

NOTES ON AFRICAN ORTHOPTERA OF THE FAMILIES
MANTIDÆ AND PHASMIDÆ IN THE UNITED STATES
NATIONAL MUSEUM, WITH DESCRIPTIONS OF NEW
SPECIES.

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The following paper is based on a portion of a series of African Orthoptera turned over to me for study several years ago by the late Dr. W. H. Ashmead, assistant curator of insects in the United States National Museum. My delay in bringing out this report has not been without its advantages, as the Berlin Museum recently placed in my hands for study its entire unworked series of material of the present families from central Africa, thus enabling me to secure a much more satisfactory knowledge of the subject.

At a later date it is my intent to bring together all the records which I have published relating to the series from Liberia and Luebo, Kongo, regions of the greatest interest faunistically, but for the present it seems best to make this report cover all the African material in the United States National Museum collection belonging to the two groups here considered.

For the opportunity to study this collection my thanks are due the authorities of the National Museum.

Family MANTIDÆ.

Subfamily ORTHODERINÆ.

Genus THEOPOMPA Stål.

THEOPOMPA NEBULOSA Bolivar.

1908. *Theopompa nebulosa* BOLIVAR, Mem. R. Soc. Españ. Hist. Nat., vol. 1, p. 458, pl. 11, fig. 2. [Kamerun.]

Luebo, Kongo. (D. W. Snyder.) One female.

This specimen fully agrees with the original description except for the subconfluent character of the two proximal blackish maculations on the internal face of the cephalic femora, the sulcus alone dividing them.

The range of the species is considerably extended by this record.

Genus TARACHODES Burmeister.

TARACHODES WERNERI, new name.

1907. *Tarachodes perloides* WERNER, Sitzungs. k. Akad. Wiss. Wien, Math.-nat. Kl., vol. 116, Abth. 1, pp. 192, 208, pl. 3, figs. 1-2. [Southwest Africa.] (Not of Burmeister, 1838.)

Loanda, Angola. One male.

It is evident on comparing the original description of *Tarachodes perloides* Burmeister¹ with Werner's key for the species of the genus and notes on *perloides* as recognized by him, that the latter is in error in the association of his specimens. Burmeister states distinctly, "ventre rufescente, segmentis 2-punctatis," while Werner in his key gives as one of the diagnostic characters of *perloides* "abdomen subtus immaculatum." It is quite probable that true *perloides* is the same as either *sancta* Saussure or *maura* Stål, both of which have the abdominal segments bimaculate ventrad. With the material available at the present time we can not say which of these names should be replaced by the older *perloides*. Under any circumstance *perloides* of Werner is not *perloides* of Burmeister, and a new name is required for the former. I take pleasure in dedicating the species to the author of the very valuable paper in which its characters were described and the species figured.

TARACHODES DIVES (Saussure).

1869. *Ch[iropus] dives* SAUSSURE, Mitth. Schw. Ent. Ges., vol. 3, p. 61. [Benguella.]

Loanda, Angola. (H. Chatelain.) One female.

Mossamedes district, Angola. One female nymph. [Acad. Nat. Sci. Phila.].

From this material it is apparent that Werner² was mistaken in referring the female specimen of this species from Benguella described by Saussure³ to *T. perloides* Burmeister as recognized by him.⁴ The specimens before me fully agree with Saussure's original description and figure and differ from Werner's figure in the more elongate pronotum, which is slightly constricted caudad. The cephalic margin of the pronotum is also more arcuate, the lateral angles less decided, and the caudal margin more decidedly truncate mesad. The width of the head in proportion to that of the pronotum is considerably greater in the female of *dives* than in Werner's figure of the same sex of *perloides* (= *wernerii*).

¹ Handb. d. Entom., vol. 2, Abth. 2, pt. 1, p. 529. [Cape of Good Hope.]

² Sitzungs. k. Akad. Wiss. Wien, Math.-nat. Kl., vol. 116, 1907, Abth. 1, pp. 202 and 210.

³ Mélanges Orthoptérologiques, vol. 3, 1870, p. 164, pl. 4, figs. 1, 1a.

⁴ See *T. wernerii*, p. 452.

TARACHODES PILOSIPES, new species.

Type.—Male; Luebo, Kongo. (D. W. Snyder.) [Cat. No. 14602, U.S.N.M.]

Closely allied to *T. dissimulator* Wood-Mason¹ from Kamerun, agreeing in general proportions and form, in the pale proximal area on the tegmina and in the pilosity of certain portions of the body, but differing in the arcuate instead of truncate vertex, in the nondenticulate cephalic coxæ, in the almost complete absence of black from the internal faces of the cephalic coxæ and femora, in the absence of blackish puncta caudad on the prosternum and also of a distinct maculation on the metasternum and in the less clearly defined proximal and completely absent distal pale areas on the tegmina.

Size rather large; form subdepressed; limbs and ventral surface pilose, this strongly marked on the median and caudal limbs. Head with the greatest depth contained about one and one-fifth times in the greatest width; face slightly concave; occiput moderately but distinctly arcuate, the juxta-ocular sulci well impressed; ocelli moderately large, placed in a triangle; facial shield with the greatest depth contained one and two-thirds times in the greatest width, dorsal margin subtruncate mesad, slightly oblique subtruncate laterad, lateral margins subparallel, ventral margin slightly arcuate-emarginate, surface of shield smooth; antennæ simple; eyes not projecting, their outline rounding into that of the head. Pronotum with the greatest dorsal (supra-coxal) width contained slightly less than twice in the length, the width at the cephalo-lateral angles very slightly less than that of the supra-coxal region, that at the caudo-lateral angles not more than four-fifths that of the widest portion; cephalic margin strongly arcuate, slightly sinuate laterad, with a slight median truncation, cephalo-lateral angles distinctly produced, angulate, lateral margins slightly pilose, bi-undulate, narrower caudad of the coxal insertion than cephalad of the same, caudo-lateral angles rounded, caudal margin rather broadly truncate mesad, obliquely truncate laterad; surface of disk multimpresed, a more or less distinct medio-

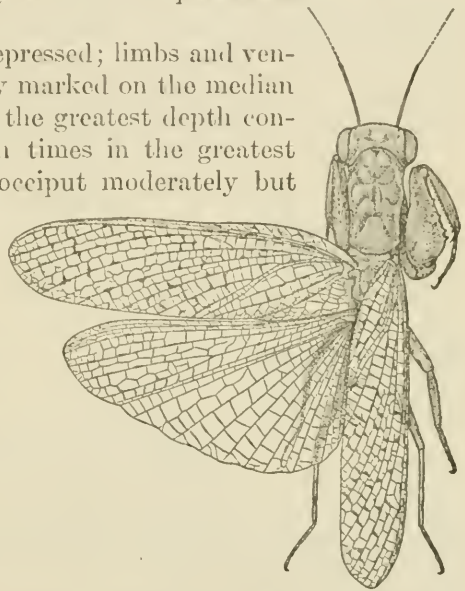


FIG. 1.—TARACHODES PILOSIPES. DORSAL VIEW OF TYPE. (X 1½.)

¹ Journ. Asiatic Soc. Bengal, vol. 51, pt. 2, p. 23.

longitudinal shallow sulcus present, a well-marked transverse sulcus present at the cephalic third and subobsolete mesad, caudal third with a \cap -shaped area depressed below the level of the median section, a shallow transverse depression is present at the cephalic sixth, oblique paired depressions located meso-laterad and a transverse narrow rounded elevation borders the caudal margin. Tegmina decidedly exceeding the apex of the abdomen, the length slightly greater than three times that of the pronotum, broad, the greatest width contained about three and one-half times in the length of the same, hyaline; costal margin well arcuate proximad and distad, straight for the remainder of its length; sutural margin for the greater portion of its length subparallel to the straight section of the costal margin; apical margin oblique arcuato-truncate, the immediate apex costal in position and well rounded. Wings about five-sixths the length of the



FIG. 2.—*TARACHODES PILOSIPES*. VENTRAL VIEW OF HEAD, STERNA AND CEPHALIC LIMB. ($\times 1\frac{1}{2}$.)

tegmina, the greatest width contained about twice in the length, apex rotundato-rectangulate. Supra-anal plate transverse subtrigonal, the apex rather deeply rotundato-emarginate; cerci distinctly surpassing the apex of the subgenital plate, depressed, slightly tapering, moniliform; subgenital plate very ample, lateral margins moderately converging caudad, apical margin truncate, styles short, simple, free. Cephalic coxæ two-thirds the length of the pronotum, robust, unarmed; cephalic femora hardly shorter than the pronotum, compressed, the dorsal portion strongly so, the greatest depth of the femur contained

two and one-third times in the length of the same, dorsal margin slightly arcuate proximad, straight distad, external face broad, deplanate, with a median raised distal ridge, ventro-external margin with five short teeth, one of which is on the genicular lobe, ventro-internal margin with twelve to thirteen small teeth of two, usually alternating, sizes, discoidal spines four in number, placed well proximad and with the proximal one very small, the others short and robust; cephalic tibiae (exclusive of apical claw) equal to slightly more than two-thirds of the femoral length, armed on the external margin with thirteen to fifteen spines, on the internal margin with fourteen spines, both series with the spines gradually increasing in length distad; cephalic tarsi subequal to the tibiae in length, compressed, the metatarsi sublamellate disto-dorsad. Median and caudal limbs rather short, the former very robust with the femora greatly compressed, the caudal femora equal to about three-fourths of the pronotal length and the median pair slightly shorter than the caudal ones.

General color buff, much of the dorsum of the pronotum washed with vinaceous-buff; the dorsal surface of head, pronotum, external face

of the caudal limbs and most of the median and caudal limbs more or less thickly and distinctly punctulate with vandyke brown. Tegmina hyaline, proximal portion subopaque cream-buff, obliquely delimited, embracing the concolorous stigma and all of the marginal field; veins cream-buff, the longitudinal ones with regularly placed sections of brown, varying from vandyke to seal brown, which at the intersections of cross-veins color the latter to or nearly as far as the spurious veins, the latter seal brown. Wings milky hyaline, slightly buffy along the costal margin, principal veins cream-buff, the principal veins of the discoidal field marked as on the tegmina, but in a weaker, more irregular fashion. Cephalic coxæ pale rose purple on the internal face, proximal extremity narrowly dark brown, the distal margin of the general color, preceded by a small brownish spot; cephalic femora weakly lined with brownish on the median keel of the internal face. Tarsi with the joints tipped with dark brown, the metasterni with three to four maculations of the same. Prosternum solidly blackish except for a short caudal unmarked section of the general color; mesosternum and metasternum non-maculate.

Measurements.

	<i>mm.</i>
Length of body.....	37.0
Length of pronotum.....	9.8
Greatest width of pronotum.....	5.5
Length of tegmen.....	31.0
Greatest width of tegmen.....	9.2
Length of cephalic femur.....	9.0

The type of this beautiful species is unique.

Genus GALEPSUS Stål.

GALEPSUS CONGICUS, new species.

Type.—Male, Luebo, Kongo. (D. W. Snyder.) [Cat. No. 14603, U.S.N.M.]

Allied to *G. lenticularis* (Saussure), *G. capitatus* (Saussure), and *G. meridionalis* form *intermedius* Werner from South and East Africa, but differing from both the latter in the distinctly narrower and proportionately much deeper head, in the somewhat more arcuate vertex and more rounded eyes. From *G. lenticularis*, which is apparently its closest ally, it can be separated by the absence of distinct protuberances on the vertex and by the less arcuate character of the same. The form of the head in this species is quite distinctive, being distinctly narrower than deep.

Size rather small; form slender and elongate, slightly depressed; surface smooth. Head slightly but distinctly deeper than wide, as is usual in the genus, flexed so that its axis is horizontal, the exposed dorsal portion of the occiput gently rounded with a pair of impressed

juxta-ocular arcuate sulci paralleling the eyes; occipital line undulate arcuato-truncate between the sulci, subarcuate laterad; ocelli placed in a triangle, the ventral ocellus larger than the paired ones; facial shield with the greatest (median) depth about two-thirds the greatest (ventral) width, the dorsal margin gently arcuate, ventral margin moderately arcuato-emarginate, lateral margins slightly diverging ventrad, surface smooth; eyes little prominent, rotundato-obtuse cephalo-laterad, gently arcuate laterad, the greatest width of the eyes contained about one and one-half times in their length; antennæ simple. Pronotum elongate rectangulate, the greatest (supra-coxal) width contained two and one-half times in the greatest length; cephalic margin well arcuate, slightly flattened mesad, cephalo-lateral angles well rounded; lateral margins cephalad of the coxal insertion subequal to the supra-coxal width, caudad of the same distinctly but not greatly narrowed, caudal margin arcuate laterad, truncate mesad; disk of the pronotum with the faintest possible medio-longitudinal sulcus cephalad, an equally faint median carina near the caudal extremity; transverse sulcus at the cephalic third, strongly U-shaped, the arms of the sulcation slightly sinuate and slightly converging cephalad; margins entire. Tegmina with the greatest length about two and one-half times that of the pronotum, slightly surpassing the apex of the abdomen, apex narrowly rotundate. Wings with the costal margin nearly straight, apex rotundato-rectangulate. Supra-anal plate transverse trigonal, angle broadly obtuse, median carina present; cerci depressed, sublamellate, surpassing the subgenital plate, apex missing, proximal joints broader than long; subgenital plate broad, proximad, lateral margins strongly converging caudad, caudal margin very narrow, truncate, styles very short, free. Cephalic coxæ equal in length to about three-fifths of the pronotal length, unarmed on the margins; cephalic femora equal to four-fifths of the pronotal length, moderately compressed, dorsal margin subarcuate proximad, straight distad, ventro-lateral margin with five spines, decreasing in length distad, the distal one on the genicular lobe, ventro-internal margin with 13 spines, more or less alternating in length, discoidal spines 4 in number; cephalic tibiæ (without apical claw) about two-thirds the length of the femora, external margin armed with 10 to 11 spines, internal margin armed with 11 spines increasing in length distad; cephalic metatarsi equal to four-fifths of the tibial length, remainder of the tarsi very slightly shorter than the metatarsi. Median limbs quite short, the femora not more than three-fifths of the pronotal length. Caudal limbs longer than the median ones, the femora but slightly shorter than the pronotum.



FIG. 3.—GALEPSUS CONGICUS. OUTLINE OF HEAD. (X 4.)

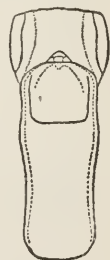


FIG. 4.—GALEPSUS CONGICUS. DORSAL OUTLINE OF HEAD AND PRONOTUM. (X 4.)

General color cinnamon; eyes seal brown; antennæ ochraceous; pronotum clouded with chocolate and with a fine medio-longitudinal line of the same. Prosternum seal brown mesad for the greater portion of its length. Tegmina and wings very faintly infumate, the veins lined with russet and prout's brown.

Measurements.

Length of body.....	<i>mm.</i> 27.0
Length of pronotum.....	7.0
Greatest width of pronotum.....	2.8
Length of tegmen.....	19.2
Length of cephalic femur.....	5.2

The type is unique.

Subfamily MANTINAE.

Genus HAPALOMANTIS Stål.

HAPALOMANTIS RHOMBOCHIR (Werner).

1908. *Entella rhombochir* WERNER, Ber. Senck. Naturf. Ges., p. 48, pl. 3, fig. 6. [No locality.]

Loanda, Angola. One female.

This specimen agrees with individuals from Kamerun.

Genus STENOPYGA Karsch.

STENOPYGA EXTERA Karsch.

1892. *Stenopyga extera* KARSCH, Ent. Nach., vol. 18, p. 146. [Barombi station on Elephant Lake, Kamerun.]

Mount Coffee, Liberia. March, 1897. (R. P. Currie.) One male.

This specimen is inseparable from a Kamerun individual. The range of this species is by this record continued northward along the coast, as the Gold Coast was the previous northern point for the form.

Genus TENODERA Burmeister.

TENODERA SUPERSTITIOSA (Fabricius).

1781. [*Mantis*] *superstitiosa* FABRICIUS, Spec. Ins., vol. 1, p. 348. [Equinoctial Africa.]

Loanda, Angola. (H. Chatelain.) One female.

Luebo, Kongo. (D. W. Snyder.) One female.

The measurements of these specimens are as follows:

	Luebo.	Loando.
	<i>Mm.</i>	<i>Mm.</i>
Length of body.....	92.0	95.0
Greatest width of head.....	7.0	8.0
Length of pronotum.....	37.0	39.0
Greatest width of pronotum.....	5.5	5.6
Length of tegmen.....	61.0	63+
Greatest width of tegmen.....	8.5	9.6
Length of cephalic femur.....	21.0	22.0
Length of caudal femur.....	33.5	34.5

The previous exact West African records for this species are Mukinbunga, Lower Kongo, Bibunde and Mapanja, Kamerun (Sjöstedt) and Bissau, Portuguese Guinea (Griffini).

Genus POLYSPILOTA Burmeister.

POLYSPILOTA VALIDISSIMA Gerstaecker.

1883. *Polyspilota validissima* GERSTAECKER, Mitth. Naturw. Ver. Neu-Vorpomm., vol. 14, p. 89. [Aburi, Gold Coast.]

Mount Coffee, Liberia. (G. P. Goll.) One male.

Clay Ashland, Liberia. (Mrs. J. E. D. Sharp.) One female.

The specimens of this striking species agree well with the original description and vary in dimensions but a millimeter or so from the type measurements. The range of the species is extended north-westward from the Gold Coast by these records, while the most southern point from which the species is known is the Gaboon country (Westwood).

The female specimen shows that there is some variation in the coloring of the internal face of the cephalic coxæ, these parts being dark brown as in the male, while in the type female they were described as blackish.

POLYSPILOTA CALABARICA Westwood.

1889. *Polyspilota calabarica* WESTWOOD, Rev. Mantid., p. 35, pl. 11, fig. 2. [Old Calabar.]

Mount Coffee, Liberia. (G. P. Goll.) One male.

This individual agrees quite well with the original description and figure except that the transverse costal tegminal bars are more regularly spaced, much as in males of *P. validissima*. The size is slightly less than that of the type, but this is apparently nothing more than individual variation.

It is quite difficult to understand why Werner¹ synonymized *Miomantis armicollis* Karsch with this species. One of the characters of this species, mentioned by the original describer, is the unarmed condition of the basal portion of the pronotum, while *armicollis*, based on the same sex (male) as *calabarica*, has the margins of the shaft with strong teeth. The range of *calabarica* is considerably extended to the northwest by the Mount Coffee record, the southern limit as far as at present known being the Kamerun.

POLYSPILOTA VARIEGATA (Olivier).

1792. *Mantis variegata* OLIVIER, Encycl. Meth., Ins., vol. 7, p. 638. [Angola.]

Mount Coffee, Liberia. February–April, 1897, and 1897 without month. (R. P. Currie and G. P. Goll.) Six males, fifteen females, one immature male.

Luebo, Kongo. (D. W. Snyder.) One male, three females.

Of the Mount Coffee series of this widespread and polymorphic species four males belong to the color form *pustulata*, two males and

¹ Ber. Senck. Naturf. Ges., 1908, p. 36.

eleven females to the form *striata*, and four females to the form *viridis*.¹ Of the Luebo specimens the male belongs to the *pustulata* form and the three females to the *striata* type.

As measurements of the above series may prove of service in studying the amount of geographic and individual variation in size in this species, I append a table of the dimensions.

	Length of body.	Width of head.	Length of pronotum.	Greatest width of pronotum.	Length of tegmen.	Length of cephalic femur.
MALES.						
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
March, 1897. Form <i>striata</i>		7.0	17.5	5.0	44.5	13.2
1897. Form <i>pustulata</i>		6.8	16.5	4.5	42.6	12.2
April, 1897. Form <i>pustulata</i>	58	7.0	18.0	5.0	42.0	13.0
1897. Form <i>pustulata</i>		6.8	16.5	4.5	39.0	11.2
No date. Form <i>pustulata</i>		7.0	17.3	4.5	42.0	12.2
No date. Form <i>striata</i>		7.0	17.5	4.5	43.0	12.2
Average of above series of this sex...	58	6.9	17.3	4.6	42.1	12.3
FEMALES.						
March, 1897. Form <i>viridis</i> Werner.....	63	8.2	19.5	6.0	47.0	15.0
April, 1897. Form <i>viridis</i> Werner.....	61	8.2	19.5	6.0	47.0	14.5
1897. Form <i>striata</i>	58	8.2	19.6	6.0	46.0	15.0
Do.....	59	8.2	19.2	6.5	48.0	15.0
Do.....	63	8.2	20.8	6.2	49.0	16.0
April, 1897. Form <i>viridis</i>	57	8.2	19.0	6.0	47.0	14.5
March, 1897. Form <i>striata</i>	59	8.2	19.5	5.8	43.0	14.8
April, 1897. Form <i>striata</i>	64	8.5	20.5	6.5	52.0	16.5
Do.....	63	8.3	20.8	6.2	49.0	16.0
April, 1897. Form <i>viridis</i>	63	8.3	20.0	6.0	50.0	16.0
February, 1897. Form <i>striata</i>	62	8.3	19.5	6.1	49.0	15.2
April, 1897. Form <i>striata</i>	63	8.3	19.7	6.0	48.0	15.0
Do.....	61	8.2	19.5	6.0	49.0	14.5
No date. Form <i>striata</i>		8.3	20.0	6.7	50.0	16.0
Do.....		8.0	19.2	6.0	46.8	15.2
Average of above series of this sex...	61.2	8.2	19.7	6.1	48.0	15.2

Genus SPHODROMANTIS Stål.

SPHODROMANTIS LINEOLA (Burmeister).

1838. *M[antis (Stagmatoptera)] lineola* BURMEISTER, Handb. d. Entom., vol. 2, Abth. 2, pt. 1, p. 537. [Sierra Leone.]

Mount Coffee, Liberia. April, 1897, and 1897. (R. P. Currie and G. P. Goll.) Four males, five females, two immature females.

Luebo, Kongo. (D. W. Snyder.) Two females, one immature female.

Loanda, Angola. (H. Chatelain.) Two females.

My study of this and other material causes me to indorse Werner's treatment of *gastrica* Gerstaecker, *bicarinata* Saussure, *kersteni* Stål, and *christina* Kirby as synonyms of this species.² Regarding *rudolfæ*, however, I must differ, as it appears to represent a southern form of the *bioculata* type.³

As the greater portion of the above series has been in alcohol, we can not give any notes on color variation.

¹ See Werner, Ber. Senck. Naturf. Ges., 1908, p. 38.

² Ber. Senck. Naturf. Ges., 1908, pp. 33-34.

³ See Rehn, Proc. Acad. Nat. Sci. Phila., 1911, p. 322.

Genus HOPLOCORYPHA Stål.

HOPLOCORYPHA PERPLEXA, new species.

Type.—Female; Luebo, Kongo. (D. W. Snyder.) [Cat. No. 14604, U.S.N.M.]

A member of the *macra-galeata* group, but readily separable on account of the more elongate pronotum, which has the lateral carinæ of the caudal half of the same irregularly undulate, and by the much slenderer cephalic limbs.

Size rather large (for the genus); form considerably elongate; surface rugoso-tuberculate. Head transverse, the greatest depth contained nearly one and one-half times in the greatest width; occipital line truncate between the juxta-ocular sulci; juxta-ocular lobes rather low, obtuse, not deplanate; ocelli very small, placed in an arcuate line; facial shield with the greatest depth contained one and one-half times in the greatest width, dorsal margin slightly arcuate, ventral margin subarcuate emarginate with a slight median indentation, lateral margins moderately converging dorsad, dorso-lateral angles rect-obtuse, ventro-lateral angles slightly acute; eyes prominent, ovoid when seen from the side; antennæ very delicate, filiform, their length but little greater than the greatest width of the head. Pronotum with the greatest (supra-coxal) width contained about six and one-half times in the length of same, the width at the caudal margin but slightly less than the supra-coxal width; collar distinctly narrower than the shaft, the average width of the former slightly less than a third the length of the same; cephalic margin strongly arcuate, slightly flattened mesad, lateral margins of shaft parallel, straight to near the supra-coxal region where the margins expand moderately to the obtuse-angulate lobes, narrowing caudad of the same, and subparallel on the entire shaft, although very slightly but regularly expanding caudad, entire lateral margins denticulate; median carina marked more or less distinctly over the entire pronotal length; transverse sulcus truncate, placed very slightly in advance of the greatest pronotal width; surface more or less distinctly undulato-lineate rugoso-tuberculate, the false lateral carinæ markedly crenulato-undulate; distinct usually paired tubercles placed along the median carina and a semielliptical line of tubercles placed caudad on the collar. Abdominal segments with the medio-dorsal lobe distinct, largest on the second segment; supra-anal plate large, subquadrate,

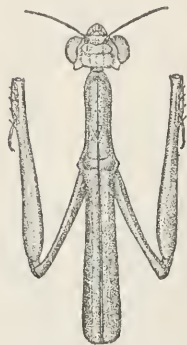


FIG. 5.—HOPLOCORYPHA PERPLEXA. DORSAL VIEW OF HEAD, PRONOTUM, AND CEPHALIC LIMBS. ($\times 1\frac{1}{2}$.)

slightly tectate, caudal margin bisarcuato-truncate, lateral angles broadly rounded; cerci slightly exceeding the supra-anal plate in length, robust, moniliform; subgenital plate strongly compressed distad. Limbs very slender. Cephalic coxæ slightly shorter than half of the pronotal length, of the structure found in the other species of the genus, the margins very finely denticulate, the slenderest portion at the distal third, internal distal lobe strongly developed, rounded: cephalic femora equal in length to about two-thirds that of the pronotum, very slender, tapering regularly from the proximal section, hardly compressed; external margin with five spines, one of which is very small and placed on the genicular lobe, internal margin with eleven¹ to twelve spines of alternating size except distad, where from three to four small spines intervene between the terminal large spine and the one preceding it; discoidal spines three in number, the second very long and surpassing in size the apical tibial claw: cephalic tibiæ slightly less than a fourth the length of the femora, moderately compressed, armed on the external margin with four spines on the distal half, unarmed proximad; internal margin with eight to ten spines; cephalic tarsi not exceeding the tibiæ in length, the metatarsi comprising more than half of the tarsal length. Median and caudal limbs very slender and elongate; tibiæ slightly longer than (caudal) or subequal to (median) the femora; median metatarsi slightly less than two-thirds of the length of the median tarsi; caudal metatarsi about three-fourths of the entire tarsal length.

General colors mottled raw umber and seal brown. Prosternum almost uniform broccoli brown, slightly roseate caudad of the insertion of the cephalic limbs. Cephalic coxæ with their internal faces nearly uniform broccoli brown, external margin beaded with seal brown; cephalic femora with the ventral and part of the internal face solid seal brown. Supra-anal plate and cerci wood brown. Median and caudal tibiæ obscurely biannulate with wood brown proximad.

Measurements.

	<i>mm.</i>
Length of body.....	60.0
Length of pronotum.....	24.5
Greatest width of pronotum.....	3.5
Length of cephalic femur.....	16.5
Length of median femur.....	16.5
Length of caudal femur.....	19.0

An imperfect paratype specimen has also been examined. It is considerably smaller than the type and, having lost the apex of its abdomen, the sex can not be ascertained. No point of difference from the type can be found.

¹ This appears to be abnormal and due to injury to certain spines.

HOPLOCORYPHA BOVIFORMIS, new species.

Type.—Male; St. Paul de Loanda, Angola. [Cat. No. 14605, U.S.N.M.]

Allied to *H. boromensis* Brancsik from Zambesia and *H. bispina* Saussure and Zehntner from Madagascar, differing from both in the extremely slender form of the pronotum and the spiniform character of the juxta-ocular lobes. From *bispina* it also appears to differ in the smaller size.

Size rather small; form elongate; surface closely and finely tuberculate. Head with the greatest depth contained one and one-half times in the greatest width; occipital outline truncate between the juxta-ocular sulci, juxta-ocular lobes rectangulate with the apices acute, mammiform, diverging, the lobes very slightly depressed; ocelli rather small, placed in an arcuate line; facial shield strongly transverse, dorsal margin truncate mesad, obliquely arcuato-emarginate laterad, ventral margin slightly arcuato-emarginate, lateral portions very narrow; antennæ slightly shorter than half of the pronotal length, simple; eyes very prominent, subglobose, ovoid in form when seen from the side. Pronotum slender, elongate, the greatest (supra-coxal) width contained nearly six times in the length; collar markedly tapering cephalad from the supra-coxal angles to the middle of the collar, thence subequal cephalad to the strongly rounded cephalic extremity, supra-coxal angles very slight but distinct; shaft slightly tapering caudad to the caudal third, thence subequal to the truncate caudal margin; lateral margins of the whole pronotum denticulate, a slight but distinct median scarina present throughout

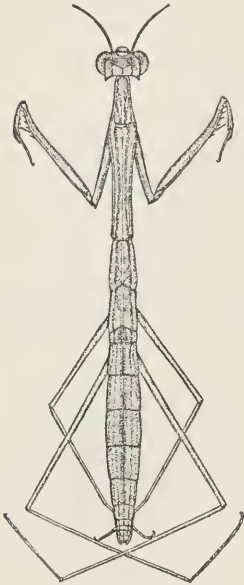


FIG. 6.—HOPLOCORYPHA BOVIFORMIS. DORSAL OUTLINE OF TYPE. (X 2.)

the pronotal length, transverse sulcus U shaped, not severing the median carina; paired supplementary carinæ on the shaft distinctly concavo-arcuate, closely and finely tuberculate, the tuberculations of the other (more lateral) portions of the shaft and of the collar arranged in linear fashion. Abdomen without marked medio-dorsal lobes on the caudal margin of the segments; supra-anal plate with the proximal width slightly greater than the length, lateral margins arcuato-convergent caudad, apical margin bisarcuate; cerci but slightly surpassing the supra-anal plate, deplanate, moderately broad, apex acute; subgenital plate with the distal half of the lateral margins converging distad, the apical extremity very narrow,

the very brief tuberculiform styles subcontiguous at their bases. Limbs of the slender type found in all of the species of the genus. Cephalic coxæ about half of the pronotal length, margins finely denticulate; cephalic femora about two-thirds the length of the pronotum, the distal extremity considerably curved dorsad, external margin armed with five spines, of which the distal one is on the genicular lobe and very rudimentary in character; internal margin with twelve spines, alternating in size, except that the distal large spine is preceded by three small ones; discoidal spines three in number the second slightly exceeding the apical tarsal claw in length; cephalic tibiæ (without apical claw) very slightly more than a fourth of the femoral length; external margin armed on the distal half with four spines; internal margin with nine spines; cephalic tarsi hardly longer than the tibiæ; metatarsus comprising two-thirds of the entire tarsal length. Median and cephalic limbs very slender, the median femora about three-fourths of the length of the caudal femora; median and caudal tibiæ slightly shorter than their respective femora; caudal metatarsi comprising about three-fourths of the entire tarsal length.

General colors prout's brown and ecru drab, one lined and washed over the other. Head with the face and the proximo-cephalic portion of the eyes prout's brown finely punctulate with olive, remainder of eyes clear tawny-olive; facial shield and region immediately ventrad of the insertion of the antennæ nearly clear wood brown. Pronotum with a medio-longitudinal bar of ecru drab, slightly expanded in the supra-coxal region and regularly expanding caudad on the caudal half of the shaft, lateral portions of the shaft weakly barred in a similar direction with the same color. Mesonotum and metanotum with paired lateral lines of prout's brown, laterad of which the color is ecru drab. Abdomen with a distinct medio-longitudinal bar of prout's brown. Limbs of the general colors clouded with tawny-olive; dark punctulations and internal longitudinal bars decided on the cephalic femora.

Measurements.

	Male (type).	Female (para- type).
	<i>mm.</i>	<i>mm.</i>
Length of body.....	27.0	38.5
Length of pronotum.....	11.2	13.5
Greatest width of pronotum.....	1.9	2.3
Length of cephalic femur.....	7.7	10.0
Length of median femur.....	9.0	10.0
Length of caudal femur.....	10.7	12.0

I have before me a female paratype, which fully agrees with the type in all important characters, allowing, of course, for sexual differentiation in proportions. A few notes, however, may not be amiss.

Form less elongate than in the male. Ocelli very small; facial shield with median truncate portion of the dorsal margin broader than in the male. Pronotum with the proportions the same. Abdomen with very small but distinct median lobes on the dorso-caudal margins of the segments, all segments multilined; supra-anal plate similar to that of the male in form but more tectate.

Color more uniform prout's brown, washed with ashy brown cephalad, with almost no clear ecru drab areas; pronotum without any portions of clear prout's brown; cephalic femora without dark areas on the internal faces; abdomen nearly uniform prout's brown.

Genus CALIDOMANTIS Rehn.

CALIDOMANTIS HOSIA,¹ new species.

Type.—Female; Luebo, Kongo. (D. W. Snyder.) [Cat. No. 14606, U.S.N.M].

Allied to *C. büttneri* Giglio-Tos,² from western, central, and southern Africa, but differing in the rotundato-subconoid eyes and the shorter tegmina and wings. It is also related to *minuta* Giglio-Tos, from the Cape of Good Hope, but it can readily be separated by the greater size of the body and the granulate pronotum.

Size rather small; form moderately elongate. Head large, the greatest width nearly twice the greatest width of the pronotum, the greatest depth of the head contained one and one-half times in the greatest width of the same; occipital outline arcuato-truncate between the juxta-ocular sulci, the portion between the sulci and the eyes distinctly arcuate declivent; ocelli small, placed in an arcuate line; facial shield strongly transverse, the greatest depth contained over three times in the width, dorsal margin narrowly truncate mesad, moderately arcuato-emarginate laterad, lateral margins arcuate, ventral margin subtruncate; antennæ simple, equal to four-fifths the length of the pronotum; eyes moderately prominent, broadly rotundato-rectangulate dorso-laterad when viewed from the front, the angle equally rounded when seen from above. Pronotum with the greatest (supra-coxal) width contained about three and one-half times in the length of the same, the collar much broader than the shaft and but little narrower than the supra-coxal expansion; cephalic margin strongly rounded with a slight median truncation, lateral margins of collar subparallel, gently expanding to the arcuate but not strongly marked supra-coxal lobes; shaft moderately and broadly narrowed, slightly expanding cephalad and caudad; caudal margin broadly truncate mesad, strongly arcuate laterad, entire lateral margins denticulate; a medio-longitudinal sulcus present for a distance

¹ *Ossa*—signifying *pious, devout*.

² Bull. Soc. Ent. Ital., vol. 41, 1911, p. 181.

cephalad and caudad of the transverse sulcus, which latter is well impressed; collar with a fairly complete elliptical carinate figure, which touches the transverse sulcus caudad; surface of the entire pronotum acute tuberculate. Tegmina slightly more than one and one-third times the length of the pronotum, elongate-ovate, subhyaline proximad in the sutural section, remainder opaque; costal margin broadly arcuate, slightly flattened mesad, sutural margin moderately arcuate, apex rotundato-rectangulate; costal veins numerous, stigma small, linear, placed slightly proximad of the middle. Wings about equal in length to the combined length of the head and pronotum, opaque; costal margin straight in the proximal two-thirds, strongly arcuate in the distal third, the immediate apex rounded acute-angulate, sinus distinct and moderately deep. Apex of abdomen missing. Cephalic coxæ distinctly compressed; dorsal margin with 5 to 6 teeth, between which are intercalated one or more smaller denticles; ventral face thickly denticulate, the denticulations adpressed; external margins finely denticulate; internal face of the coxæ with a few tubercles: cephalic femora slightly shorter than the pronotum, the greatest depth of the femora contained four times in the length of the same; dorsal femoral margin straight, finely crenulato-denticulate; external margin with 5 spines, of which the distal is very small and placed on the genicular lobe; internal margin with 14 spines, the distal one on the genicular lobe and the formulæ reading proximad being

IIIIIIIIIIIIII; discoidal spines 4 in number: cephalic tibiæ, exclusive of apical claw, slightly less than half of the femoral length, armed on the external margin with 7 spines placed on the median and distal portions, internal margins with 11 spines increasing in size distad: cephalic tarsi slightly longer than the tibiæ, exclusive of claw, the metatarsi slightly more than half of the entire tarsal length. Median and caudal limbs moderately slender; median femora nearly three-fourths the length of the pronotum; median tibiæ slightly shorter than the femora; caudal femora but slightly shorter than the pronotum; caudal tibiæ slightly exceeding the femora in length.



FIG. 7.—CALIDOMANTIS HOSIA. DORSAL VIEW OF TYPE. (X 2.)

IIIIIIIIIIIIII; discoidal spines 4 in number: cephalic tibiæ, exclusive of apical claw, slightly less than half of the femoral length, armed on the external margin with 7 spines placed on the median and distal portions, internal margins with 11 spines increasing in size distad: cephalic tarsi slightly longer than the tibiæ, exclusive of claw, the metatarsi slightly more than half of the entire tarsal length. Median and caudal limbs moderately slender; median femora nearly three-fourths the length of the pronotum; median tibiæ slightly shorter than the femora; caudal femora but slightly shorter than the pronotum; caudal tibiæ slightly exceeding the femora in length.

General color wax yellow, becoming gamboge yellow on the tegmina and wings, head inclined toward buff; eyes clay color; cephalic coxæ non-maculate; cephalic femora with three points of seal brown on the internal face, one decidedly proximal, one larger one immediately distad of the unguinal groove and one smaller one immediately proximad of the same, larger spines on the internal margin of the caudal femora lined on the internal margin and spotted at the internal base with seal brown, all the femoral and tibial spines tipped more or less broadly with the same color.

Measurements.

	<i>mm.</i>
Length of body (incomplete as apex of abdomen is missing).....	25.0
Length of pronotum.....	11.0
Greatest width of pronotum.....	2.8
Length of tegmen.....	13.8
Greatest width of tegmen.....	5.0
Length of cephalic femur.....	9.5
Length of median femur.....	8.0
Length of caudal femur.....	10.0

The type of this species is unique.

Subfamily CREOBOTRINÆ.

Genus PANURGICA Karsch.

PANURGICA LIBERIANA, new species.

Type.—Male; Mount Coffee, Liberia. (G. P. Goll.) [Cat No. 14607, U.S.N.M.]

Differing from *P. duplex* Karsch as figured by Werner¹ in having the cephalic spine shorter, the pronotum more elongate and decidedly oblique truncate lateral instead of subrectangulate and in the different shape of the lateral pronotal margin when seen from the side.

Size medium; form as usual in this genus. Head with the greatest depth contained one and two-fifths times in the greatest width; occipital line with the portion between the sulci subtruncate, juxta-ocular lobes low, rotundato-rectangulate, the angle nearer the eye than the sulcus, subtrigonal when viewed from the side; cephalic spine trigonal, depressed, distal portion slightly curved dorsad, when viewed from the dorsum the apex of the spine not surpassing the ocelli; ocelli large, subcontiguous, placed in a flattened triangle; facial shield transverse, the greatest depth about one and one-half times in the greatest width, dorsal margin with a marked median arcuate emargination, which is flanked laterad by low trigonal tubercles, the margin obliquely declivent laterad, ventral margin broadly concave, lateral margins parallel, straight, surface of plate impressed with a pair of lateral carinæ converging ventrad; clypeus subproduced dorso-

¹ Ber. Senck, Naturf. Ges., 1908, pl. 3, figs. 4a, 4b.

mesad; antennæ reaching nearly to the middle of the tegmina, moniliform; eyes strongly inflated, ovato-globose, the dorsal outline, when viewed from the lateral aspect, slightly oblique depressed. Pronotum of the usual type found in the genus, the area of greatest expansion contained about one and one-fifth times in the length; cephalic portion of margins narrowly rounded, thence laterad oblique emarginato-truncate to the portion of greatest width, caudad of this for a short distance truncate and slightly convergent, then strongly arcuato-truncate convergent to the narrowest portion, the caudal section of the pronotum with the margin broadly rounded, lateral margins serrulate; transverse sulcus strongly marked, placed very slightly before the middle, another transverse impression placed slightly caudad of the portion of least width; dorsal outline of the pronotum triarcuate when seen from the side, the central portion of the collar strongly compressed, or rather pinched, dorsad; re-entrant right angle of the lateral margins ventrad of the supplementary transverse depression decided. Tegmina very ample, nearly three and one-half times the combined length of the head and pronotum, subhyaline; marginal field narrow, distinctly narrowed in the distal half; apex of tegmina rotundato-angulate. Wings similar in texture to the tegmina and with their apices slightly surpassing those of the same. Abdomen with the proximal segments shallowly rotundato-lobate laterad, distal segments with their angles moderately acute-produced; supra-anal plate transverse, distal margin triarcuate, the median arcuation about twice as wide as the lateral ones; cerci subfusiform, moderately depressed, strongly hirsute; subgenital plate deplanate, moderately produced, distal margin rotundato-truncate, styles very short. Cephalic coxæ subequal to the length of the head and pronotum, slightly compressed; external margin serrulate, dorsal margin rather sparsely serrato-dentate, usually with smaller intercalated serrulations: cephalic femora slightly longer than the coxæ, strongly compressed, the dorsal portion sublamellate; dorsal femoral margin arcuato-truncate; ventro-lateral margin with five spines, four large, the distal one small and



FIG. 8.—PANURGICA LIBERIANA. DORSAL OUTLINE OF PRONOTUM OF TYPE. (X 3.)



FIG. 9.—PANURGICA LIBERIANA. LATERAL OUTLINE OF PRONOTUM OF TYPE. (X 3.)

placed on the genicular lobe; ventro-internal margin armed with 13 spines of alternating size, the distal one of the smaller grade and placed on the genicular lobe; discoidal spines four in number: cephalic tibiæ slightly more than two-thirds the length of the femora, considerably arcuate ventrad in the distal section; armed on the external margin with 12 adpressed spines, increasing in length distad: internal margin armed with 11 spines, increasing in length distad: cephalic tarsi two-thirds the length of the femora,

metatarsi equal to half of the entire tarsal length. Median and caudal limbs with the femora lamellato-carinate on the ventro-caudal margin, this developing into a rotundato-trigonal pregenicular lobe; tibiæ appreciably constricted before the apex.

General color wood brown to russet, thickly washed, mottled and punctulate with mummy brown; tegmina and wings pale clay color, the former with a premedian touch of mummy brown, caused by infuscation along several contiguous veins, and a slight touch of the same at the distal third, the latter with the apices edged with mummy brown. Head with the face chiefly russet, the occiput and two more or less complete transverse lines, one at the level of the ocelli, the other at the upper line of the clypeus, mummy brown; antennæ russet, becoming darker distad; eyes clove brown. Pronotum with the cephalic half of the lateral portions pale, mummy brown punctulate, the remainder of the pronotum darkened, but similarly punctulate and clouded. Limbs more or less distinctly and more or less completely annulate with the two base colors, the dark areas broader than the pale areas, the latter on the cephalic limbs with dark punctulations; internal face of the cephalic coxæ and femora nearly solid seal brown, the dorsal section of the latter with fasciæ similar to those of the external face, the smaller spines on the ventro-internal margin pale, tipped with seal brown.

Measurements.

	<i>mm.</i>
Length of body.....	23.0
Length of pronotum.....	6.0
Greatest width of pronotum.....	4.6
Length of tegmen.....	25.5
Length of cephalic femur.....	8.3
Length of median femur.....	6.2
Length of caudal femur.....	7.2

The type of this species is unique.

PANURGICA FRATERCULA, new species.

Type.—Male, Mount Coffee, Liberia. (G. P. Goll.) [Cat. No. 14608, U.S.N.M.]

Allied to the preceding species but differing in the smaller size, the much less prominent and less angulate lateral expansions of the pronotum and much lower dorsal swellings of the disk of the same.

Size rather small; form slenderer than in the preceding species. Head as in *liberiana* except for the following points of difference: occipital line moderately concave, juxta-ocular lobes very low, merely rounded bosses; cephalic spine narrower and more spiniform. Pronotum of the type usual in this genus but more longitudinal than in *liberiana*, the greatest width contained one and two-fifths times in

the length of the same; cephalic portion of the lateral margins less diverging, oblique subtruncate, lateral angles very blunt, the margins regularly arcuate mesad thence to the point of least width, lateral margins finely crenulate-serrulate; caudal portion of the pronotum with broadly rounded margins which are subtruncate mesad, entire; transverse sulcus well impressed; caudal transverse depression less impressed than the transverse sulcus and not quite as evident as in *liberiana*; when viewed from the side the dorsal outline is lower and more undulate than arcuate as in *liberiana*, central portion of collar similarly compressed but less decided; rectangulate section of lateral margins similar to *liberiana*. Tegmina and wings as in *liberiana*. Abdominal segments non-lobate laterad; supraanal plate transverse, margin slightly concave over the cerci, apex rounded; cerci and subgenital plate much as in *liberiana*. Cephalic limbs much as in the preceding species, but more slender; femora with ventro-internal margin armed with thirteen spines usually alternating in size; tibiæ with thirteen external and internal spines. Median and caudal limbs similar to those of *liberiana* but the pregenicular femoral lobes are lower.



FIG. 11.—PANURGICA FRATERCULA. LATERAL OUTLINE OF PRONOTUM OF TYPE. (X 3.)

Coloration as in *liberiana* but with the pronotum less mottled and the limbs less distinctly annulate. Antennæ seal brown, pronotum washed with the same color, tegmina with a single minute spot proximad of the distal third and another extremely faint one slightly proximad

of the middle; internal face of the cephalic coxæ and femora wood brown, suffused in the region of the trochanter with seal brown and along the dorsal margin of the femora with a continuation of the bands of the external face.

Measurements.

	<i>mm.</i>
Length of body.....	19.8
Length of pronotum.....	5.0
Greatest width of pronotum.....	3.6
Length of tegmen.....	22.5
Length of cephalic femur.....	7.5
Length of median femur.....	6.0
Length of caudal femur.....	6.5

In addition to the type we have before us a paratypic male, which is very slightly smaller than the typical individual but otherwise identical.

The presence of a third species of this genus at Mount Coffee is indicated by an additional broken specimen (R. P. Currie, 1897), minus head and most of the limbs.



FIG. 10.—PANURGICA FRATERCULA. DORSAL OUTLINE OF PRONOTUM OF TYPE. (X 3.)

Genus PSEUDOCREOBOTRA Saussure.

PSEUDOCREOBOTRA OCELLATA (Beauvois).

1805. *Empusa ocellata* BEAUVOIS, Ins. Rec. Afr. Amer., p. 110, Orth., pl. 13, fig. 2. ["Les déserts du royaume d'Oware."]

Mount Coffee, Liberia. April, 1897. (R. P. Currie.) One female.

Mount Coffee, Liberia. (Mrs. Sharp.) One male.

Luebo, Kongo. (D. W. Snyder.) One male, one female.

Kongo. (J. H. Camp.) One female.

The measurements of these specimens are as follows:

Locality.	Length of body.	Length of pronotum.	Greatest width of pronotum.	Length of tegmen.	Length of cephalic femur.
	mm.	mm.	mm.	mm.	mm.
Mount Coffee, male.....	22.5	4.8	4.8	28.5	7.5
Luebo, male.....	24.5	5.5	5.8	27.0	8.5
Mount Coffee, female.....	27.5	5.6	5.5	25.0	9.0
Luebo, female.....	30.5	6.3	6.2	26.0	10.0
Kongo, female.....	31.0	6.5	6.5	26.5	10.5

The Mount Coffee female has the eye-spot and a large basal spot on the axillary field of the wing bright brick red.

Subfamily VATINÆ.

Genus DANURIA Stål.

DANURIA ANGOLENSIS, new species.

Type.—Male; Loanda, Angola. [Cat. No. 14609, U.S.N.M.]

Differing from *D. thunbergi* Stål, the type of the genus, and apparently from the other known forms of this group as now restricted, in having the pronotum shorter and more robust in the male sex, the length of the same being considerably less than half that of the tegmina. The lateral margins of the pronotum are dentate in their entirety, while the maculation at the apex of the internal face of the cephalic coxæ is very faint, single, and transverse in character. Comparison with the species known only from the male sex is quite unsatisfactory, but this form seems very distinct from the three species known only from that sex.

Size rather large; form robust for the male sex of this genus. Head with the median depth contained one and one-half times in the greatest width; occipital outline arcuato-subangulate concave between the juxta-ocular sulci; juxta-ocular lobes acute, conical, directed dorsad or in the line of the axis of the eyes, their height above the dorsal portion of the eyes one-third of the depth of the latter, deplanate; paired supraocellar median tubercles low, rotundato-acute; ocelli moderately large, placed in a depressed triangle;

facial shield strongly transverse, the general form arcuate dorsad, dorsal margin narrowly subtruncate mesad, arcuato-emarginate laterad of the same, ventral margin moderately arcuato-emarginate; eyes prominent, rounded, when viewed from the side seem to be pyriform-ovate; antennæ missing. Pronotum with the greatest (supra-coxal) width contained nearly five times in the length of the same, shaft two and one-half times the length of the collar; cephalic extremity well rounded, margins of collar gradually tapering from shortly cephalad of the supra-coxal insertion to the distal extremity; supra-coxal lobes but little expanded, rounded; shaft subequal in width for a distance caudad of the supracoxal lobes, thence slightly expanding caudad to the caudal margin, which is truncate mesad and obliquely arcuato-truncate laterad; median carina present on the whole shaft and the greater portion of the collar, placed for the greater part of its length in a narrow sulciform depression; surface of shaft sparsely but regularly tuberculate, surface of collar subdeplanate mesad, a deeply impressed ovate figure failing to reach the much shallower transverse sulcus, this figure strongly outlined with marginal carinæ laterad and flanked mesad with three to four distinct tubercles on each side and some scattered smaller median ones; lateral margins of the whole pronotum dentato-spinose, the spines of greatest length on the median portion of the shaft. Tegmina and wings over twice the length of the pronotum; marginal field of the former moderately wide proximad, gradually narrowing distad. Abdomen with the apex missing. Cephalic coxæ two-thirds the length of the pronotum; ventral surface sparsely tuberculate, ventro-internal margin serrato-denticulate; external margin serrulate; dorsal margin with the distal lamellation forming about one-third of the entire length, the margin of the same with eight to nine decided denticulations, the dorsal margin proximad of the lamellation arcuato-emarginate, proximal portion of the same margin serrato-denticulate: cephalic femora slightly exceeding the pronotal shaft in length, very slender, dorsal margin nearly straight with a blunt subtrigonal depressed supra-genicular projection; ventro-external margin armed with five spines, one very small and genicular in position; ventro-internal margin armed with fourteen spines placed in the following fashion (reading from the distal extremity) I I I I I I I I I I, the distal one small, genicular and well separated from the others; discoidal spines four in number: cephalic tibiæ (exclusive

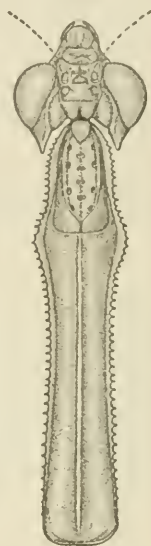


FIG. 12.—DANURIA
ANGOLENSIS.
DORSAL VIEW OF
HEAD AND PRONO-
TUM OF TYPE.
(X 3.)

of apical claw) about two-fifths of the femoral length, moderately compressed, armed on the external margin with eight spines on the median and distal portions, on the internal margin with twelve spines, increasing in length distad: cephalic tarsi somewhat longer than the tibiæ, the metatarsus equal to half of the tarsal length. Median and cephalic limbs slender, the femora and tibiæ moderately compressed.

General color cinnamon becoming mars brown on the tegmina; pronotum mottled rather irregularly with olive, the larger dorsal tubercles and the marginal denticulations touched with the same; region of the tegminal stigma clouded with vandyke brown; wings very strongly infumate (as usual in the genus); proximal abdominal segments broadly margined dorso-caudad with shining seal brown; cephalic coxæ washed at the proximal extremity of the internal face, along the lamellate ridge and around the insertion with seal brown, distal extremity of the internal face with the usual bar very weak seal brown and transverse in position, a narrow distal margining of the same present; internal margin of cephalic tibiæ with three poorly defined oblique fasciæ of seal brown.

Measurements.

	<i>mm.</i>
Length of body (minus apex of abdomen).....	62.0
Length of pronotum.....	19.5
Greatest width of pronotum.....	4.0
Length of tegmen.....	44.0
Length of cephalic femur.....	15.0
Length of median femur.....	13.0
Length of caudal femur.....	17.5

The type of this species is unique.

Family PHASMIDÆ.

Subfamily CLITUMNINÆ.

Genus GRATIDIA Stål.

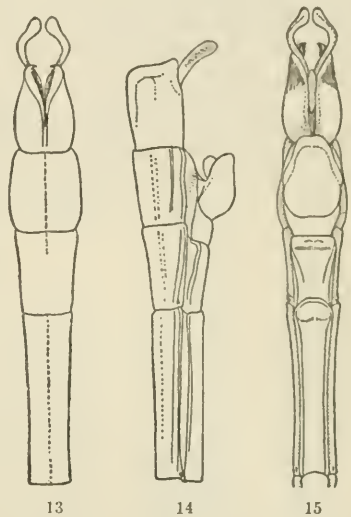
GRATIDIA PULCHRIPES, new species.

Type.—Male; Luebo, Kongo. (D. W. Snyder.) [Cat. No. 14610, U.S.N.M.]

Related to *G. kibonotensis* Sjöstedt, *insulsa*, *montana*, and *specifica* Brunner and *linea-alba* Rehn, but differing from these as follows: from *kibonotensis* in the subequal and straight (laterally viewed) cerci, which also project considerably caudad of the anal segment, in the less distinctly emarginate distal margin of the subgenital plate and in the far greater size; from *insulsa* in the greater size and non-carinate abdomen; from *montana* in the much longer limbs (cephalic femur 31.5 instead of 25), although the general size is about the

same; from *specifica* in the lobes of the anal segment being produced rectangulate, in the caudal point of insertion of the cerci and in the distinctly incurved form of the same; from *linea-alba* in the peculiar character of the apex of the cerci and the more inflated subgenital plate.

Size rather large (for the genus); form very elongate, limbs exceedingly slender. Head distinctly longer than the prothorax, somewhat narrowed caudad, with a very slight transverse inflation between the eyes, medio-longitudinal sulcus slight; occipital margin with a median pair of subconical tubercles; eyes subspherical, moderately prominent; antennæ seventeen-jointed, in length slightly less than half that of the cephalic femora. Prothorax with the lateral margins slightly constricted cephalad; cephalic margin regularly arcuato-emarginate, caudal margin truncate. Mesothorax slightly more than six times the length of the prothorax, very delicately carinate in all but the extreme caudal section, which is very finely sulcate. Metathorax, including the median segment, nearly equal to the mesothorax in length, very delicately carinate; median segment quadrate but very slightly longitudinal, cephalic margin very obtusely angulate, caudal margin arcuato-emarginate. Abdomen with the segments longitudinal, all except the distal ones very decidedly so, not distinctly carinate except near the apex where several lateral and a median carinæ are moderately marked; anal segment compressed, subtectate, strongly carinate dorsad, distinctly fissate for some distance, from the side the caudal margin is truncate, very slightly rounded dorsad, distinctly rectangulate produced ventrad, internally strongly denticulate, ventral line of anal segment subtruncate except for a slight arcuate emargination at the cercal insertion, which is near the caudal extremity; cerci straight (from side), subequal, slightly thickened and rounded distad, from the dorsum they are seen to be distinctly bowed and slightly knobbed at the apex; subgenital plate moderately inflated with the caudal margin bisarcuate. Cephalic femora but slightly shorter than the head and thoracic segments; cephalic tibiæ exceeding the femora by the length of the head and pronotum. Median femora equal in length to the head and pro- and mesothorax; median tibiæ some-



FIGS. 13-15.—GRATIDIA PULCHRIPES. DORSAL, LATERAL, AND VENTRAL OUTLINES OF APEX OF ABDOMEN OF TYPE. (X 5.)

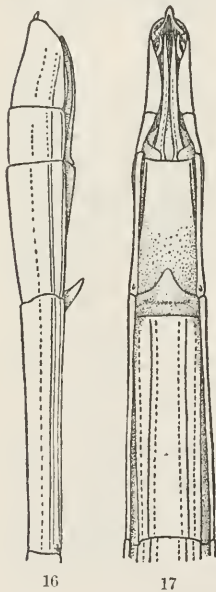
what exceeding the femora. Caudal femora equal to three-fourths the length of the cephalic femora; tibiæ exceeding the femora by more than the length of the head.

General color pale pea green, the cerci, head, antennæ and prothorax strongly washed with seal brown; limbs russet, the distal extremities of the femora seal brown, this area bordered proximad on the median and cephalic limbs by a broad irregular annulus of cream white, pads of the tarsi cream white, in striking contrast to the general coloration.

Measurements.

	<i>mm.</i>
Length of body.....	69.5
Length of pronotum.....	2.5
Length of mesonotum.....	15.0
Length of metanotum (including median segment).....	14.0
Length of cephalic femur.....	31.5
Length of median femur.....	20.8
Length of caudal femur.....	26.0

An imperfect male specimen from the type locality has been examined in addition to the type. This individual is somewhat smaller than the type but otherwise does not differ in the essential characters.



FIGS. 16, 17.—*GRATIDIA CRYPTOCERCATA*. LATERAL AND VENTRAL VIEW OF APEX OF ABDOMEN OF TYPE. ($\times 5$.)

GRATIDIA CRYPTOCERCATA, new species.

Type.—Female; Kongo. [Cat. No. 14611, U.S.N.M.]

Allied to *G. reducta* Brunner¹ from German East Africa, agreeing in the hidden cerci, but differing in the bicarinate instead of tricarinate ventral abdominal segment, much more elongate operculum, and larger size.

Size moderately large; form moderately elongate. Head slightly more than one and one-half times the prothoracic length, regularly but not very greatly narrowing caudad, interocular region hardly inflated; occipital margin with a pair of very low and weak median tubercles separated by a shallow depression of the margin; eyes subglobose, hardly prominent; antennæ imperfect, fifteen joints present. Prothorax with the lateral margins subparallel caudad, slightly arcuate constricted cephalad; cephalic margin decidedly arcuato-emarginate, caudal margin truncate; median transverse sulcus arcuate caudad. Mesothorax falling short of the length of the median femora by that of the prothorax, with the

¹ Insektenfam. Phasm., vol. 2, p. 228.

faintest trace of a median carina. Metathorax half the length of the cephalic femora, carinate in similar fashion to the mesothorax; median segment slightly transverse, cephalic and caudal margins of segment arcuate cephalad. Abdomen with all except the extreme distal segments distinctly longitudinal, a weak median carinæ and two pairs of lateral carinæ more or less distinct, but never strongly marked; anal segment, longitudinal compressed, strongly tectate, median carina distinct, caudal margin arcuate with a small but deep V-shaped median emargination exposing the small subdigitiform supra-anal plate; cerci completely hidden; operculum lanceolate, reaching nearly to the apex of the anal segment, non-carinate; seventh ventral abdominal segment margined laterad by prominent carinæ and with a distinct median pair of the same, distal margin produced into an acute-angulate roughened lobe. Cephalic femora falling but little short of the meso- and metathorax in length; tibiæ very slightly exceeding the femora. Median femora equal to about two-thirds the cephalic femoral length; tibiæ exceeding the femora by half the prothoracic length. Caudal limbs missing.

General color prout's brown, becoming wood brown on the head and more or less washed with the same color on the limbs and with éceru drab on the apex of the abdomen.

Measurements.

	<i>mm.</i>
Length of body.....	77.0
Length of prothorax.....	2.5
Length of mesothorax.....	15.0
Length of metathorax (incl. med. segm.).....	12.6
Length of cephalic femur.....	25.0
Length of median femur.....	17.5
Length of caudal femur.....	

The type is unique.