longer than its diameter. Legs from trochanter to tibia sparsely and finely covered with small teeth; number of noduli on 1st to 4th femora 0-1-0-0.

Colour of the body reddish-brown dorsally ; carapace, scutum and free abdominal tergites mottled with lighter yellow spots ; free sternites of abdomen and coxae spaceously covered with white secretions of skin. Chelicerae, palps and legs yellowish-brown.

Distribution.—Western Ghats, along the tramway, Cochin State (1 male—Gravelly leg.) ; Panchgani, Satara District, Bombay Presidency (1 male, 1 female—Government Museum, Madras).

Type-specimen.—No. $\frac{1029}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta, from Cochin State.

Syleus Thor.

1876. *Syleus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, IX, p. 114.

1923. *Syleus*, Roewer, *Weberknechte der Erde*, p. 928.

Only one species of this genus has so far been recorded.

Syleus niger (C. L. Koch).

1848. *Acanthonotus niger*, Koch, *Hahn u. C. L. Koch, Arachniden*, XVI, p. 61.

1923. *Syleus niger*, Roewer, *Weberknechte der Erde*, p. 928.

Distribution.—Bombay, India.

Akalpia Rwr.

1914. *Akalpia*, Roewer, *Arch. Naturg.*, LXXX, fasc. 9, p. 109.

1923. *Akalpia*, Roewer, *Weberknechte der Erde*, p. 951.

Only a single species of this genus has so far been described.

Akalpia oblonga Rwr.

1914. *Akalpia oblonga*, Roewer, *Arch. Naturg.*, LXXX, fasc. 9, p. 110.

1923. *Akalpia oblonga*, Roewer, *Weberknechte der Erde*, p. 952, fig. 1089.

Distribution.—Akalpa, Kandal Valley, Ratnagiri, Bombay Presidency.

Melanopa Thor.

1889. *Melanopa* (in part), Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 659.

1923. *Melanopa*, Roewer, *Weberknechte der Erde*, p. 931.

Key to the species of the genus *Melanopa*.

- | | |
|---|-----------------------------------|
| 1. 1st to 4th femora toothed and distinctly hirsute .. | 2 |
| 1st to 4th femora toothed, but not hirsute .. | 4 |
| 2. Scutum with one broad and dark median band .. | 3 |
| Scutum uniformly black-brown, without any band | |
| (Himalayas, Bengal, Burma) .. | <i>M. fragilis</i> p. 116. |
| 3. Scutum only on the 2nd area with a single median | |
| thorn (Himalayas) .. | <i>M. hirta</i> , p. 116. |
| Scutum on the 1st and 2nd areas with two median | |
| thorns (Eastern Himalayas) .. | <i>M. transversalis</i> , p. 117. |
| 4. Ocular tubercle toothed basally under the eyes .. | 5 |
| Ocular tubercle smooth basally or only granulated | |
| as also the surface of the carapace .. | 9 |
| 5. 1st article of the chelicerae dorsally granulated .. | 6 |
| 1st article of the chelicerae dorsally smooth .. | 8 |

- | | |
|---|----------------------------------|
| 6. Scutum only on the 2nd area with a single median thorn | 7 |
| Scutum on the 1st and 2nd areas with two median thorns (Tonkin) | <i>M. scabra</i> , p. 115. |
| 7. Median thorn of the scutum smooth (India and Indo-China) | <i>M. atrata</i> , p. 116. |
| Median thorn of the scutum wholly or partially granulated (India and Indo-China) | <i>M. varians</i> , p. 115. |
| 8. Ocular tubercle with one ring of teeth around each eye (Burma) | <i>M. plebeja</i> , p. 115. |
| Ocular tubercle smooth above (India) | <i>M. hansenii</i> , p. 115. |
| 9. Humps of the marginal rows of 1st to 4th coxae straight, blunt | 10 |
| Each of the humps of marginal rows consisting of three small teeth (Matheran, Bombay) | <i>M. matherania</i> , p. 115. |
| 10. 1st article of the chelicerae dorsally granulated | 11 |
| 1st article of the chelicerae dorsally smooth (Burma) | <i>M. tristis</i> , p. 116. |
| 11. Body dorsally and ventrally uniform black-brown (India) | <i>M. unicolor</i> , p. 117. |
| Scutum with a distinct median dark-brown band | 12 |
| 12. Chelicerae and palps dark-brown, only tarsus of the latter ferruginous (Yunnan) | <i>M. yuennanensis</i> , p. 116. |
| Chelicerae and palps wholly ferruginous (Shan States) | <i>M. diluta</i> , p. 116. |

Melanopa scabra Rwr.

1912. *Melanopa scabra*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 36.

1923. *Melanopa scabra*, Roewer, *Weberknechte der Erde*, p. 939.

Distribution.—Tonkin.

Melanopa varians (With).

1903. *Gagrella varians*. With, *Journ. Linn. Soc., London, Zool.*, XXVIII, p. 503.

1923. *Melanopa varians*, Roewer, *Weberknechte der Erde*, p. 934.

Distribution.—Birbhum ; Abor Country, India ; Tavoy, Burma.

Melanopa plebeja Thor.

1889. *Melanopa plebeja*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 659.

1923. *Melanopa plebeja*, Roewer, *Weberknechte der Erde*, p. 934.

Distribution.—Minhla, Prome, Burma.

Melanopa hansenii (With).

1903. *Gagrella hansenii*, With, *Journ. Linn. Soc., London, Zool.*, XXVIII, p. 503.

1923. *Melanopa hansenii*, Roewer, *Weberknechte der Erde*, p. 935.

Distribution.—Todaspor, India.

Melanopa matherania Rwr.

1915. *Melanopa matherania*, Roewer, *Ann. Mus. Hungar.*, XIII, p. 215.

1923. *Melanopa matherania*, Roewer, *Weberknechte der Erde*, p. 939.

Distribution.—Matheran, Bombay Presidency, India.

Melanopa tristis Thor.

1889. *Melanopa tristis*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 662.

1923. *Melanopa tristis*, Roewer, *Weberknechte der Erde*, p. 936.

Distribution.—Teinzo, Burma.

Melanopa yuennanensis Rwr.

1910. *Melanopa yuennanensis*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 26.

1923. *Melanopa yuennanensis*, Roewer, *Weberknechte der Erde*, p. 935.

Distribution.—Yunnan, China.

*** Melanopa fragilis** (With).

1903. *Gagrella fragilis*, With, *Journ. Linn. Soc., London, Zool.* XXVIII, p. 493.

1910. *Melanopa fragilis*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 21.

1923. *Melanopa fragilis*, Roewer, *Weberknechte der Erde*, p. 932.

Distribution.—Pashok, alt. 1,500—3,500 feet (42 males, 17 females—Gravelly, Hartless *leg.*) ; Darjeeling (1 male) ; Ghumti, alt. 1,500—5,000 feet, (3 males, 5 females) ; Ghoom, alt. 4,000—5,000 feet, (1 male—Carmichael *leg.*) ; Kalimpong, East Himalayas (11 males, 7 females) ; all in Darjeeling District ; Rangamati, Chittagong Hill Tract, Bengal (1 male—Hodgart *leg.*).

*** Melanopa atrata** (Stol.)

1869. *Gagrella atrata*, Stoliczka, *Journ. Asiat. Soc., Bengal*, XXXVIII, p. 212

1910. *Melanopa atrata*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 23.

1923. *Melanopa atrata*, Roewer, *Weberknechte der Erde*, p. 933.

Distribution.—Courtallam, Madras Presidency (4 males and females) ; Tollygunj, Calcutta, Bengal (22 males and females) ; Shillong (1 male 1 female) ; Tura, Garo Hills (1 female) ; Khasia Hills (1 female) ; all in Assam ; Phagu, alt. 8,300—8,700 feet, Simla Hills, (1 female—N. Annandale *leg.*) ; Bargakote, alt. 8,000 feet ; Kumaon (1 female—Tytler *leg.*), all in Western Himalayas.

*** Melanopa hirta** (With).

1903. *Gagrella hirta*, With, *Journ. Linn. Soc., London, Zool.*, XXVIII, p. 492.

1910. *Melanopa hirta*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 65.

1923. *Melanopa hirta*, Roewer, *Weberknechte der Erde*, p. 938.

Distribution.—Kalimpong (1 female—Sutherland *leg.*) ; Sitong, alt. 2,500 feet (10 *pulli*), Darjeeling District.

*** Melanopa diluta**, sp. nov.

Length of body of male 6, of female 7, 1st to 4th femora 6, 10, 7, 8, 1st to 4th legs 28, 50, 27, 39 mm.

Surface of carapace, scutum and free tergites and sternites of abdomen densely granulated ; scutum with two median spines of equal length, one on the 1st and the other on the 2nd area ; ocular tubercle unarmed and smooth ; surface of 1st to 4th coxae very coarsely granulated, edge of small humps of marginal rows straightly blunted. First article of chelicerae dorsally with a dense group of granules. Palps :

femur dorsally and ventrally, also patella dorsally and tibia ventrally and medially covered with small teeth ; patella without an apophysis at the medial corner ; tibia $2\frac{1}{2}$ times longer than wide ; tarsus in the male with a ventral longitudinal row of very small granules. Legs : 1st to 4th femora covered with small teeth ; number of the noduli on 1st to 4th femora 0-1-0-0.

Colour of the whole body dorsally and ventrally, of the four coxae, ocular tubercle, and the two spines of the scutum, blackish-brown ; carapace on each side of the ocular tubercle and scutum on each side of the two spines mottled with lighter yellowish spots ; chelicerae and palps uniformly ferruginous ; legs ferruginous, but 1st to 4th trochanters and the basal ends of the 1st to 4th femora distinctly black.

Distribution.—Foot of Elephant Hill, Ywanghwe State, alt. *ca.* 5,700 feet, Southern Shan States (2 males, 6 females).

Type-specimens.—No. $\frac{1080}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

*** *Melanopa unicolor* Rwr.**

1912. *Melanopa unicolor*, Roewer, *Arch. Naturg.*, LXXVIII, A. 1, p. 35.

1923. *Melanopa unicolor*, Roewer, *Weberknechte der Erde*, p. 939.

Distribution.—Dehra Dun, United Provinces (1 female—Ind. Mus., Calcutta) ; Orissa.

*** *Melanopa transversalis* Rwr.**

1912. *Melanopa transversalis*, Roewer, *Arch. Naturg.*, LXXVIII, A. 1, p. 34.

1923. *Melanopa transversalis*, Roewer, *Weberknechte der Erde*, p. 938.

Distribution.—Ghoom, alt. 4,000—5,000 feet, Darjeeling District (1 female—Carmichael *leg.*—Ind. Mus., Calcutta).

***Gagrella* Thor.**

1876. *Gagrella*, Thorell, *Ann. Mus. Civ. Stor. Nat. Hist. Genova*, IX, p. 119.

1923. *Gagrella*, Roewer, *Weberknechte der Erde*, p. 952.

Out of the 86 known species of this genus 37 are found in India and Indo-China.

Key to the Indian and Indo-Chinese species of *Gagrella*.

- | | |
|---|---------------------------------|
| 1. Scutum with a metallic greenish, sulphur-yellowish, or coppery, but not golden gloss | 2 |
| Scutum without any metallic gloss | 10 |
| 2. Scutum mottled with distinct white or yellow spots | 3 |
| Scutum without any such spots, at the most paler or darker punctations or sometimes with a dark median band | 6 |
| 3. Ocular tubercle smooth or toothed only above the eyes | 4 |
| Ocular tubercle toothed below the eyes also .. | 5 |
| 4. 1st article of chelicerae dorsally smooth (Eastern Himalayas) | <i>G. speciosa</i> , p. 122. |
| 1st article of chelicerae dorsally with one or more teeth (Malacca) | <i>G. cyanargentea</i> . |
| 5. Chelicerae wholly black or dark-brown (Burma) .. | <i>G. histrionica</i> , p. 121. |
| Chelicerae wholly pale-yellowish (Burma) .. | <i>G. magnifica</i> , p. 120. |

6. Body dorsally with a metallic greenish or yellowish gloss	7
Body dorsally ferruginous or black, with a dark coppery gloss	9
7. Body dorsally with a greenish gloss; 1st article of chelicerae dorsally smooth	8
Body dorsally with a yellowish gloss; 1st article of chelicerae dorsally densely toothed (Burma)	<i>G. sulphurea</i> , p. 123.
8. Scutum without any dark median band (Deccan)	<i>G. prasina</i> , p. 123.
Scutum before the thorn with a dark median band (Palni Hills, Madras)	<i>G. palnica</i> , p. 125.
9. 1st article of chelicerae toothed dorsally (Burma)	<i>G. aenescens</i> , p. 120.
1st article of chelicerae smooth dorsally (Assam) ..	<i>G. metallica</i> , p. 124.
10. 1st to 4th femora toothed and distinctly hirsute ..	11
1st to 4th femora toothed, but not hirsute ..	12
11. Chelicerae pale yellowish (India)	<i>G. nobilis</i> , p. 121.
Chelicerae black (Malacca)	<i>G. aureolata</i> .
12. Ocular tubercle above smooth or nearly smooth, at most with a few hairs	13
Ocular tubercle above toothed or granulated ..	27
13. Scutum prevailing black or black-brown (uniformly coloured or mottled)	14
Scutum prevailing pale yellowish, ferruginous or with a golden gloss (uniformly coloured or mottled)	22
14. Scutum uniform black or black-brown ..	15
Scutum black, but mottled with white or yellow ..	19
15. 1st article of chelicerae dorsally smooth ..	16
1st article of chelicerae dorsally with 1 to 2 teeth (India and Burma)	<i>G. feae</i> , p. 120.
16. 2nd and 4th tibiae with one broad apical white ring (Malacca)	<i>G. albifrons</i> .
1st to 4th tibiae uniformly coloured and without apical white rings	17
17. 2nd article of the chelicerae near the articulation of the 1st article with one pointed tooth: the tooth white, chelicerae black (Burma) ..	<i>G. arthrocentra</i> , p. 122.
Chelicerae not armed with such a tooth ..	18
18. Chelicerae black (Malacca)	<i>G. nigripalpis</i> , p. 121.
Chelicerae pale yellowish or ferruginous (Malacca)	<i>G. atrorubra</i> , p. 122.
19. Chelicerae black or black-brown (Malacca) ..	<i>G. biseriata</i> , p. 121
Chelicerae pale yellowish or ferruginous ..	20
20. Scutum yellowish with the lateral and frontal margins black and a median black band, the median band crossed by four rows of small black points (Indo-China)	<i>G. cruciata</i> , p. 121.
Scutum not marked as in <i>G. cruciata</i> ..	21
21. Scutum with two median thorns on 1st to 2nd areas (Burma)	<i>G. disticta</i> , p. 120.
Scutum with a median thorn on 1st area only (Burma)	<i>G. feae humeralis</i> .
22. Carapace in front and on each side of the ocular tubercle pale-yellowish or whitish, with a few dark-brown impressed spots, front of the carapace in the middle blackish; 1st and 2nd thoracic tergites blackish or brown ..	23
Carapace not coloured in such a manner ..	25
23. Palps uniformly coloured, pale-brown; legs uniformly coloured, but 3rd and 4th trochanters dorsally with pale spots (Tenasserim, Burma) ..	<i>G. lepida</i> , p. 121.
Palps ferruginous, but the femora apically and patellas basally brown	24
24. 2nd femur apically with a white ring; 1st to 4th tarsi uniformly coloured (Burma) ..	<i>G. armillata</i> , p. 121.
1st to 4th femora uniformly coloured, without paler rings, but the first articles of 2nd and 4th tarsi with distinct white rings (Assam) ..	<i>G. annulatipes</i> , p. 123.

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| 25. Ocular tubercle also basally under the eyes smooth ;
the whole body with a greenish, not metallic,
lustre (Nilgiris, Cochin State) | <i>G. viridula</i> , p. 125. | 26 |
| Ocular tubercle basally under the eyes toothed .. | | |
| 26. Scutum only on the 2nd area with one median thorn
(Burma) | <i>G. gravelyi</i> , p. 123. | |
| Scutum with two median thorns on 1st and 2nd
areas (Burma) | <i>G. leucobunus</i> , p. 123. | |
| 27. Ocular tubercle also basally under the eyes
toothed | | 28 |
| Ocular tubercle basally under the eyes smooth .. | | 38 |
| 28. Scutum with two median thorns | | 29 |
| Scutum with only one median thorn on the 2nd
area, seldom also one very small hump on the
1st area | | 34 |
| 29. Palps wholly unarmed ; ocular tubercle basally
under each eye with three teeth (Burma) .. | <i>G. armillata</i> , p. 121. | |
| Palps, at least femur, toothed ; ocular tubercle
armed differently | | 30 |
| 30. Palps wholly pale-yellowish ; scutum mottled with
yellow (Burma) | <i>G. distincta</i> , p. 120. | |
| Palps black-brown, or dark ferruginous, scutum
not mottled, black or dark-brown, without a
median band | | 31 |
| 31. Palps pale-yellowish, but femur, patella and tibia
dark-brown (Tonkin) | <i>G. indochinensis</i> , p. 124. | |
| Palps ferruginous, or except for the tarsus, black-
brown | | 32 |
| 32. Ocular tubercle on each side with a complete ring
of teeth around each eye | | 33 |
| Ocular tubercle only above and frontally with a
few teeth (India and Burma) | <i>G. feae</i> , p. 120. | |
| 33. Length of the body 3 mm. ; legs uniformly ferru-
ginous (Shan States) | <i>G. parva</i> , p. 126. | |
| Length of the body 5—6 mm. ; legs brown, 1st to
4th femora and tibiae with several pale yellowish
rings or spots (Andaman Islands) | <i>G. andamana</i> , p. 126. | |
| 34. Ocular tubercle nearly smooth, at the most front-
ally above with a few very small granules
(Burma and India) | <i>G. feae</i> , p. 120. | |
| Ocular tubercle above strongly toothed on each
side of the furrow | | 35 |
| 35. Scutum uniformly black or black-brown ; carapace
frontally with a median yellow spot | | 36 |
| Scutum not uniformly black or black-brown ;
carapace otherwise marked | | 37 |
| 36. 1st article of chelicerae dorsally with 1—2 granules ;
patella of the palp without an apophysis
(Siam) | <i>G. luteofrontalis</i> , p. 123. | |
| 1st article of chelicerae dorsally densely toothed ;
patella of the palp with a medial apophysis
(Burma) | <i>G. scabra</i> , p. 123. | |
| 37. Humps of the marginal rows of 1st coxa straightly
blunted | | 5 |
| Humps of the marginal rows of 1st coxa three-
pointed (Burma) | <i>G. spinulosa</i> , p. 122. | |
| 38. Colour of the scutum prevailing black or dark-
brown, uniformly coloured or mottled with
small white or yellowish spots | | 39 |
| Colour of the scutum prevailing pale-yellowish
or ferruginous | | 43 |
| 39. Abdomen dorsally distinctly mottled | | 40 |
| Abdomen dorsally not distinctly mottled | | 42 |
| 0. Abdomen dorsally mottled with white spots | | 5 |
| Abdomen dorsally mottled with yellow or pale-
brown spots | | 41 |

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|--|-----------------------------------|----|
| 41. Abdomen dorsally on each side with 6-7 spots of yellow secretions (Cochin-China) .. | <i>G. flavimaculata</i> , p. 124. | |
| Abdomen dorsally on each side with one large dark-reddish spot with two smooth, nearly yellow spots behind (Tavoy, Burma) .. | <i>G. binotata</i> , p. 122. | |
| 42. Carapace on each side of the ocular tubercle thickly covered with white secretions (Burma) .. | <i>G. erebea</i> , p. 120. | |
| Carapace not covered with white secretions (Burma) | <i>G. patalungensis</i> , p. 122. | |
| 43. All joints of the palps only hirsute, not toothed .. | | 23 |
| Femur of the palps ventrally toothed .. | | 44 |
| 44. Length of the body 8—11 mm. ; 1st to 4th tibiae apically with one white ring (Siam and Burma) .. | <i>G. coriacea</i> , p. 121. | |
| Length of the body at the most 8 mm ; 1st to 4th tibia without white apical rings | | 45 |
| 45. Carapace black or black-brown (Nicobar Islands) | <i>G. unispinosa</i> , p. 122. | |
| Carapace mottled with white or pale spots .. | | 46 |
| 46. Humps of the marginal rows of 1st coxa straightly blunted | | 47 |
| Humps of the marginal rows of 1st coxa three-pointed (Cochin China) | <i>G. flava</i> , p. 123. | |
| 47. Scutum yellowish or ferruginous (Burma) .. | <i>G. cervina</i> , p. 122. | |
| Scutum darker reddish-brown and on each side a little mottled with black (Siam) | <i>G. fulva</i> , p. 123. | |

* *Gagrella feae* Thor.

1889. *Gagrella feae*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 648.
 1923. *Gagrella feae*, Roewer, *Weberknechte der Erde*, p. 957.

Distribution.—Rangoon, Pegu, Metan, Tenasserim, Burma ; Abor Country, Assam ; Calcutta, Bengal ; Kierpur, Purneah District, Bihar (5 females—Ind. Mus., Calcutta) ; Barkul, alt. 1,000 feet, Orissa (3 males, 5 females, 3 *pulli*—Ind. Mus., Calcutta).

Gagrella aenescens Thor.

1889. *Gagrella aenescens*, Thorell, *Ann. Mus. Civ. Stor. Nat., Genova*, XXVII, p. 643.
 1923. *Gagrella aenescens*, Roewer, *Weberknechte der Erde*, p. 958.

Distribution.—Mount Mooleyit, Burma.

Gagrella disticta (Thor).

1889. *Gagrella nocticolor* var. *disticta*, Thorell, *Ann. Mus. Civ. Stor. Nat., Genova*, XXVII, p. 651.
 1923. *Gagrella disticta*, Roewer, *Weberknechte der Erde*, p. 958.

Distribution.—Bhamo, Burma.

Gagrella erebea Thor.

1889. *Gagrella erebea*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 636.
 1923. *Gagrella erebea*, Roewer, *Weberknechte der Erde*, p. 959.

Distribution.—Teinzo, Bhamo, Burma.

Gagrella magnifica Rwr.

1910. *Gagrella magnifica*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 50.
 1923. *Gagrella magnifica*, Roewer, *Weberknechte der Erde*, p. 959.

Distribution.—Pegu, Burma.

Gagrella histrionica Thor.

1889. *Gagrella histrionica*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 652.

1923. *Gagrella histrionica*, Roewer, *Weberknechte der Erde*, p. 960.

Distribution.—Schwegu, Bhamo, Burma.

Gagrella coriacea Rwr.

1910. *Gagrella coriacea*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 62.

1923. *Gagrella coriacea*, Roewer, *Weberknechte der Erde*, p. 963.

Distribution.—Battambang, Burma ; Bangkok, Siam.

Gagrella lepida Thor.

1889. *Gagrella lepida*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 627.

1923. *Gagrella lepida*, Roewer, *Weberknechte der Erde*, p. 965.

Distribution.—Tenasserim (Wood-Mason), Dawna Hills, Burma ; Rotung, Abor Country (Egar).

Gagrella nigripalpis Rwr.

1910. *Gagrella nigripalpis*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 61.

1923. *Gagrella nigripalpis*, Roewer, *Weberknechte der Erde*, p. 964.

Distribution.—Malacca.

Gagrella biseriata Sim.

1901. *Gagrella biseriata* and *Gagrella illusa*, Simon, *Proc. Zool. Soc. London*, pt. ii, p. 81.

1923. *Gagrella biseriata*, Roewer, *Weberknechte der Erde*, p. 964.

Distribution.—Perak (Gunong Inas), Jalor (Bukit Besar), Jeram-Kawan, Malacca.

Gagrella armillata Thor.

1889. *Gagrella armillata*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 629.

1923. *Gagrella armillata*, Roewer, *Weberknechte der Erde*, p. 965.

Distribution.—Prome, Burma ; Darrang, Assam.

Gagrella cruciata Rwr.

1910. *Gagrella crux*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 64.

1923. *Gagrella cruciata*, Roewer, *Weberknechte der Erde*, p. 966.

Distribution.—Pegu, Burma.

Gagrella nobilis With.

1903. *Gagrella nobilis*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 489.

1923. *Gagrella nobilis*, Roewer, *Weberknechte der Erde*, p. 966.

Distribution.—Siliguri, Bengal, India.

Gagrella patalungensis Sim.

1901. *Gagrella patalungensis*, Simon, *Proc. Zool. Soc. London*, pt. ii, p. 82.

1923. *Gagrella patalungensis*, Roewer, *Weberknechte der Erde*, p. 961.

Distribution.—Patalung, Bangkongrak, Indo-China ; Siripur, Saran, Bihar, India.

Gagrella arthrocentra (Thor.)

1889. *Arthrocentrus atratus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 623.

1923. *Gagrella arthrocentra*, Roewer, *Weberknechte der Erde*, p. 961.

Distribution.—Mount Mooleyit, Burma.

Gagrella spinulosa Thor.

1889. *Gagrella spinulosa*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 657.

1923. *Gagrella spinulosa*, Roewer, *Weberknechte der Erde*, p. 961.

Distribution.—Kawkareit, Moulmein, Myawadi, Upper Tenasserim, Burma.

Gagrella cervina Sim.

1887. *Gagrella cervina*, Simon, *Journ. Asiat. Soc. Bengal*, LVI, p. 115.

1923. *Gagrella cervina*, Roewer, *Weberknechte der Erde*, p. 962.

Distribution.—Dawna Hills, Meetan, Tavoy (Mita), Burma.

Gagrella binotata Sim.

1887. *Gagrella binotata*, Simon, *Journ. Asiat. Soc. Bengal*, LVI, pp. 101—107.

1923. *Gagrella binotata*, Roewer, *Weberknechte der Erde*, p. 962.

Distribution.—Tavoy, Burma.

Gagrella atrorubra Sim.

1901. *Gagrella atrorubra*, Simon, *Proc. Zool. Soc. London*, pt. ii, p. 83.

1923. *Gagrella atrorubra*, Roewer, *Weberknechte der Erde*, p. 963.

Distribution.—Perak (Gunong Inas), Malacca.

Gagrella unispinosa (With).

1903. *Gagrella imperator-unispinosa*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 502.

1923. *Gagrella unispinosa*, Roewer, *Weberknechte der Erde*, p. 967.

Distribution.—Nicobars.

Gagrella speciosa Rwr.

1911. *Gagrella speciosa*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 162.

1923. *Gagrella speciosa*, Roewer, *Weberknechte der Erde*, p. 967.

Distribution.—Kurseong, Eastern Himalayas, Bengal.

***Gagrella prasina Rwr.**

1911. *Gagrella prasina*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 2, p. 163.

1923. *Gagrella prasina*, Roewer, *Weberknechte der Erde*, p. 968.

Distribution.—Western Ghats, Travancore (Maddathoray); Coonoor, alt. 5,600—6,000 feet, Nilgiris (1 female, Gravely leg.—Government Museum, Madras); Dhoni Forest, alt. 1,500—4,000 feet, South Malabar (2 females, Barnes leg.—Government Museum, Madras); Peninsular India.

Gagrella annulatipes Rwr.

1912. *Gagrella annulatipes*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 28.

1923. *Gagrella annulatipes*, Roewer, *Weberknechte der Erde*, p. 968.

Distribution.—Assam.

Gagrella scabra Rwr.

1912. *Gagrella scabra*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 1, p. 29.

1923. *Gagrella scabra*, Roewer, *Weberknechte der Erde*, p. 968.

Distribution.—Myawadi, Burma.

Gagrella leucobunus Rwr.

1912. *Gagrella leucobunus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 29.

1923. *Gagrella leucobunus*, Roewer, *Weberknechte der Erde*, p. 969.

Distribution.—Dawna Hills, Burma.

Gagrella sulphurea Rwr.

1912. *Gagrella sulphurea*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 30.

1923. *Gagrella sulphurea*, Roewer, *Weberknechte der Erde*, p. 969.

Distribution.—Dawna Hills, Burma.

Gagrella gravelyi Rwr.

1912. *Gagrella gravelyi*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 31.

1923. *Gagrella gravelyi*, Roewer, *Weberknechte der Erde*, p. 970.

Distribution.—Dawna Hills, Burma.

Gagrella luteofrontalis Rwr.

1910. *Gagrella luteofrontalis*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 67.

1923. *Gagrella luteofrontalis*, Roewer, *Weberknechte der Erde*, p. 970.

Distribution.—Bangkok, Siam.

Gagrella fulva Rwr.

1910. *Gagrella fulva*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 67.

1923. *Gagrella fulva*, Roewer, *Weberknechte der Erde*, p. 971.

Distribution.—Bortong (?), Siam.

Gagrella flava Rwr.

1910. *Gagrella flava*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 68.

1923. *Gagrella flava*, Roewer, *Weberknechte der Erde*, p. 971.

Distribution.—Cochin-China.

Gagrella flavimaculata With.

1903. *Gagrella flavimaculata*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 498.

1923. *Gagrella flavimaculata*, Roewer, *Weberknechte der Erde*, p. 971.

Distribution.—Cochin-China.

Gagrella indochinensis Rwr.

1927. *Gagrella indochinensis*, Roewer, *Boll. Labor. Zool. Agrar. Portici*, XX, p. 208.

Distribution.—Khuoi-Tao, Tonkin.

***Gagrella metallica**, sp. nov.

Male : length of body 5, 1st to 4th femora 8, 18, 7.5, 11.5, 1st to 4th legs 46, 88, 44, 58 mm.

Female : length of body 6.5, 1st to 4th femora 9, 18, 8.5, 13, 1st to 4th legs 44, 92, 42, 58 mm.

Surface of carapace, scutum and free tergites of abdomen smooth and brilliant ; ocular tubercle high, slightly inclined, unarmed, smooth ; scutum with one median sharp and smooth spine on 2nd area ; free sternites of abdomen opaque, smooth ; surface of 1st to 4th coxae coarsely granulated, edge of small humps of marginal rows straight, blunted ; 1st article of chelicerae dorsally smooth. Palps : femur ventrally with a lateral longitudinal row of small pointed teeth and ventro-medially with an equal longitudinal, but shorter basal row of small blunt teeth, patella dorsally scattered with small teeth, tibia about four times as long as thick, entirely unarmed, tarsus unarmed, but in male with a ventral longitudinal row of small teeth. 1st to 4th legs : trochanters entirely smooth, femora sparsely covered with scattered small teeth ; number of noduli on 1st to 4th femora 0-1-0-0.

Colour of carapace blackish-brown, around the shining black ocular tubercle appearing as a pale yellowish triangle, the frontally directed point of which is traversed by a narrow black line. The two thoracic tergites and scutum with its spine and also the free tergites of abdomen very shining violet-blue ; scutum on each side with a narrow testaceous longitudinal spot, which sometimes is continued on the free tergites and often is more distinct in the female than in the male. The free sternites of abdomen and 1st to 4th coxae dark brown, more or less covered with white secretions of skin. Chelicerae distinctly light yellow, the supracheliceral lamellae black in contrast. Palps light yellow, femur brownish. Legs : trochanters and basal buttons of femora brilliant black, other limbs light yellow, 1st to 4th tibiae distally with whitish rings.

Distribution.—Cherrapunji, (2 males, 1 female, Kemp *leg.*, Types; 1 female, 2 males, cotypes—Government Museum, Madras) ; Shillong (1 female, Kemp *leg.*, Indian Museum, Calcutta ; 1 male, Government Museum, Madras) ; Tura, Garo Hills (1 female *pullus*, Indian Museum, Calcutta) ; Assam.

Type-specimens.—No. $\frac{1024}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta,

***Gagrella viridula*, sp. nov.**

Male: length of body 4, 1st to 4th femora 11, 21, 10, 14, 1st to 4th legs 48, 101, 44, 67 mm.

Female: length of body 5.5, 1st to 4th femora 9, 17, 8, 12, 1st to 4th legs 41, 87, 36, 56 mm.

Surface of carapace, scutum, free tergites and sternites of abdomen and of 1st to 4th coxae smooth and polished; ocular tubercle smooth, but with 1—3 pointed small teeth above and frontally on each side of the median furrow; scutum with a slender smooth spine. Edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae dorsally with 3—4 granules. Palps almost unarmed; femur only ventro-basally with about 10 blunt granules, patella dorsally with about 10 scattered, small, pointed teeth, tibia about $4\frac{1}{2}$ times longer than thick, unarmed; tarsus unarmed, but in the male with a ventro-medial row of very small teeth. Legs long, thin; 1st to 4th trochanters on each side with a few teeth, rest of the legs unarmed; number of the noduli on 1st to 4th femora 0-1-0-0.

Colour of the body dorsally and ventrally ferruginous, with a brilliant greenish but not metallic lustre on the carapace, on the free thoracic tergite, on the scutum and on the free tergites and sternites of the abdomen. Ocular tubercle pale yellowish with blackish rings around the eyes. Surface of the carapace frontally and laterally covered with white secretions; 1st to 4th coxae yellowish-brown, also covered with white secretions on the marginal rows. Chelicerae and palps pale yellowish, the latter somewhat greenish dorsally. Legs with their trochanters uniform brown.

Distribution.—Ootacamund, alt. 6,700—8,900 feet (1 male, 1 female—Gravely *leg.*), Nilgiris; Komolapara (1 female—cotype, Indian Museum, Calcutta); Parambikulam, alt. 1,700—3,000 feet (2 *pulli*, females); Cochin State.

Type-specimens.—No. $\frac{1022}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

***Gagrella palnica*, sp. nov.**

(Fig. 3).

Length of body 5, 1st to 4th femora 8, 13, 7, 9; 1st to 4th legs 32, 55, 32, 44 mm.

Surface of carapace, scutum and free tergites and sternites of abdomen smooth, not granulated; 2nd area of scutum with one median slender

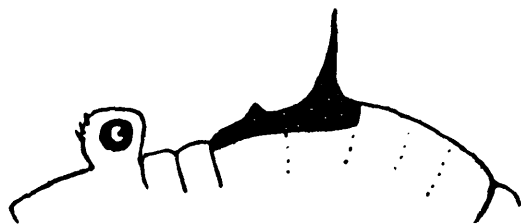


FIG. 3.—*Gagrella palnica*, sp. nov.—Left lateral view of the dorsum of the body.

and short spine, 1st area of scutum with a low and small median hump. Ocular tubercle on each side frontally with 3-4 granules. Surface of

1st to 4th coxae smooth ; edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae dorsally smooth. Palps : trochanter to tarsus wholly unarmed, smooth ; patella with an inner apical apophysis. Legs in femoral region sparingly denticulated ; number of the noduli on 1st to 4th femora 0-1-0-0.

Colour of the body and ocular tubercle pale yellowish ; carapace, two thoracic tergites and scutum of each side metallic-green, spine of scutum blackish-brown with a median longitudinal stripe of the same colour running from this spine to the frontal margin of scutum. 1st to 4th coxae ferruginous ; 1st to 4th trochanters and the basal buttons of the femora blackish-brown, rest of the legs, palps and chelicerae pale yellowish.

Distribution.—Kodaikanal, Palni Hills, South India (4 females, Kemp leg.—Type and cotypes).

Type-specimen.—No. $\frac{1061}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Gagrella parva, sp. nov.

Length of body, 3, 1st to 4th femora 4.5, 7.5, 4.5, 6, 1st to 4th legs 20, 38, 20, 26 mm.

Surface of carapace, scutum and free tergites of abdomen densely granulated ; ocular tubercle with a row of 6—9 teeth around each eye. Scutum with two median spines, one on each of 1st and 2nd areas. Free sternites of abdomen and surface of 1st to 4th coxae smooth, not granulated ; edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae dorsally granulated. Palps : femur dorsally and ventrally covered with small teeth, patella dorsally with a few teeth and apically with a medial apophysis ; tibia $5\frac{1}{2}$ times longer than broad, wholly unarmed, tarsus of male with a ventral longitudinal row of small granules. Legs : 1st to 4th trochanters and femora covered with small teeth ; number of noduli on 1st to 4th femora 0-1-0-0.

Colour of body dorsally and ventrally ferruginous, scutum in the middle somewhat darker around the two black spines, but without a distinct band, or the entire scutum uniform blackish-brown ; carapace and coxae partly covered with greyish secretions ; chelicerae and palps ferruginous, tibia and tarsus lighter yellow ; legs uniformly ferruginous.

Distribution.—Heho River, Yawnghe State, alt. ca. 3,500 feet, S. Shan States, Burma, (males and females, Gravely leg.—Types Indian Museum, Calcutta ; cotypes in Roewer collection).

Type-specimens.—No. $\frac{1034}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Gagrella andamana, sp. nov.

Male : length of body 5, 1st to 4th femora 7, 13, 7, 9, 1st to 4th legs 32, 54, 30, 40 mm.

Female : length of body 6, 1st to 4th femora 7, 11, 6, 8, 1st to 4th legs 27, 38, 25, 35 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly granulated; ocular tubercle on each side above and below the eyes finely toothed; scutum with two median spines, one on each of the 1st and 2nd areas. Free sternites of abdomen smooth, not granulated; surface of 1st to 4th coxae coarsely granulated; edge of small humps of marginal rows of coxae with 5 small teeth. 1st article of chelicerae dorsally with 2—5 small teeth. Palps: trochanter and femur strongly toothed, patella dorsally toothed, medially without an apophysis, tibia dorsally toothed, $2\frac{1}{2}$ times longer than broad, tarsus in the male with a ventral longitudinal row of small granules. Legs: 1st to 4th femora finely toothed; number of noduli on 1st to 4th femora 0-1-0-0.

Colour of the body light-ferruginous, carapace and scutum somewhat mottled with yellow on each side and behind the two darker spines on the scutum; ocular tubercle pale yellow, its median furrow darker, brown. Free sternites of abdomen pale yellow; 1st to 4th coxae darker brown, each with a pale yellow spot in the middle, and covered with white secretions. Chelicerae ferruginous, palps paler, but femur ventrally and the whole patella and tibia darker brown at their bases. Legs darker brown, femora and tibiae with several pale yellow ring-spots.

Distribution.—Port Blair, Andamans, (7 males, 3 females, 5 *pulli*; Kemp *leg.*, Type, Ind. Mus., Calcutta; cotype in Roewer collection).

Type-specimens.—No. $\frac{1042}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Scotomenia Thor.

1889. *Scotomenia*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 664.

1923. *Scotomenia*, Roewer, *Weberknechte der Erde*, p. 1029.

Only one species of this genus is found in the area under consideration.

Scotomenia cetrata Thor.

1889. *Scotomenia cetrata*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 664.

1923. *Scotomenia cetrata*, Roewer, *Weberknechte der Erde*, p. 1029.

Distribution.—Katha, Irawaddy, Schwegu, Teinzo, Burma.

Marthana Thor.

1891. *Marthana*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXX, p. 719.

1923. *Marthana*, Roewer, *Weberknechte der Erde*, p. 994.

Only one of the 5 known species of the genus is probably found in Malacca.

Marthana cornifer Lom.

1906. *Marthana cornifer*, Loman, *Mitt. Mus. Hamburg*, XXIII, p. 103.

1923. *Marthana cornifer*, Roewer, *Weberknechte der Erde*, p. 995.

Distribution.—Malacca (?)

Palniella, gen. nov.

Ocular tubercle as long as broad, as high, without large thorns or teeth. Scutum with a median blunt hump (in the male smaller than in the female) on the 2nd area only. Legs long and thin; 1st and 3rd femora $1\frac{1}{2}$ to 2 times longer than the body; 2nd femur more than twice the length of the body; number of noduli on 1st to 4th femora 0-1-0-0.

Palniella virididorsata, sp. nov.

(Fig. 4).

Length of body 4, 1st to 4th femora 7, 10, 7, 9, 1st to 4th legs 28, 49, 28, 38 mm.

Entire surface of body both dorsally and ventrally uniformly and very finely granulated; ocular tubercle wholly smooth, with a distinct longitudinal furrow; 2nd area of scutum with one median bluntly rounded hump (fig. 4). Surface of 1st to 4th coxae smooth; edge of small humps of the marginal rows of coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps wholly unarmed and smooth, except for the femur, which has ventro-basally 3—4 teeth and dorsally at the apex 1 small tooth; patella with an apophysis on the medial corner; tibia 4 times longer than broad; tarsus of male with a longitudinal row of small granules. Legs: 1st to 4th trochanters and femora slightly toothed; number of noduli on 1st to 4th femora 0-1-0-0.



FIG. 4.—*Palniella virididorsata*, gen. et sp. nov.—Left lateral view of the dorsum of the body.

Colour of the body and ocular tubercle yellow, rings of the eyes broadly black; scutum with a median, broad, blackish-green stripe, in the middle of which lies the brilliant blackish-brown hump of the 2nd area; the stripe reaches from the anterior border of the scutum to the anal operculum, and on each side of this stripe the scutum has four transverse rows of fine brown points. 1st to 4th coxae darker brown, Chelicerae and palps and legs uniformly ferruginous.

Distribution.—Kodaikanal, Palni Hills, S. India (1 male, 1 female, types;—Gravely *leg.*); Chingleput District, Kambakkam Hills (several males, cotypes in Madras Museum and Roewer collection—Gravely *leg.*); Kodaikanal (1 male, Gravely *leg.*), Kukkal (1 female, Kemp *leg.*); Palni Hills, Southern India.

Type-specimens.—No. $\frac{1046}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Dentobunus Rwr.

1910. *Dentobunus*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 31.

1923. *Dentobunus*, Roewer, *Weberknechte der Erde*, p. 940.

Key to the Continental species of *Dentobunus*.

1. Ocular tubercle, in addition to the two large frontal teeth, armed above with small teeth on each side of the longitudinal furrow 2
 Ocular tubercle smooth except for the two large frontal teeth 4
2. Ocular tubercle on each side of the longitudinal furrow above with one large and one small tooth behind it (Malacca) *D. quadridentatus*, p. 130.
 Ocular tubercle, besides the two large frontal teeth on each side of the longitudinal furrow, above with numerous small teeth 3
3. Genital operculum with a black median band; 2nd coxa basally black; the two large teeth of ocular tubercle bifurcate at their apices (South-eastern Asia) *D. ramicornis*, p. 129.
 Genital operculum and 1st to 4th coxae uniform pale yellowish; the two large teeth of ocular tubercle not bifurcate at their apices (Andamans) *D. imperator*, p. 130.
4. 1st to 4th coxae black, brown or pale-yellowish¹ 5
 1st and 3rd coxae white, 2nd coxa deep-black; the metallic violet-blue to shining black scutum with spots of white secretions (Burma) *D. magnificus*, p. 130.
5. 1st to 4th coxae brown or black¹ 6
 1st to 4th coxae pale-yellowish 8
6. Palps: femur, patella and tibia toothed, femur and patella black, tibia and tarsus pale-yellowish (Burma) *D. chaetopus*, p. 129.
 Palps: femur only hirsute, all articles pale-yellowish 7
7. Abdomen dorsally pale-yellowish with a black median band from the thorns of the scutum to anal operculum (Nicobars) *D. dentatus*, p. 129.
 Abdomen dorsally dark-brown, scutum with yellowish lateral margins and on each side of the two thorns with a large spot of white secretions; with two parallel submedian rows of yellowish spots (not covered with secretions) on the hinder part of abdomen (Malacca) *D. insignitus*, p. 130.
8. 1st to 4th trochanters and bases of femora black in contrast to the pale-yellowish coxae (Malacca) *D. acuaris*, p. 130.
 1st to 4th trochanters and coxae pale-yellowish (Burma; Malacca) *D. bicorniger*, p. 130.

Dentobunus ramicornis* (Thor.)**1894. *Gagrella ramicornis*, Thorell, *Bih. Svensk. Ak.* XX, Nr. 4, p. 16.1923. *Dentobunus ramicornis*, Roewer, *Weberknechte der Erde*, p. 611.*Distribution*.—South-East-Asia (exact locality not known).Dentobunus chaetopus* (Thor.)**1889. *Gagrella chaetopus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 631.1923. *Dentobunus chaetopus*, Roewer, *Weberknechte der Erde*, p. 942.*Distribution*.—Bhamo, Schwegu, Moulmein, Burma.***Dentobunus dentatus* (With).**1903. *Gagrella dentatus*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 488.1923. *Dentobunus dentatus*, Roewer, *Weberknechte der Erde*, p. 942.*Distribution*.—Nicobars.¹ The secretions are not taken into consideration in defining the colouration.

Dentobunus imperator (With).

1903. *Gagrella imperator*, and *imperator-dentata*, With, Journ. Linn. Soc., Zoo', XXVIII, p. 501.

1923. *Dentobunus imperator*, Roewer, *Weberknechte der Erde*, p. 943.

Distribution.—Andamans.

Dentobunus insignitus Rwr.

1910. *Dentobunus insignitus*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 37.

1923. *Dentobunus insignitus*, Roewer, *Weberknechte der Erde*, p. 943.

Distribution.—Paulu Penang, Malacca.

Dentobunus quadridentatus Rwr.

1923. *Dentobunus quadridentatus*, Roewer, *Weberknechte der Erde*, p. 944.

Distribution.—Singapore ; Malacca.

Dentobunus acuarius (Thor.)

1891. *Gagrella acuarius*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXX, p. 695.

1923. *Dentobunus acuarius*, Roewer, *Weberknechte der Erde*, p. 944.

Distribution.—Malacca (also Sumatra and Java).

Dentobunus bicorniger Sim.

1901. *Gagrella bicornigera*, Simon, *Proc. Zool. Soc., London*, pt. ii, p. 81.

1923. *Dentobunus bicorniger*, Roewer, *Weberknechte der Erde*, p. 946.

Distribution.—Legoh, Lower Burma ; and Malacca.

Dentobunus magnificus Rwr.

1912. *Dentobunus magnificus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 33.

1923. *Dentobunus magnificus*, Roewer, *Weberknechte der Erde*, p. 947.

Distribution.—Dawna Hills, Burma.

Melanopula, gen. nov.

Ocular tubercle low, broader than high, smooth or granulated, without large spines or teeth. Scutum of abdomen with 1 or 2 median spines. Legs comparatively short and stout : 1st and 3rd femora shorter or as long as the body ; 2nd femur less than twice the length of the body ; number of noduli on 1st to 4th femur 0-2-0-0.

*** Melanopula biceps, sp. nov.**

Length of body 6.5 (male), 7 (female), 1st to 4th femora 6.5, 12, 6.5, 9, 1st to 4th legs 26, 51, 26, 33 mm.

Surface of carapace, scutum and free tergites and sternites of abdomen shagreened, not granulated ; ocular tubercle smooth ; scutum with four distinctly and sharply marked transverse furrows, 1st and 2nd areas of scutum, each with one slender median spine. Surface of 1st to 4th coxae uniformly and coarsely granulated, edge of small humps of the marginal rows of coxae straightly blunted. 1st article of chelicerae, dorsally smooth. Palps : femur ventro-basally with a few teeth ;

tibia and tarsus unarmed; patella without an apophysis, dorsally and medially with a few teeth, tibia $2\frac{1}{2}$ times longer than broad. Legs: 1st to 4th femora finely toothed and spaceously hirsute; number of noduli on 1st to 4th femora 0-2-0-0.

Colour of the body dark brown, middle of the front of carapace with a bifurcated yellowish line; 1st and 2nd areas of the scutum on each side of the two spines with an indistinct yellowish longitudinal line marking off a faint dark median saddle. 1st to 4th coxae sparingly covered with greyish secretions. Chelicerae and palps yellowish, legs black or blackish-brown; 1st to 4th tibiae with one pale apical ring.

Distribution.—Birch Hill, alt. 6,000—7,000 feet, Darjeeling District (1 male, 5 females, types and cotypes, Ind. Mus., Calcutta).

Type-specimens.—No. $\frac{1030}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Metagagrella Rwr.

1910. *Metagagrella*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 95.

1923. *Metagagrella*, Roewer, *Weberknechte der Erde*, p. 998.

Key to the Continental species of the genus *Metagagrella*.

- | | |
|---|--------------------------------|
| 1. Humps of marginal rows of 1st to 4th coxae straightly blunted | 2 |
| Humps of marginal rows of 1st to 4th coxae three-pointed | 4 |
| 2. Chelicerae wholly pale-yellowish (Tonkin) .. | <i>M. silvestrii</i> , p. 132. |
| Chelicerae black | 3 |
| 3. Abdomen dorsally uniform black (Burma) .. | <i>M. nigra</i> , p. 132. |
| Abdomen dorsally black, but on each side with a longitudinal row of large ferruginous spots (Burma) | <i>M. biseriata</i> , p. 132. |
| 4. Scutum with two median thorns, on 1st and 2nd areas | <i>M. minax</i> , p. 131. |
| Scutum only with one median thorn on 2nd area only | 5 |
| 5. Ocular tubercle wholly smooth above (Malacca) .. | <i>M. pustulata</i> , p. 131. |
| Ocular tubercle covered with a few teeth above (Burma) | <i>M. sordidata</i> , p. 131. |

Metagagrella sordidata (Thor.)

1889. *Gagrella sordidata*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 634.

1923. *Metagagrella sordidata*, Roewer, *Weberknechte der Erde*, p. 998.

Distribution.—Mooleyit, Burma.

Metagagrella minax (Thor.)

1889. *Gagrella minax*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 638.

1923. *Metagagrella minax*, Roewer, *Weberknechte der Erde*, p. 999.

Distribution.—Meetan, Burma.

Metagagrella pustulata Rwr.

1910. *Metagagrella pustulata*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 97.

1923. *Metagagrella pustulata*, Roewer, *Weberknechte der Erde*, p. 999.

Distribution.—Malacca.

Metagagrella nigra Rwr.1912. *Metagagrella nigra*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 36.1923. *Metagagrella nigra*, Roewer, *Weberknechte der Erde*, p. 1001.*Distribution*.—Dawna Hills, Burma.**Metagagrella biseriata Rwr.**1912. *Metagagrella biseriata*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 37.1923. *Metagagrella biseriata*, Roewer, *Weberknechte der Erde*, p. 1001.*Distribution*.—Dawna Hills, Burma.**Metagagrella silvestrii Rwr.**1927. *Metagagrella silvestrii*, Roewer, *Boll. Labor. Zool. Agrar. Portici.*, XX, p. 209.*Distribution*.—Toccu-Concession, Tonkin.**Strandia Rwr.**1910. *Strandia*, Roewer, *Ent. Rundsch.*, XXVII, p. 177.1923. *Strandia*, Roewer, *Weberknechte der Erde*, p. 1008.

The species of this genus are restricted to South India and Ceylon.

Key to the species of the genus *Strandia*.

- | | |
|--|----------------------------------|
| 1. Patella of palps with one median apophysis .. | 2 |
| Patella of palps without a median apophysis .. | 5 |
| 2. 1st article of chelicerae with some small teeth dorsally | 3 |
| 1st article of chelicerae smooth dorsally .. | 4 |
| 3. Sternites of abdomen smooth; scutum reddish-brown with a darker median band (Deccan) .. | <i>S. triangularis</i> , p. 133. |
| Sternites of abdomen granulated; scutum golden yellowish with the median black-brown thorn (Palni Hills, Cochin) | <i>S. aurantiaca</i> , p. 133. |
| 4. Body and chelicerae reddish-brown; palps darker brown, but its tibia and tarsus pale-yellowish (Deccan) | <i>S. kanaria</i> , p. 134. |
| Body black, chelicerae dark-brown, palps black, but its tibia in the apical half and the entire tarsus pale-yellow (Palni Hills) | <i>S. atra</i> , p. 134. |
| 5. Chelicerae black, scutum with two median thorns (Ceylon) | <i>S. biseriata</i> , p. 135. |
| Chelicerae pale-yellowish, scutum with one median thorn only | 6 |
| 6. Ocular tubercle toothed above (Ceylon) .. | <i>S. ceylonensis</i> , p. 135. |
| Ocular tubercle smooth above | 7 |
| 7. 1st article of chelicerae dorsally with 2-3 small teeth | 8 |
| 1st article of chelicerae dorsally smooth .. | 9 |
| 8. Abdomen dorsally uniform black-brown (Deccan) .. | <i>S. gracilis</i> , p. 133. |
| Scutum on each side frontally with one golden-yellowish spot (Deccan) | <i>S. similis</i> , p. 133. |
| 9. Sternites of abdomen not granulated (Ceylon) .. | <i>S. bicolor</i> , p. 135. |
| Sternites of abdomen each with a row of granules | 10 |
| 10. Scutum with a dark-brown median band (Deccan) | <i>S. maindroni</i> , p. 133. |
| Scutum uniform reddish-ferruginous, without a median band (Ceylon) | <i>S. rubra</i> , p. 135. |

Strandia maindroni* (Sim.)**1897. *Gagrella maindroni*, Simon, *Bull. Mus. Paris*, III, p. 296.1923. *Strandia maindroni*, Roewer, *Weberknechte der Erde*, p. 1009.*Distribution*.—Matheran, Mahabaleshwar, Bangalore, India. *Strandia triangularis* (With).**1903. *Gagrella triangularis*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 499.1923. *Strandia triangularis*, Roewer, *Weberknechte der Erde*, p. 1009.

The species is represented in the present collection from :—Chalakudi (2 males, 3 females, 2 *pulli*—Gravely *leg.*) ; Forest Tramway (3 males, 3 females), Cochin State ; Nallamalais (9 males) ; Bangalore, Mysore (4 males, 6 females—Gravely *leg.*) ; Ootacamund, Nilgiris (1 male, 1 female) ; Kollara Kara (3 males, 1 female—Pillai *leg.*) ; Kodaikanal, Palni Hills (2 males, 1 female—Gravely *leg.*) ; South India.

Distribution.—Vellore (near Madras) ; Western Ghats, Satara District, Bombay ; Peninsular India.

Strandia gracilis* Rwr.**1910. *Maindronia gracilis*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 107.1923. *Strandia gracilis*, Roewer, *Weberknechte der Erde*, p. 1010.*Distribution*.—Pundaloya, South India.Strandia similis* Rwr.**1911. *Strandia similis*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 168.1923. *Strandia similis*, Roewer, *Weberknechte der Erde*, p. 1911.

Distribution.—Bangalore, Western Ghats ; Travancore, Maddathoray, Dhoni Forest ; South India.

*** *Strandia aurantiaca*, sp. nov.**

Male : Length of body 3·5, 1st to 4th femora 9, 18, 8, 12, 1st to 4th legs 37, 66, 34, 50 mm.

Female : Length of body 4·5, 1st to 4th femora 8, 15, 8, 12, 1st to 4th legs 37, 61, 33, 51 mm.

Body dorsally and ventrally uniformly and coarsely granulated ; ocular tubercle on each side of the median longitudinal furrow with 3-4 scattered teeth dorsally, but basally on each side and especially in front toothed ; scutum only on 2nd area with one slender and smooth spine ; free sternites of abdomen finely granulated ; surface of 1st to 4th coxae more coarsely granulated, edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae with 2—4 fine teeth dorsally. Palps: trochanter ventrally toothed, femur ventrally densely covered with fine teeth, ventro-medially with a short basal row of 6-7 blunt humps and dorso-apically covered with small teeth, patella dorsally and laterally toothed, with one small medio-apical apophysis, tibia 3 times longer than broad, toothed except in medio-ventral area, where it is smooth ; tarsus unarmed, but in male with a ventral longitudinal row of very small teeth. Legs : trochanters and femora toothed ; number of noduli on 1st to 4th femora 0-3-0-0.

Colour of the body golden-yellow; dorsally ocular tubercle with black rings around the eyes; spine of the scutum and its wide base blackish-brown. Free sternites of the abdomen and 1st to 4th coxae ferruginous, the latter more or less covered with whitish secretions. Chelicerae, palps, and legs uniformly ferruginous.

Distribution.—Trichur (3 males, 1 female, 2 *pulli*—Gravely *leg.* type-specimens); Chalakudi (2 males, 6 females, 6 *pulli*—Gravely *leg.*; cotypes); 1 female without definite locality; Cochin State; Kodaikanal, Palni Hills, (1 male, 2 females); Madras (2 males, 4 females); S. India.

Type-specimens.—No. $\frac{1018}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

*** *Strandia kanaria*, sp. nov.**

Length of body 6 (male), 8 (female), 1st to 4th femora 11, 18, 11, 14, 1st to 4th legs, ?, ?, 52, 66 mm.

Surface of carapace, scutum and free tergites of abdomen densely and coarsely granulated; ocular tubercle on each side of the smooth median furrow dorsally with 3-4 small teeth and basally under the eyes distinctly toothed; only 2nd area of scutum with one median spine. Free sternites of abdomen covered with coarse granules; surface of 1st to 4th coxae coarsely granulated, edge of small humps of the marginal rows of 1st to 4th coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps: femur densely and coarsely toothed ventrally, patella densely toothed medially and dorsally, with a short medio-apical apophysis, tibia $3\frac{1}{2}$ times longer than broad, tarsus in female unarmed, in male with a ventral longitudinal row of very small teeth. Legs: femora toothed; number of noduli on 1st to 4th femora 0-3-0-0.

Colour of the body dark brown, 1st to 4th coxae covered with white secretions. Chelicerae reddish-brown, palps dark-brown, but tibia and tarsus paler, ferruginous; legs dark-brown.

Distribution.—Talewadi near Castle Rock, N. Kanara District (1 male, 1 female—Kemp *leg.*; Types); Western Ghats.

Type-specimens.—No. $\frac{1049}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

*** *Strandia atra*, sp. nov.**

Male: length of body 4.5, 1st to 4th femora 10, 15, 9, 13, 1st to 4th legs, 39, 79, 44, 58 mm.

Female: length of body 7, 1st to 4th femora 9, 15, 9.5, 12, 1st to 4th legs 40, 78, 38, 52 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly granulated; ocular tubercle smooth, but basally under the eyes on each side with 3-4 teeth; only 2nd area of scutum with one slender, median spine. Free sternites of abdomen each with one distinct row of coarse granules; surface of 1st to 4th coxae densely and coarsely granulated, edge of small humps of the marginal rows of coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps: femur densely toothed ventrally, patella densely toothed dorsally, with a short medio-apical

apophysis, tibia 3 times longer than broad ; in male unarmed, in female ventrally toothed, tarsus unarmed, but in male with a ventral longitudinal row of small teeth. Legs : femora toothed ; number of noduli on 1st to 4th femora 0-3-0-0.

Colour of body black, only the frontal middle of carapace with a narrow pale yellow stripe ; carapace and scutum uniformly covered with white secretions ; 1st to 4th coxae densely covered with such secretions. Chelicerae dark-brown, palps black, but tibia in the apical half and the whole tarsus pale yellow.

Distribution.—Law's Ghat Road, Palni Hills (4 males, 3 females—Gravely *leg.* ; Types) ; Peninsular India.

Type-specimens.—No. $\frac{1050}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

**Strandia ceylonensis* (Karsch).

1891. *Gagrella ceylonensis*, Karsch, *Berlin Ent. Zeitz.*, XXXVI, p. 308.

1923. *Strandia ceylonensis*, Roewer, *Weberknechte der Erde*, p. 1011.

The species is represented in the collection before me from Peradeniya, Ceylon (1 female—Fletcher *leg.*).

Distribution.—Pusselawa, Nalanda, Peradeniya, Hakgala, Ceylon.

Strandia rubra (Rwr.)

1910. *Maindronia rubra*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 109.

1923. *Strandia rubra*, Roewer, *Weberknechte der Erde*, p. 1011.

Distribution.—Ceylon (exact locality not known).

Strandia biseriata Rwr.

1912. *Strandia biseriata*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 38.

1923. *Strandia biseriata*, Roewer, *Weberknechte der Erde*, p. 1012.

Distribution.—Kandy, Ceylon.

Strandia bicolor Rwr.

1915. *Strandia bicolor*, Roewer, *Arch. Naturg.*, LXXXI, fasc. 3, p. 151.

1923. *Strandia bicolor*, Roewer, *Weberknechte der Erde*, p. 1012.

Distribution.—Nuwara, Ceylon.

Crassicippus Rwr.

1910. *Crassicippus*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 100.

1923. *Crassicippus*, Roewer, *Weberknechte der Erde*, p. 1004.

Key to the Continental species of the genus *Crassicippus*.

- | | | |
|--|--------------------------------|---|
| 1. Ocular tubercle dorsally on each side with two teeth
(Malacca, Burma) | <i>C. nigerrimus</i> , p. 136. | |
| Ocular tubercle wholly smooth dorsally .. | | 2 |
| 2. Scutum black, with yellow or white secretions .. | | 3 |
| Scutum with two or four spots, but these not covered
with secretions (secretions may be present in
other manner) | | 4 |

3. Sternites of abdomen each with a row of granules ;
carapace narrowly margined with white
secretions (Malacca) *C. semigranosus*, p. 136.
- Sternites of abdomen without rows of granules ;
carapace on each side covered with a "0" of
white secretions (Malacca) *C. figuratus*, p. 136.
4. Scutum with a lateral yellow marginal band
(Assam) *C. signatus*, p. 136.
- Scutum with four yellowish longitudinal bands 5
5. 1st article of chelicerae dorsally with one small
tooth or wholly smooth (Tavoy) *C. quadrivittatus*, p. 136.
- 1st article of chelicerae dorsally densely toothed
(Burma) *C. speciosus*, p. 136.

Crassicippus semigranosus (Sim.)

1901. *Gagrella semigranosa*, Simon, *Proc. Zool. Soc. London*, II, p. 83.

1923. *Crassicippus semigranosus*, Roewer, *Weberknechte der Erde*, p. 1005.

Distribution.—Bukit Besar, Jalor ; Gedong, Perak.

Crassicippus nigerrimus Rwr.

1910. *Crassicippus nigerrimus*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4,
p. 102.

1923. *Crassicippus nigerrimus*, Roewer, *Weberknechte der Erde*, p. 1005.

Distribution.—Malacca ; Dawna Hills, Burma.

Crassicippus figuratus Rwr.

1923. *Crassicippus figuratus*, Roewer, *Weberknechte der Erde*, p. 1006.

Distribution.—Singapore ; Malacca.

Crassicippus quadrivittatus (Sim.)

1887. *Gagrella quadrivittata*, Simon, *Journ. Asiat. Soc. Bengal*, XXXVIII,
p. 214.

1923. *Crassicippus quadrivittatus*, Roewer, *Weberknechte der Erde*, p. 1006.

Distribution.—Tavoy, Burma.

Crassicippus signatus (Stol.)

1869. *Gagrella signata*, Stoliczka, *Journ. Asiat. Soc. Bengal*, XXXVIII, p. 214

1923. *Crassicippus signatus*, Roewer, *Weberknechte der Erde*, p. 1007.

Distribution.—Assam.

Crassicippus speciosus Rwr.

1912. *Crassicippus speciosus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 46.

1923. *Crassicippus speciosus*, Roewer, *Weberknechte der Erde*, p. 1008.

Distribution.—Dawna Hills, Burma.

Aurivilliola Rwr.

1910. *Aurivilliola*, Roewer, *Ent. Rundsch*, XXVII, p. 177.

1923. *Aurivilliola*, Roewer, *Weberknechte der Erde*, p. 1002.

Key to the Continental species of the genus *Aurivilliola*.

- | | | | |
|---|-------|---------------------------------|---|
| 1. Body dorsally and ventrally hirsute (Burma) | .. | <i>A. hirsuta</i> , p. 137. | |
| Body not hirsute | | | 2 |
| 2. 1st article of chelicerae dorsally smooth | .. | | 3 |
| 1st article of chelicerae dorsally toothed | .. | | 4 |
| 3. Ocular tubercle wholly smooth; scutum only with one median thorn (Palni Hills) | | <i>A. nigripalpis</i> , p. 138. | |
| Ocular tubercle toothed above; scutum with two median thorns (Nilgiris) | | <i>A. bispinifera</i> , p. 138. | |
| 4. Patella of palps with a median apophysis (Deccan) | | <i>A. palpalis</i> , p. 137. | |
| Patella of palps without a median apophysis | .. | | 5 |
| 5. Scutum with two median thorns (Indo-China) | .. | <i>A. annamensis</i> , p. 137. | |
| Scutum with one median thorn only (Shan States) | | <i>A. shanica</i> , p. 137. | |

Aurivilliola hirsuta* Rwr.**1912. *Aurivilliola hirsuta*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 47.1923. *Aurivilliola hirsuta*, Roewer, *Weberknechte der Erde*, p. 1003.*Distribution*.—Dawna Hills, Burma.Aurivilliola palpalis* Rwr.**1915. *Aurivilliola palpalis*, Roewer, *Arch. Naturg.*, LXXXI, fasc. 3, p. 147.1923. *Aurivilliola palpalis*, Roewer, *Weberknechte der Erde*, p. 1004.*Distribution*.—Bombay, Peninsular India.***Aurivilliola annamensis* Rwr.**1927. *Aurivilliola annamensis*, Roewer, *Boll. Labor. Zool. Agrar. Portici*, XX, p. 209.*Distribution*.—Annam (Vinh), Indo-China.*** *Aurivilliola shanica*, sp. nov.**

Male: length of body 5, 1st to 4th femora 5, 8, 5, 7, 1st to 4th legs 23, 42, 23, 30 mm.

Female: length of body 6.5, 1st to 4th femora 6.6, 9, 5, 7, 1st to 4th legs 24, 44, 24, 31 mm.

Surface of carapace, scutum and free tergites and sternites of abdomen densely and uniformly granulated; ocular tubercle on each side of the longitudinal furrow and also under the eyes finely toothed; scutum on the 2nd area only with one median spine. Surface of 1st to 4th coxae coarsely and uniformly granulated, edge of small humps of the marginal rows of coxae straightly blunted. 1st article of chelicerae dorsally toothed. Palps: femur ventrally and dorsally toothed, patella without an apophysis, dorsally and ventrally toothed, tibia twice as long as broad, ventro-basally toothed. Legs: 1st to 4th trochanters and femora sparsely toothed; number of noduli on 1st to 4th femora 0-3-0-0.

Colour of the body and ocular tubercle dark-brown, only the longitudinal furrow pale-yellow; 1st to 4th coxae and carapace covered with greyish-white secretions. Chelicerae dark-brown, palps dark-brown, but tibia and tarsus paler brown. Legs uniformly brown.

Distribution.—Yawnghwe State, Heho River, alt. 4,000 feet, S. Shan States (4 males, 12 females—Gravely leg.; Types and cotypes).

Type-specimens.—No. $\frac{1035}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

The diagnoses of the following two new species, which were collected by Dr. J. Carl (Geneva) in South India in 1926, will be published this year in *Revue Suisse de Zoologie* in a paper entitled "Reise von Dr. J. Carl."

***Aurivilliola bispinifera* Rwr.**

Distribution.—Peninsular India.

***Aurivilliola nigripalpis* Rwr.**

Distribution.—Upper and Lower Palni Hills, Peninsular India.

***Gagrellula* Rwr.**

1910. *Gagrellula*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 110.

1923. *Gagrellula*, Roewer, *Weberknechte der Erde*, p. 1012.

Key to the Continental species of the genus *Gagrellula*.

- | | |
|--|----------------------------------|
| 1. Patella of palps with a median apophysis .. | 2 |
| Patella of palps without a median apophysis .. | 3 |
| 2. Ocular tubercle on each side with only two teeth above; femur of palps wholly unarmed (India) | <i>G. crux</i> , p. 139. |
| Ocular tubercle on each side with a row of teeth above; femur of palps strongly toothed (Nilgiris) | <i>G. albilineata</i> , p. 139. |
| 3. Femur of palps wholly unarmed | 4 |
| Femur of palps ventrally toothed | 5 |
| 4. Body ferruginous, but with a greenish (not metallic) gloss (Deccan) | <i>G. virescens</i> , p. 139. |
| Body dorsally ferruginous to brown, with a darker median band (Ceylon) | <i>G. vittata</i> , p. 139. |
| 5. Ocular tubercle toothed above (sometimes only 1-2 teeth on each side) | 6 |
| Ocular tubercle smooth above | 7 |
| 6. 1st article of chelicerae dorsally smooth (Malacca) | <i>G. bimaculata</i> , p. 138. |
| 1st article of chelicerae dorsally toothed (Burma) | <i>G. bipunctata</i> , p. 139. |
| 7. Chelicerae black or black-brown | 8 |
| Chelicerae pale ferruginous or yellow | 10 |
| 8. 1st to 3rd trochanters black, each with a yellowish-white spot behind (Burma) | <i>G. melanotarsus</i> , p. 139. |
| 1st to 4th trochanters wholly black | 9 |
| 9. Scutum reddish-brown with a black median band (Burma) | <i>G. rufoscutum</i> , p. 139. |
| Scutum black with two parallel longitudinal rows of white spots of secretions (Palni Hills) | <i>G. saddlana</i> , p. 140. |
| 10. 1st article of chelicerae dorsally with 3-4 granules (Malacca) | <i>G. aurilimbata</i> , p. 139. |
| 1st article of chelicerae dorsally smooth (Deccan) | <i>G. unicolor</i> , p. 139. |

***Gagrellula bimaculata* Rwr.**

1911. *Gagrellula bimaculata*, Roewer, *Notes Leyden Mus.*, XXXIII, p. 256;

1923. *Gagrellula bimaculata*, Roewer, *Weberknechte der Erde*, p. 1017.

Distribution.—Kedah, Malacca,

Gagrellula aurilimbata Rwr.

1923. *Gagrellula aurilimbata*, Roewer, *Weberknechte der Erde*, p. 1017.

Distribution.—Singapore ; Malacca.

Gagrellula melanotarsus (Rwr.).

1911. *Gagrella melanotarsus*, Roewer, *Arch. Naturg.*, LXXVII, p. 166.

1923. *Gagrellula melanotarsus*, Roewer, *Weberknechte der Erde*, p. 1018.

Distribution.—Mudon (near Moulmein), Burma.

*** Gagrellula unicolor** Rwr.

1916. *Gagrellula unicolor*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 118.

1923. *Gagrellula unicolor*, Roewer, *Weberknechte der Erde*, p. 1020.

Distribution.—Ootacamund, Deccan. Represented in this collection from : Kavalai (2 females—Gravelly leg.) ; Parabikulam (7 females—Gravelly leg.) ; Cochin State ; Kambakkam Hill, alt. 200-800 feet (2 males—Gravelly leg.), Chingleput District, Madras Presidency.

Gagrellula virescens Rwr.

1910. *Gagrellula virescens*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 118.

1923. *Gagrellula virescens*, Roewer, *Weberknechte der Erde*, p. 1020.

Distribution.—Ootacamund, Peninsular India.

Gagrellula crux (With).

1903. *Gagrella crux*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 490.

1923. *Gagrellula crux*, Roewer, *Weberknechte der Erde*, p. 1020.

Distribution.—Punkabari, Assam.

Gagrellula bipunctata (Rwr.).

1912. *Gagrella bipunctata*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 42.

1923. *Gagrellula bipunctatula*, Roewer, *Weberknechte der Erde*, p. 1021.

Distribution.—Myawadi, Amherst District, Burma.

Gagrellula rufoscutum Rwr.

1912. *Gagrella rufoscutum*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 43.

1923. *Gagrellula rufoscutum*, Roewer, *Weberknechte der Erde*, p. 1021.

Distribution.—Dawna Hills, Burma.

Gagrellula vittata Rwr.

1912. *Gagrellula vittata*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 44.

1923. *Gagrellula vittata*, Roewer, *Weberknechte der Erde*, p. 1022.

Distribution.—Nuwara, Ceylon.

Gagrellula albilineata Rwr.

The diagnosis of this new species, which was collected by Dr. J. Carl of Geneva in the Nilgiris in 1926, will be published this year in *Revue Suisse de Zoologie* in a paper entitled "Reise von Dr. J. Carl. . ."

* *Gagrellula saddlana*, sp. nov.

(Fig. 5).

Male : length of body 4, 1st to 4th femora 7, 11, 6, 9, 1st to 4th legs 28, 48, 27, 37 mm.

Female : length of body 6, 1st to 4th femora 6, 10, 6, 8.5, 1st to 4th legs 28, 39, 26, 36 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly and coarsely granulated; ocular tubercle smooth all over; only 2nd area of scutum with a median spine. Free sternites of abdomen granulated; surface of 1st to 4th coxae sparingly and coarsely granulated, edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps: femur sparingly and

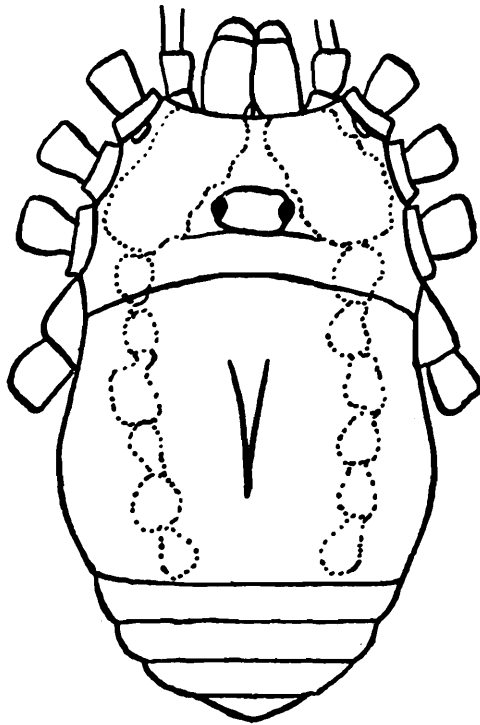


FIG. 5. — *Gagrellula saddlana*, sp. nov.—Dorsal view of the body without legs; the outlines of the white secretion-spots are dotted.

irregularly toothed ventrally, medially with a basal row of 6-8 coarse teeth, patella toothed, without apophysis, tibia $3\frac{1}{2}$ times longer than broad, smooth; tarsus unarmed, but in male with a ventral longitudinal row of small teeth. Legs: femora finely toothed; number of noduli on 1st to 4th femora 0-3-0-0.

Colour of the body black; carapace on each side of the black ocular tubercle covered with white secretions, less in the female than in the male. Scutum with a few ferruginous spots midway between the lateral margin and the median spine of the scutum, the spots are also covered with white secretions; the secretions are also present on the spaces between the four coxae and on the surface of the free sternites of the abdomen. Chelicerae and palps blackish-brown, only tarsus of palps paler brown in male or pale-ferruginous.

Distribution.—Palni Hills, Neutral Saddle, Peninsular India (3 males 2 females—Kemp *leg.*; Types).

Type-specimens.—No. $\frac{1049}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Paradentobunus Rwr.

1915. *Paradentobunus*, Roewer, *Arch. Naturg.*, LXXXI, fasc. 3, p. 150.

1923. *Paradentobunus*, Roewer, *Weberknechte der Erde*, p. 949.

Only a single species of this genus has so far been recorded from the area.

Paradentobunus aureomaculatus Rwr.

1915. *Paradentobunus aureomaculatus*, Roewer, *Arch. Naturg.*, LXXXI, fasc. 3, p. 150.

1923. *Paradentobunus aureomaculatus*, Roewer, *Weberknechte der Erde*, p. 949.

Distribution.—Darjeeling, Eastern Himalayas.

Marthanella Rwr.

1910. *Marthanella*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 129.

1923. *Marthanella*, Roewer, *Weberknechte der Erde*, p. 1030.

Only one of the three known species occurs within the limits of Continental India.

Marthanella ferruginea Rwr.

1911. *Marthanella ferruginea*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 165.

1923. *Marthanella ferruginea*, Roewer, *Weberknechte der Erde*, p. 1030.

Distribution.—Kakhyen Hills, Burma; also known from Java and Malacca.

Eugagrella Rwr.

1910. *Eugagrella*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 119.

1923. *Eugagrella*, Roewer, *Weberknechte der Erde*, p. 1023.

Key to the Continental species of the genus *Eugagrella*.

- | | |
|---|--------------------------------|
| 1. Femur of palps toothed | 2 |
| Femur of palps not toothed (Burma) | <i>E. rufescens</i> , p. 142. |
| 2. Ocular tubercle toothed basally under the eyes (Tenasserim) | <i>E. stoliczkae</i> , p. 142. |
| Ocular tubercle smooth basally under the eyes or only granulated similarly as the surface of carapace | 3 |
| 3. 1st article of chelicerae dorsally smooth (Deccan) | <i>E. barnesi</i> , p. 142. |
| 1st article of chelicerae dorsally granulated | 4 |
| 4. Scutum golden-yellowish or pale-brown with a darker brown median band (Burma) | <i>E. laticlavia</i> , p. 141. |
| Scutum black with white secretions | 5 |
| 5. Scutum with two S-like bands of white secretions (Palni Hills) | <i>E. palnica</i> , p. 142. |
| Scutum with irregular spots of white secretions (Nilgiris) | <i>E. carli</i> , p. 143. |

Eugagrella laticlavia (Thor.)

1889. *Gagrella laticlavia*, Thorell, *Ann. Mus. Civ. Stor. Nat. Hist. Genova*, XXVII, p. 641.

1923. *Eugagrella laticlavia*, Roewer, *Weberknechte der Erde*, p. 1026.

Distribution.—Mooleyit, Burma.

Eugagrella stoliczkae (With).

1903. *Gagrella stoliczkae*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 497.

1923. *Eugagrella stoliczkae*, Roewer, *Weberknechte der Erde*, p. 1027.

Distribution.—Tenasserim, Burma.

Eugagrella rufescens (Thor.)

1889. *Gagrella rufescens*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVIII, p. 645.

1923. *Eugagrella rufescens*, Roewer, *Weberknechte der Erde*, p. 1027.

Distribution.—Mooleyit, alt. 600-1900, Dawna Hills, Burma.

*** Eugagrella barnesi**, sp. nov.

Length of body 4, 1st to 4th femora 10, 15, 10, 13, 1st to 4th legs 42, 75, 43, 54 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly granulated; ocular tubercle wholly smooth; only 2nd area of scutum with one slender spine. Free sternites of abdomen each with a row of small granules; surface of 1st to 4th coxae very coarsely granulated, edge of small humps of marginal rows of 1st to 4th coxae straightly blunted. 1st article of the chelicerae dorsally smooth. Palps: femur, ventrally toothed, patella without an apophysis, dorsally with a few small and scattered teeth, tibia $3\frac{1}{2}$ times longer than broad, smooth, tarsus smooth, but ventrally with a longitudinal row of very small teeth. Legs: femora toothed, number of noduli on 1st to 4th femora 0-4-0-0.

Colour of body dorsally and ventrally and of ocular tubercle black, carapace covered thickly with white secretions around the ocular tubercle, scutum covered with some small spots of white secretions, margins of 1st to 4th coxae also covered with such secretions. Chelicerae blackish-brown, palps blackish-brown, but their tibiae in their apical halves and the entire tarsus pale yellow.

Distribution.—Netterikal Region, Kalakkad Forest, alt. 3000-5000 feet, Tinnevely District (1 male, 1 *pullus*—Barnes *leg.*; Type).

Type-specimen.—No. $\frac{1078}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

*** Eugagrella palnica**, sp. nov.

(Fig. 6).

Length of body 4, 1st to 4th femora 9, 17, 8.5, 12, 1st to 4th legs 42, 68, 40, 57 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly and coarsely granulated; ocular tubercle smooth all over, only 2nd area of scutum with one median spine. Free sternites of abdomen smooth; surface of 1st to 4th coxae sparsely and coarsely granulated, edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae dorsally with 3-4 small teeth. Palps: femur very sparsely scattered with small teeth ventrally, patella unarmed and without apophysis, tibia $2\frac{1}{2}$ times longer than wide, unarmed, tarsus unarmed,

but in male with a ventral longitudinal row of very small teeth. Legs : femora toothed ; number of noduli on 1st to 4th femora 0-4-0-0.

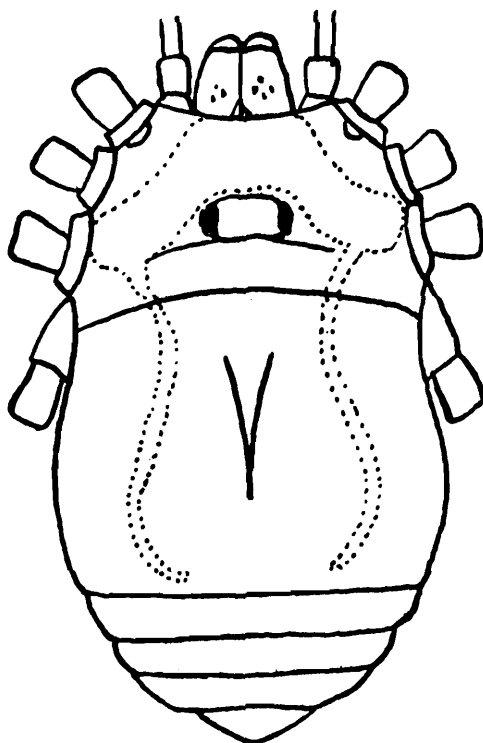


FIG. 6.—*Eugagrella palnica*, sp. nov.—Dorsal view of the body without legs ; the outlines of the white secretion-strips are dotted.

Colour of body black, carapace in front of the ocular tubercle with a broad median saddle of white secretions ; this saddle extends on each side of scutum to its posterior margin as a small but distinct S-shaped line of white secretions. 1st to 4th coxae and the free sternites of the abdomen covered with white secretions. Chelicerae black, palps black, but apical half of tibia and the whole tarsus pale yellow.

Distribution.—Palni Hills, Law's Ghat Road, Peninsular India (1 male—Gravely leg.).

Type-specimen.—No. $\frac{1079}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

***Eugagrella carli* Rwr.**

The diagnosis of this new species, which was collected by Dr. J. Carl (Geneva) in South India in 1926, will be published this year in *Revue Suisse de Zoologie*.

***Neogagrella* Rwr.**

1913. *Neogagrella*, Roewer, *Arch. Naturg.*, LXXIX, fasc. 10, p. 77.

1923. *Neogagrella*, Roewer, *Weberknechte der Erde*, p. 1032.

Only two species of this genus are known so far, one from Celebes and the second described below from Peninsular India.

*** *Neogagrella barnesi*, sp. nov.**

Length of body 6, 1st to 4th femora 7, 13, 7, 11, 1st to 4th legs 37, 68, 35, 51 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly granulated; ocular tubercle smooth or in front with 2-3 very small granules; only 2nd area of scutum with one slender vertical spine. Free sternites of abdomen smooth, not granulated; surface of the 1st to 4th coxae coarsely granulated, edge of small humps of marginal rows of 1st to 4th coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps: femur coarsely toothed ventrally, patella without an apophysis, toothed all round, tibia $2\frac{1}{2}$ times longer than broad, dorso-basally toothed; tarsus unarmed, smooth. Legs: femora toothed, number of noduli on 1st to 4th femora 1-4-1-2.

Colour of body blackish-brown dorsally and ventrally, ocular tubercle blackish-brown above, but basally pale yellow; carapace around the ocular tubercle thickly covered with white secretions, which are wanting only on the two parallel ferruginous stripes on the front of the carapace; scutum from in front of its spine to its coxae similarly covered with secretions. Chelicerae blackish-brown; palps dark brown but their tibiae in their apical halves and the entire tarsus pale yellow. Legs blackish-brown, but tibia to tarsus paler brown.

Distribution.—Netterikal Region, Kalakkad Forest, alt. 3000-5000 feet, Tinnevely District, Peninsular India (4 females, 1 *pullus*—Barnes leg.).

Type-specimens.—No. $\frac{1077}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Gagrellenna, gen. nov.

Ocular tubercle as high as broad, as long; basally constricted, unarmed and without large spines or thorns. Scutum of abdomen with one median spine on the 2nd area. Legs very long and thin; 1st and 3rd femora much longer than the body, and 2nd femur much longer than twice the length of the body; number of noduli on 1st to 4th femora 1-4-1-1.

*** Gagrellenna bipunctata, sp. nov.**

Male: length of body 3.5, 1st to 4th femora 13, 28, 11, 16, 1st to 4th legs 55, 123, 52, 74 mm.

Female: length of body 4, 1st to 4th femora 12, 25, 11, 16, 1st to 4th legs 55, 99, 52, 74 mm.

Dorsal surface of body uniformly and finely granulated; ocular tubercle slightly inclined, distinctly furrowed and entirely smooth; scutum only on 2nd area with one slender median spine. Free sternites of abdomen each with one row of fine granules; surface of 1st to 4th coxae sparsely but coarsely granulated, edge of humps of marginal rows of coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps: trochanter with 2 small teeth ventrally, femur ventrally with a complete longitudinal row of 8-10 pointed teeth and ventro-medially with a basal row of 6 blunt humps, patella dorsally, medially and laterally toothed, without apophysis; tibia $3\frac{1}{2}$ times longer than broad, entirely unarmed; tarsus unarmed, but in male with a ventral row of very small

teeth. Legs : 1st to 4th trochanters and femora sparsely toothed ; number of noduli on 1st to 4th femora 1-4-1-1.

Colour of body ferruginous ; ocular tubercle bright black, its furrow ferruginous ; scutum on each side of the dark brown median spine with one pale yellowish round spot (not covered with secretions). Free sternites of abdomen and 1st to 4th coxae pale ferruginous, marginal rows of abdomen with scattered white secretions ; similar scattered secretions also cover the free sternites. Chelicerae pale yellowish ; palps ferruginous, but tibia and tarsus paler. Legs uniformly pitch-brown.

Distribution.—Kavalai (1 male, 1 female—Gravely *leg.* ; Types). Forest Tramway mile (2 males, 2 females, 1 *pullus*—Gravely *leg.*), Cochin State ; Coonoor Ghat, alt. 5500 feet, Nilgiris (1 male, 3 females, 3 *pulli*—Gravely *leg.*).

Type-specimens.—No. $\frac{1060}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Coonoora, gen. nov.

Ocular tubercle as high as broad, as long, basally constricted, above on each side of the longitudinal furrow with one anterior spine. Scutum of abdomen with one median spine on the 2nd area. Legs long and thin : 1st and 3rd femora much longer than body and 2nd femur much longer than twice the length of the body ; number of noduli on 1st to 4th femora 1-4-1-1.

*** Coonoora biceratops, sp. nov.**

(Fig. 7).

Length of body 5, 1st to 4th femora 10, 19, 11, 14, 1st to 4th legs 38, 78, 40, 55 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly covered with very small round pits, not granulated ; ocular tubercle bright and smooth, except dorsally, on each side of the furrow, with one anterior small somewhat forwardly directed spine ; only 2nd area of scutum with one short, but pointed and smooth, somewhat recurved spine. Free sternites of abdomen sparsely granulated ; surface of 1st to 4th coxae very coarsely granulated, edge of small humps of marginal rows of coxae three-pointed. 1st article of chelicerae dorsally smooth. Palps : trochanter dorsally smooth and ventrally toothed, femur ventrally with strong teeth, dorsally little hirsute, patella dorsally and on each side densely toothed, but ventrally smooth, its medio-apical apophysis also densely toothed, tibia $3\frac{1}{2}$ times longer than broad, toothed, but smooth ventro-medially ; tarsus in female with one ventral longitudinal row of stout teeth and one ventro-medial shorter longitudinal row of smaller teeth. Legs : femora toothed ; number of noduli on 1st to 4th femora 1-4-1-1.

Colour of body dorsally and ventrally and of 1st to 4th coxae brown ocular tubercle blackish-brown with pale base ; 1st to 4th coxae densely covered with white secretions. Chelicerae and palps pale yellowish,

teeth of palps tipped black. Legs dark brown, only 2nd tibia with a pale apical ring.

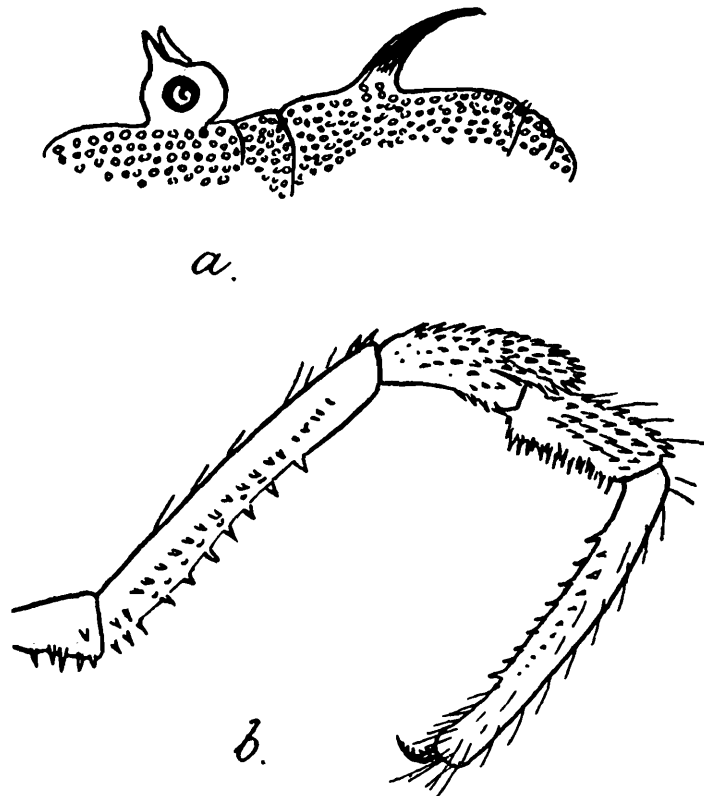


FIG. 7.—*Coonoora biceratops*, gen. et sp. nov.—(a) Left lateral view of the dorsum of the body; (b) medial view of the left palp of the male.

Distribution.—Coonoor, alt. 5700-6000 feet, Nilgiris (1 female—Gravely leg. : Type).

Type-specimen.—No. $\frac{1076}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Hologagrella Rwr.

1910. *Hologagrella*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 126.

1923. *Hologagrella*, Roewer, *Weberknechte der Erde*, p. 1027.

Two of the three species of this genus occur in the Celebes and Philippine Islands, while the third is found in Malacca.

Hologagrella reticulata Rwr.

1910. *Hologagrella reticulata*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 126.

1923. *Hologagrella reticulata*, Roewer, *Weberknechte der Erde*, p. 1028.

Distribution.—Malacca.

Nilgirisia, gen. nov.

Ocular tubercle as high as broad, as long, without large spines or thorns. Scutum of abdomen with one median spine on 2nd area. Legs long and thin; 1st and 3rd femora longer than the body and 2nd femur much longer than twice the length of the body; number of noduli on 1st to 4th femora 2-7-2-3.

* *Nilgirisia gravelyi*, sp. nov.

Male : length of body 3.5, 1st to 4th femora 12, 18, 10, 15, 1st to 4th legs 55, 106, 49, 73 mm.

Female : length of body 5, 1st to 4th femora 9, 18, 9, 11.5, 1st to 4th legs 45, 95, 45, 59 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly and finely granulated ; ocular tubercle distinctly furrowed and wholly smooth ; only 2nd area of scutum with one smooth and slender median spine. Free sternites of abdomen and surface of 1st to 4th coxae bright and smooth, edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps : femur ventrally with 4-5 scattered and very small teeth, patella without an apophysis, and together with tibia and tarsus unarmed, tibia $3\frac{1}{2}$ times longer than broad, tarsus in male with a ventral longitudinal row of very small teeth. Legs : trochanters and femora almost smooth, very sparsely scattered with small teeth ; number of noduli on 1st to 4th femora 2-7-2-3.

Colour of body dorsally and ventrally and of 1st to 4th coxae dark brown to blackish-brown ; ocular tubercle bright black with a lighter longitudinal furrow. Female somewhat lighter brown than the male ; carapace on each side of the ocular tubercle and scutum on each side of median spine (sometimes also in front) scattered with small granules of white secretions. Chelicerae and palps pale yellow ; legs blackish-brown.

Distribution.—Coonoor Ghat, alt. 5700-6000 feet (3 males, 2 females—Gravely leg. : Types) ; Ootacamund, alt. 6700-8000 feet (4 males—Gravely leg.) ; Nilgiris.

Type-specimens.—No. $\frac{1028}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Zaleptus Thor.

1876. *Zaleptus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, IX, p. 115.

1923. *Zaleptus*, Roewer, *Weberknechte der Erde*, p. 1036.

Key to the Continental species of the genus *Zaleptus*.

- | | |
|---|--------------------------------|
| 1. Patella of palps without a median apophysis .. | 2 |
| Patella of palps with a median apophysis .. | 4 |
| 2. Ocular tubercle wholly smooth .. | 3 |
| Ocular tubercle toothed or granulated above | |
| (India) | <i>Z. thorellii</i> , p. 148. |
| 3. Femur and tibia of palps toothed (Malacca) | <i>Z. cinctus</i> , p. 149. |
| Palps wholly smooth, unarmed (Palni Hills) | <i>Z. indicus</i> , p. 149. |
| 4. 1st article of chelicerae dorsally toothed .. | 5 |
| 1st article of chelicerae dorsally smooth .. | 8 |
| 5. 2nd and 4th tibiae each with one broad whitish apical ring-spot | 6 |
| 1st to 4th tibiae uniformly coloured, without pale apical rings | 7 |
| 6. Abdomen dorsally with two parallel longitudinal rows of golden-yellowish spots (Siam) | <i>Z. biseriatus</i> , p. 148. |
| Abdomen dorsally uniformly coloured pale-brown, only 1st to 3rd free tergites each with a pair of white spots (Burma) | <i>Z. festivus</i> , p. 148. |

- | | | |
|---|--------------------------------|----|
| 7. Humps of the marginal rows of 1st to 4th coxae three-pointed (Siam) | <i>Z. spinosus</i> , p. 148. | |
| Humps of the marginal rows of 1st to 4th coxae straightly blunted (Tenasserim) | <i>Z. sulphureus</i> , p. 148. | |
| 8. Ocular tubercle granulated above (Malacca) | <i>Z. unicolor</i> , p. 149. | |
| Ocular tubercle wholly smooth above | | 9 |
| 9. 2nd and 4th tibiae each with one broad whitish apical ring-spot | | 10 |
| 1st to 4th tibiae uniformly coloured, without pale apical rings.. .. | | 11 |
| 10. Femur of palps ventrally toothed; body with metallic coppery or golden gloss (Tenasserim, Malacca) | <i>Z. subcupreus</i> , p. 149. | |
| Femur of palps unarmed; body with a metallic green gloss (Nilgiris) | <i>Z. viridis</i> , p. 150. | |
| 11. Femur of palps ventrally bluntly toothed; 1st to 4th trochanters black or metallic-blue, each with two white spots (Sikkim) | <i>Z. splendens</i> , p. 149. | |
| Femur of palps unarmed; 1st to 4th trochanters uniform black (Sikkim).. .. | <i>Z. caeruleus</i> , p. 148. | |

Zaleptus thorellii With.

1903. *Zaleptus thorellii*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 480.
 1923. *Zaleptus thorellii*, Roewer, *Weberknechte der Erde*, p. 1037.

Distribution.—Birbhum District, India.

Zaleptus caeruleus Rwr.

1910. *Zaleptus caeruleus*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 134.
 1923. *Zaleptus caeruleus*, Roewer, *Weberknechte der Erde*, p. 1037.

Distribution.—Sikkim.

Zaleptus spinosus Rwr.

1910. *Zaleptus spinosus*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 135.
 1923. *Zaleptus spinosus*, Roewer, *Weberknechte der Erde*, p. 1038.

Distribution.—Dawna Hills, Burma; Bangkok, Siam.

Zaleptus biseriatus Rwr.

1910. *Zaleptus biseriatus*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 135.
 1923. *Zaleptus biseriatus*, Roewer, *Weberknechte der Erde*, p. 1039.

Distribution.—Bangkok, Siam.

Zaleptus festivus Thor.

1889. *Zaleptus festivus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 611.
 1923. *Zaleptus festivus*, Roewer, *Weberknechte der Erde*, p. 1039.

Distribution.—Kawkareit, Tenasserim, Dawna Hills, Burma; Bao Laoes, Siam.

*** Zaleptus sulphureus Thor.**

1889. *Zaleptus sulphureus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 614.
 1903. *Zaleptus sulphureus*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 479.
 1923. *Zaleptus sulphureus*, Roewer, *Weberknechte der Erde*, p. 1040, fig. 1141.

Distribution.—Abor Country, Assam ; Tenasserim, Dawna Hills, Burma. Represented in this collection from : Heho River (12 males), Fort Stedman (1 male), Foot of Elephant Hill, near Yawngnaw (32 males and females—Gravely leg. ; on bushes, very active and easily disturbed) ; Southern Shan States, Burma.

*** *Zaleptus splendens* Rwr.**

1911. *Zaleptus splendens*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 170.

1923. *Zaleptus splendens*, Roewer, *Weberknechte der Erde*, p. 1038.

Distribution.—Ghoom, alt. 4000-5000 feet, Darjeeling District (1 male, 2 females—Carmichael leg.) ; Sureil, alt. 5000 feet, Darjeeling District (1 male, 2 females).

*** *Zaleptus indicus*, sp. nov.**

Length of body 3, 1st to 4th femora 7.5, 14, 6.5, 11, 1st to 4th legs 37, 65, 35, 51 mm.

Surface of carapace, scutum and free tergites and sternites of abdomen uniformly and finely shagreened ; ocular tubercle all over bright and smooth, entirely unarmed. Surface of 1st to 4th coxae coarsely granulated, edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps : femur, patella, tibia and tarsus unarmed, patella without an apophysis, tibia $2\frac{1}{2}$ times longer than broad, tarsus in male with a ventral longitudinal row of very small teeth. Legs : femora toothed, number of noduli of 1st to 4th femora 0-1-0-0.

Colour of the body dorsally and ventrally and chelicerae, palps and legs entirely ferruginous, ocular tubercle only bright black.

Distribution.—Kodaikanal, Palni Hills, South India (2 males, 1 pullus—Kemp leg. ; Types).

Type-specimens.—No. $\frac{1063}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

***Zaleptus subcupreus* Thor.**

1889. *Zaleptus subcupreus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 609.

1923. *Zaleptus subcupreus*, Roewer, *Weberknechte der Erde*, p. 1040.

Distribution.—Tenasserim ; Pegu ; Burma ; and Malacca.

***Zaleptus cinctus* Rwr.**

1923. *Zaleptus cinctus*, Roewer, *Weberknechte der Erde*, p. 1041.

Distribution.—Malacca.

***Zaleptus unicolor* Rwr.**

1923. *Zaleptus unicolor*, Roewer, *Weberknechte der Erde*, p. 1041.

Distribution.—Malacca.

Zaleptus viridis Rwr.

The diagnosis of this new species, which was collected by Dr. J. Carl of Geneva in South India in 1926, will be published this year in *Revue Suisse de Zoologie*.

Ceratobunellus Rwr.

1911. *Ceratobunellus*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 175
 1923. *Ceratobunellus*, Roewer, *Weberknechte der Erde*, p. 1051.

Key to the species of the genus *Ceratobunellus*.

- Body black-brown; scutum with two posterior
 ferruginous spots (Calcutta) *C. calcuttensis*.
 Body pale-ferruginous; scutum with two longi-
 tudinal rows of black spots with a median
 pale-yellow band running between them
 (Calcutta) *C. brevipes*.

Ceratobunellus calcuttensis (With).

1903. *Ceratobunus calcuttensis*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII,
 p. 477.
 1923. *Ceratobunellus calcuttensis*, Roewer, *Weberknechte der Erde*, p. 1051.

Distribution.—Calcutta, Bengal, India.

Ceratobunellus brevipes (With).

1903. *Ceratobunus brevipes*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII,
 p. 478.
 1923. *Ceratobunellus brevipes*, Roewer, *Weberknechte der Erde*, p. 1051.

Distribution.—Calcutta, Bengal, India.

Verpulus Sim.

1901. *Verpulus*, Simon, *Proc. Zool. Soc. London*, II, p. 84.
 1923. *Verpulus*, Roewer, *Weberknechte der Erde*, p. 1056.

Key to the species of the genus *Verpulus*.

- Ocular tubercle wholly smooth (Malacca) .. *V. spumatus*.
 Ocular tubercle uniformly granulated (Burma) .. *V. marginatus*.

Verpulus spumatus Sim.

1901. *Verpulus spumatus*, Simon, *Proc. Zool. Soc. London*, II, p. 84.
 1923. *Verpulus spumatus*, Roewer, *Weberknechte der Erde*, p. 1056.

Distribution.—Bukit Besar, Singapore, Malacca.

Verpulus marginatus Rwr.

1912. *Verpulus marginatus*, Roewer, *Arch., Naturg.*, LXXVIII, fasc. 1, p. 52.
 1923. *Verpulus marginatus*, Roewer, *Weberknechte der Erde*, p. 1056.

Distribution.—Dawna Hills, Burma.

Hypsibunus Thor.

1891. *Hypsibunus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXX, p. 679.
 1923. *Hypsibunus*, Roewer, *Weberknechte der Erde*, p. 1052.

Key to the Continental species of the genus *Hypsibunus*.

- 1st article of chelicerae dorsally toothed; ocular
 tubercle with a ring of pointed teeth around each
 eye (Annam) *H. scaber*.
 1st article of chelicerae dorsally smooth; ocular
 tubercle only frontally with a few teeth
 (Calcutta) *H. fuscus*.

Hypsibunus scaber Rwr.

1910. *Hypsibunus scaber*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 149.
 1923. *Hypsibunus scaber*, Roewer, *Weberknechte der Erde*, p. 1053.

Distribution.—Annam.

Hypsibunus fuscus (With).

1903. *Zaleptus fuscus*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 479.
 1923. *Hypsibunus fuscus*, Roewer, *Weberknechte der Erde*, p. 1054.

Distribution.—Calcutta, Bengal, India.

Tetraceratobunus Rwr.

1915. *Tetraceratobunus*, Roewer, *Arch. Naturg.*, LXXXI, fasc. 3, p. 150.
 1923. *Tetraceratobunus*, Roewer, *Weberknechte der Erde*, p. 1055.

Only one species of this genus has so far been described.

Tetraceratobunus lineatus Rwr.

1915. *Tetraceratobunus lineatus*, Roewer, *Arch. Naturg.*, LXXXI, fasc. 3, p. 151.
 1923. *Tetraceratobunus lineatus*, Roewer, *Weberknechte der Erde*, p. 1055.

Distribution.—Darjeeling, Bengal.

Euceratobunus Rwr.

1923. *Euceratobunus*, Roewer, *Weberknechte der Erde*, p. 1052.

Only a single species of this genus is known.

Euceratobunus pulcher (With).

1903. *Ceratobunus pulcher*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII,
 p. 476.
 1923. *Euceratobunus pulcher*, Roewer, *Weberknechte der Erde*, p. 1052.

Distribution.—Punkabari, Assam, India.

Kempina Rwr.

1911. *Kempina*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 177.
 1923. *Kempina*, Roewer, *Weberknechte der Erde*, p. 1054.

Key to the species of the genus *Kempina*.

- Humps of marginal rows of 1st to 4th coxae
 straightly blunted (Assam) *K. bicornigera*.
 Humps of marginal rows of 1st to 4th coxae three-
 pointed (Burma) *K. cuprea*.

Kempina bicornigera Rwr.

1911. *Kempina bicornigera*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 177.
 1923. *Kempina bicornigera*, Roewer, *Weberknechte der Erde*, p. 1054.

Distribution.—Mangaldai District, Assam ; Bhutan.

Kempina cuprea Rwr.

1912. *Kempina cuprea*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 51.
 1923. *Kempina cuprea*, Roewer, *Weberknechte der Erde*, p. 1055.

Distribution.—Dawna Hills, Burma.

Euzaleptus Rwr.

1911. *Euzaleptus*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, pp. 179 and 182
 1923. *Euzaleptus*, Roewer, *Weberknechte der Erde*, p. 1045.

Three Continental species and one species from Borneo.

Key to the Continental species of the genus *Euzaleptus*.

- | | | | |
|---|----|---------------------|---|
| 1. 1st article of chelicerae dorsally smooth | .. | | 2 |
| 1st article of chelicerae dorsally toothed (Sikkim) | .. | <i>E. muticus</i> . | |
| 2. Body and legs distinctly hirsute (Sikkim) | .. | <i>E. pilosus</i> . | |
| Body and legs not hirsute (Sikkim) | .. | <i>E. minutus</i> . | |

Euzaleptus minutus (With).

1903. *Zaleptus minutus*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 481.
 1923. *Euzaleptus minutus*, Roewer, *Weberknechte der Erde*, p. 1045.

Distribution.—Darjeeling, Bengal.

*** Euzaleptus pilosus**, sp. nov.

Male : length of body 3, 1st to 4th femora 4.5, 7, 3.5, 5, 1st to 4th legs 18, 37, 19, 25 mm.

Female : length of body 5, 1st to 4th femora 4, 7, 3.5, 5, 1st to 4th legs 18, 37, 19, 25 mm.

Surface of carapace, scutum and free tergites and sternites of abdomen and 1st to 4th coxae very finely and densely uniformly granulated and hirsute ; ocular tubercle within and on each side of its longitudinal furrow and basally similarly granulated. Edge of small humps of marginal rows of 1st to 4th coxae straightly blunted. 1st article of chelicerae smooth dorsally. Palps : femur, patella and tibia all over densely and finely granulated, patella without an apophysis, tibia 3 times longer than broad, tarsus smooth, but in male with a ventral longitudinal row of small teeth. Legs : trochanters granulated like the body, femora toothed and covered with prominent hairs ; number of noduli on 1st to 4th femora 0-3-0-1.

Colour of body black or blackish-brown, the two thoracic tergites, the area of scutum and free tergites of the abdomen each with one row of six whitish-yellow minute spots. Chelicerae pale yellow ; palps and trochanters of the legs pale yellow, but their granules black ; rest of the legs reddish-brown.

Remarks.—This species appears very similar to *Metaverpulus hirsutus* Rwr., *vide* p. 155.

Distribution.—Kalimpong, Darjeeling District (2 males, 1 female, 2 pulli).

Type-specimens.—No. $\frac{1045}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

* **Euzaleptus muticus**, sp. nov.

Length of body 3.5 (male), 4 (female), 1st to 4th femora 5.5, 10, 4.5, 8, 1st to 4th legs 25, 50, 26, 36 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly and coarsely granulated, scutum with one median longitudinal shagreened spot; ocular tubercle wholly smooth. Free sternites of abdomen smooth; surface of 1st to 4th coxae very sparsely but coarsely granulated, edge of small humps of marginal rows of coxae straightly blunted. 1st article of chelicerae dorsally with 34 small teeth. Palps: femur ventrally sparsely toothed, patella without an apophysis, dorsally sparsely toothed, tibia 3 times longer than broad, ventrally and on each side sparsely but strongly toothed, tarsus unarmed, but in male with a ventral longitudinal row of very small teeth. Legs: trochanters smooth, femora sparsely toothed; number of noduli on 1st to 4th femora 0-3-0-1.

Colour of body entirely black in male and blackish-brown in female, carapace in front and on each side of the black ocular tubercle with scattered spots and covered on these spots with white secretions. Coxae black, covered in their apical halves with white secretions. Chelicerae and area around the mouth pale ferruginous; palps dark brown, tarsus only pale yellow. Legs dark brown, with black trochanters.

Distribution.—Darjeeling, alt. 7000 feet (4 males, 2 females—Gravelly leg.; Types and cotypes).

Type-specimens.—No. $\frac{1043}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Zaleptanus, gen. nov.

Ocular tubercle as long as broad, as high, unarmed, without large spines or thorns. Scutum of abdomen entirely unarmed. Edge of small humps of marginal rows of 1st to 4th coxae straightly blunted. Legs long and thin, 1st to 4th femora much longer than twice the length of body; number of noduli on 1st to 4th femora 0-2-0-0.

* **Zaleptanus gravellyi**, sp. nov.

Length of body 5 (male), 6 (female), 1st to 4th femora 13, 26, 12, 16, 1st to 4th legs 70, 135, 60, 115 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly and finely granulated; ocular tubercle entirely smooth all over. Free sternites of abdomen each with one row of small granules; surface of 1st to 4th coxae very coarsely granulated, edge of small humps of marginal rows of 1st to 4th coxae straightly blunted. 1st article of chelicerae

dorsally smooth. Palps: femur ventrally densely toothed, patella toothed all over, without an apophysis, tibia $3\frac{1}{2}$ times longer than broad, unarmed and smooth, tarsus smooth, but in male with a ventral longitudinal row of very small teeth. Legs very long and thin, femora toothed, number of noduli on 1st to 4th femora 0-2-0-0.

Colour of body dorsally and ventrally and ocular tubercle blackish-brown; 1st to 4th coxae partly covered with white secretions. Chelicerae and palps uniform pale yellow; legs uniform dark brown.

Distribution.—Parambikulam, alt. 1700-3200 feet (4 males, 5 females, 5 *pulli*—Gravelly leg.); Forest Tramway mile, alt. 300 feet (3 males, 1 female, 8 *pulli*—Gravelly leg.); Kavalai, alt. 1300-3000 feet (3 males, 4 females, 7 *pulli*—Gravelly leg.); Cochin State.

Type-specimens.—No. $\frac{1040}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Cervibunus Rwr.

1912. *Cervibunus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 51.

1923. *Cervibunus*, Roewer, *Weberknechte der Erde*, p. 1046.

Key to the species of the genus *Cervibunus*.

The four thorns of ocular tubercle slender; each forked on its tip; 1st article of chelicerae dorsally densely toothed (Burma)	<i>C. maculatus</i> .
The four thorns of ocular tubercle short and curved, not forked at the tip; 1st article of chelicerae dorsally almost smooth (Bengal)	<i>C. ornatus</i> .

Cervibunus maculatus Rwr.

1912. *Cervibunus maculatus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 52.

1923. *Cervibunus maculatus*, Roewer, *Weberknechte der Erde*, p. 1046.

Distribution.—Dawna Hills, Burma.

*** Cervibunus ornatus, sp. nov.**

(Fig. 8).

Length of body 5, 1st to 4th femora 7, 14, 6.5, 9, 1st to 4th legs 28, 72, 26, 39 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly granulated; ocular tubercle granulated and dorsally on each side with one anterior and one posterior erect and somewhat curved spine (*i.e.*



FIG. 8.—*Cervibunus ornatus*, sp. nov.—(a) Left lateral view of ocular tubercle; (b) two small humps of the marginal rows or the coxae.

four spines in all). Free sternites of abdomen each with one row of small granules; surface of 1st to 4th coxae coarsely granulated, edge of

small humps of marginal rows of coxae three-pointed. 1st article of chelicerae dorsally with 2-3 small teeth. Palps : femur ventrally with stouter and dorsally with finer teeth, patella toothed all over, medially with a toothed apical apophysis ; tibia 3 times longer than broad, toothed all over ; tarsus unarmed and smooth. Legs : femora toothed ; number of noduli on 1st to 4th femora 0-3-0-0.

Colour of body reddish-brown, carapace in front and on each side of the blackish-brown ocular tubercle scattered with yellow and covered with white secretions ; scutum with one median and two lateral yellowish longitudinal bands, one on each side ; these three bands partly covered with white secretions and the median one continued over the free tergites as small yellowish median spots. Free sternites of abdomen and 1st to 4th coxae covered with a few white secretions. Chelicerae pale yellow ; palps reddish-brown, but the tarsus pale yellow. Legs uniformly reddish-brown, but basal parts of femora and the whole trochanters blackish-brown.

Distribution.—Rangamati, Chittagong, Bengal (1 female—Hodgart leg. ; Type).

Type-specimen.—No. $\frac{1039}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Metazaleptus Rwr.

1912. *Metazaleptus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 55.

1923. *Metazaleptus*, Roewer, *Weberknechte der Erde*, p. 1044.

Only one species of this genus has so far been discovered.

*** Metazaleptus hirsutus (With).**

1903. *Zaleptus hirsutus*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 482.

1923. *Metazaleptus hirsutus*, Roewer, *Weberknechte der Erde*, p. 1044.

Distribution.—Sureil, alt. 5000 feet (3 males, 7 females), Ghumti, alt. 5000 feet (1 male, 1 female—Carmichael leg.), Lebong, alt. 6000-6600 feet (1 male, 1 female—Gravely leg.), Kalimpong, alt. 4500 feet (1 male—Gravely leg.), Darjeeling District, alt. 1000 feet (1 female—Gravely leg.), Darjeeling District, Bengal.

Metaverpulus Rwr.

1912. *Metaverpulus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 53.

1923. *Metaverpulus*, Roewer, *Weberknechte der Erde*, p. 1057.

Only one species of this genus has so far been described.

*** Metaverpulus hirsutus Rwr.**

1912. *Metaverpulus hirsutus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 53.

1923. *Metaverpulus hirsutus*, Roewer, *Weberknechte der Erde*, p. 1057.

The two females possess a medio-apical apophysis on the patella of the palps, the males have none. The number of noduli on 1st to 4th femora of the legs in the *pulli* is 1-4-1-2, but in the adults the same as in the type: 0-4-0-1.

Distribution—Cuttack, Orissa. In this collection represented from : Sitong Ridge, alt. 4700 feet (2 males, 1 female—Gravely leg.) ; Pashok (5 pulli), Darjeeling District.

Harmanda Rwr.

1910. *Harmanda*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 151.

1923. *Harmanda*, Roewer, *Weberknechte der Erde*, p. 1057.

Key to the species of the genus *Harmanda*.

- | | | |
|---|----------------------------------|---|
| 1. Humps of frontal marginal row of 1st coxa three-pointed ; scutum with a metallic gloss (Eastern Himalayas) | <i>H. aenescens</i> , p. 156. | |
| Humps of frontal marginal row of 1st coxa straightly blunted ; scutum without metallic gloss | | 2 |
| 2. Scutum with three parallel longitudinal rows of golden-yellow spots (Malacca) | <i>H. triseriata</i> , p. 157. | |
| Scutum without such rows, at the most with one paler median band | | 3 |
| 3. Legs uniform black, only 1st to 4th trochanters and bases of 1st to 4th femora ferruginous (Sikkim) | <i>H. albipunctata</i> , p. 156. | 4 |
| Legs pale and annulated dark-brown | | 5 |
| 4. Scutum with a pale median band | | |
| Scutum without a median band, but transversely mottled with small darker spots (Western Himalayas) | <i>H. annulata</i> , p. 157. | |
| 5. Ocular tubercle entirely smooth ; tibia of palps unarmed (Eastern Himalayas) | <i>H. lineata</i> , p. 156. | |
| Ocular tubercle toothed above ; tibia of palps toothed (Sikkim) | <i>H. instructa</i> , p. 156. | |

Harmanda albipunctata Rwr.

1915 *Harmandella albipunctata*, Roewer, *Arch. Naturg.*, LXXXI, fasc. 3, p. 148.

1923. *Harmanda albipunctata*, Roewer, *Weberknechte der Erde*, p. 1058.

Distribution.—Darjeeling.

Harmanda aenescens Rwr.

1911. *Harmandella albipunctata*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 172.

1923. *Harmanda aenescens*, Roewer, *Weberknechte der Erde*, p. 1059.

Distribution.—Mussoorie, Western Himalayas ; Gowchar, Nepal.

*** Harmanda instructa Rwr.**

1910. *Harmanda instructa*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 154.

1923. *Harmanda instructa*, Roewer, *Weberknechte der Erde*, p. 1058.

Distribution.—Kalimpong, alt. 600-4500 feet, Darjeeling District (4 males, 3 females—Gravely leg.).

*** Harmanda lineata Rwr.**

1911. *Harmandella aenescens*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 173.

1923. *Harmanda lineata*, Roewer, *Weberknechte der Erde*, p. 1059.

Distribution.—Kurseong, Eastern Himalayas. Represented in this collection from : Pashok, alt. 2000-3500 feet (21 males, 7 females—

Gravely *leg.*); Soom, alt. 3000-3500 feet (4 males—Gravely *leg.*); Darjeeling District.

***Harmanda annulata* Rwr.**

1911. *Harmandella annulata*, Roewer, *Arch. Naturg.*, LXXVII, fasc. 2, p. 174.

1923. *Harmanda annulata*, Roewer, *Weberknechte der Erde*, p. 1059.

Distribution.—Simla, Munduli; Dehra Dun District; Western Himalayas.

***Harmanda triseriata* Rwr.**

1923. *Harmanda triseriata*, Roewer, *Weberknechte der Erde*, p. 1060.

Distribution.—Singapore; Malacca.

***Carmichaelus*, gen. nov.**

Ocular tubercle as broad as long, somewhat higher than long; unarmed, without large spines or thorns. Scutum of abdomen unarmed. Legs long and thin; 1st to 4th femora much longer than body; number of noduli on 1st to 4th femora 1-7-1-2.

*** *Carmichaelus maculatus*, sp. nov.**

(Fig. 9).

Male: length of body 3, 1st to 4th femora 10, 18, 8, 12, 1st to 4th legs 38, 72, 35, 51 mm.

Female: length of body 5, 1st to 4th femora 9, 18, 8, 12, 1st to 4th legs 35, 75, 36, 50 mm.

Surface of carapace, scutum and free tergites of abdomen uniformly shagreened; ocular tubercle as broad as long, $1\frac{1}{2}$ times higher in front than long, unarmed, its median longitudinal furrow shagreened in the same manner as body. Free sternites of abdomen smooth; surface of 1st to 4th coxae coarsely granulated, edge of small humps of marginal rows of coxae bluntly rounded with a small buckle in the middle (fig. 9, *b*).

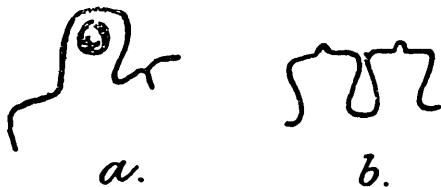


FIG. 9.—*Carmichaelus maculatus*, gen. et sp. nov.—(a) Left lateral view of ocular tubercle; (b) two small humps of the marginal rows of the coxae.

1st article of chelicerae dorsally smooth. Palps: femur ventrally and medially, patella and tibia all over very densely toothed, patella without an apophysis, tibia $3\frac{1}{2}$ times longer than broad, tarsus unarmed, but in male with a longitudinal row of small teeth ventrally. Legs: femora toothed, number of noduli on 1st to 4th femora 1-7-1-2.

Colour of whole body black or blackish-brown, carapace in front and on each side of the black ocular tubercle covered all over with white secretions; scutum with two parallel longitudinal rows of pale yellow spots, which are often thickly covered with white secretions; these spots

are especially prominent on the posterior surface of the abdomen of the female. Free sternites of abdomen and 1st to 4th coxae thickly covered with white secretions. Chelicerae ferruginous; palps dark brown, tarsus pale yellow. Legs uniform blackish-brown.

Distribution.—Birch Hill, alt. 6000-7000 feet, Darjeeling District (2 males, 2 females—Carmichael *leg.*; Types).

Type-specimens.—No. $\frac{1038}{18}$ in the collection of the Zoological Survey of India (Ind. Mus.), Calcutta.

Ceratobunus Thor.

1889. *Ceratobunus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 615.

1923. *Ceratobunus*, Roewer, *Weberknechte der Erde*, p. 1046.

Key to the Continental species of the genus *Ceratobunus*.

- | | |
|---|---------------------------------|
| 1. Humps of marginal rows of 1st to 4th coxae three-pointed | 2 |
| Humps of marginal rows of 1st to 4th coxae straightly blunted | 5 |
| 2. 2nd tibia with a broad white apical ring-spot | 3 |
| 2nd tibia uniformly coloured, without an apical white ring-spot | 4 |
| 3. Patella of palps with a median apophysis (Burma) | <i>C. bimaculatus</i> , p. 158. |
| Patella of palps without a median apophysis (Burma) | <i>C. gravelyi</i> , p. 159. |
| 4. Abdomen dorsally with a metallic blue-green gloss (Burma) | <i>C. T-luteus</i> , p. 159. |
| Abdomen dorsally without a metallic gloss (Burma) | <i>C. annulatus</i> , p. 159. |
| 5. 2nd tibia with a broad white apical ring-spot (India) | <i>C. vigilans</i> , p. 158. |
| 2nd tibia uniformly coloured, without an apical whitish ring-spot (Himalayas) | <i>C. cupreus</i> , p. 158 |

Ceratobunus bimaculatus Thor.

1889. *Ceratobunus bimaculatus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 619.

1923. *Ceratobunus bimaculatus*, Roewer, *Weberknechte der Erde*, p. 1047.

Distribution.—Schwegu, Bhamo, Burma.

Ceratobunus vigilans (With).

1903. *Hypsibunus vigilans*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 475.

1923. *Ceratobunus vigilans*, Roewer, *Weberknechte der Erde*, p. 1049.

Distribution.—Siliguri, Bengal, India.

Ceratobunus cupreus Rwr.

1912. *Ceratobunus cupreus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 48.

1923. *Ceratobunus cupreus*, Roewer, *Weberknechte der Erde*, p. 1049.

Distribution.—Ghumti, Darjeeling District.

*** *Ceratobunus annulatus* Thor.**

1889. *Ceratobunus annulatus*, Thorell, *Ann. Mus. Civ. Stor. Nat. Genova*, XXVII, p. 616.

1903. *Ceratobunus annulatus*, With, *Journ. Linn. Soc. London, Zool.*, XXVIII, p. 476.

1928. *Ceratobunus annulatus*, Roewer, *Weberknechte der Erde*, p. 1047.

Distribution.—Mooleyit, Pegu Mudon near Moulmein, Puddupyu, Burma. In this collection represented from : Garo Hills, alt. 3500-3900 feet, Assam (1 male—Kemp *leg.*) ; Sureil, alt. 5000 feet (3 males, 4 females, 8 *pulli*) ; Birch Hill (2 females) ; Lebong, alt. 6000-6600 feet (9 *pulli*) ; Kalimpong (3 *pulli*), Ghumti, alt. 1500-5000 feet (20 *pulli*) ; Soom (6 *pulli*) ; Sitong Ridge, alt. 4700 feet (1 *pullus*) ; all in Darjeeling District ; Nepal Valley (3 males, 1 female ; *pulli*).

*** *Ceratobunus gravelyi* Rwr.**

1912. *Ceratobunus gravelyi*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 49.

1923. *Ceratobunus gravelyi*, Roewer, *Weberknechte der Erde*, p. 1050.

Distribution.—Sukli, Misty Hollow, Burma ; Rangamati, Chittagong, Bengal (1 male, 3 females—Hodgart *leg.*).

***Ceratobunus T-luteus* Rwr.**

1912. *Ceratobunus T-luteus*, Roewer, *Arch. Naturg.*, LXXVIII, fasc. 1, p. 50.

1923. *Ceratobunus T-luteus*, Roewer, *Weberknechte der Erde*, p. 1050.

Distribution.—Kawkareit, Amherst District, Burma.

***Bastia* Rwr.**

1910. *Bastia*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 156.

1923. *Bastia*, Roewer, *Weberknechte der Erde*, p. 1062.

Only one species.

***Bastia lineata* Rwr.**

1910. *Bastia lineata*, Roewer, *Abh. Ver. Hamburg*, XIX, fasc. 4, p. 156.

1923. *Bastia lineata*, Roewer, *Weberknechte der Erde*, p. 1062.

Distribution.—Maria Basti, India.

Subfamily PHALANGIINAE Sim.

As is stated in the introductory part all the specimens of this subfamily are young specimens which it is not possible to determine generically.

Distribution.—Mount Godwin-Austen (1 *pullus*) ; Central Gilgit (2 *pulli*) ; both in Himalayas ; Kashmir Valley, alt. 7000-9000 feet (1 *pullus*).

