

STUDIES IN OLD WORLD MANTIDÆ (ORTHOPTERA).

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The material forming the base of the present paper is almost entirely contained in the collections of the Academy of Natural Sciences of Philadelphia and the United States National Museum. The author is indebted to Dr. W. H. Ashmead of the latter institution, for the privilege of examining the material under his charge.

Subfamily **Orthoderinæ**.

Genus **EREMIAPHILA** Lefebvre.

1835. *Eremiaphila* Lefebvre, Ann. Soc. Entom. France, IV, p. 468.

Type.—By selection *E. luxor* Lefebvre.¹

Eremiaphila bore Lefebvre.

1835. *Eremiaphila bore* Lefebvre, Ann. Soc. Ent. France, IV, p. 492. [Desert of Suez.]

Two immature specimens; Egypt.² (Dr. H. C. Wood.) [A. N. S. Phila.]

These appear to be the only specimens in existence except the types.

Eremiaphila sabulosa Saussure.

1871. *E[remiaphila] sabulosa* Saussure, Mélanges Orthoptérologiques, Suppl., III fasc., p. 387. [Isthmus of Suez.]

One immature specimen; Egypt. (Dr. H. C. Wood.) [A. N. S. Phila.]

This species has apparently not been recorded since the original description.

Genus **THEOPOMPA** Stål.

1877. *Theopompa* Stål, Bihang till K. Svenska Vet.-Akad. Handlingar, Band 4, No. 10, pp. 22, 47.

Included *ophthalmica* (Olivier) and *servillei* (Haan), of which the latter can be considered the type.

¹ Of the originally included species (*audouin*, *cerisy*, *genc*, *zetterstedt*, *luxor*, *bore*, *savigny*, *khamzin*, *kralil*, *kheych*, *typhon*, *petit*, *hebraica* and *anubis*), *luxor* possesses the best figure, and for that reason I have selected it as the type.

² Dr. Wood has very kindly given me the following information regarding the specimens in the Academy's collection presented by him, and simply labelled "Egypt": My Egyptian collections were made in three places—at Helowan and at the Menai House in the desert, seven or eight miles from Cairo; at Assouan (at the First Cataract on the Nile); and probably some at Luxor on the Nile.

Theopompa servillei (Haan).

1842. *Mantis servillei* Haan, Verhand. Natuurl. Gesch. Neder. overz. bezitt., p. 81, tab. 16, figs. 5-6. [Lewibonger, Java, 300 feet elevation.]

One female; Trong. Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

Genus **CHIROPUS** Saussure.

1869. *Chiropus* Saussure, Bull. Soc. Entom. Suisse, III, pp. 54, 61.

Type.—*Chiropus dives* Saussure.

Chiropus insidiator (Wood-Mason).

1882. *Tarachodes insidiator* Wood-Mason, Journ. Asiat. Soc. Bengal, LI, Pt. 2, p. 22. [Nyassa, East Africa.]

Two somewhat immature females; Zulu Mission, South Africa. [A. N. S. Phila.]

This species has been recorded from Barberton in the Transvaal, Nyassaland, Voi in British East Africa and Somaliland.

Genus **PYRGOMANTIS** Gerstaecker.

1869. *Pyrgomantis* Gerstaecker, Archiv für Naturgeschichte, XXXV, Band I, p. 210.

Type.—*P. singularis* Gerstaecker.

Pyrgomantis singularis Gerstaecker.

1869. *Pyrgomantis singularis* Gerstaecker, Archiv für Naturgeschichte, XXXV, Band I, p. 211. [Between Mombasa and Wanga, East Africa.]

Three immature males; Zulu Mission, South Africa. [A. N. S. Phila.]

This species has been recorded from Pretoria, Transvaal, Natal and Zululand.

Subfamily **Mantinae**.

Genus **IRIDOPTERYX** Saussure.

1869. *Iridopteryx* Saussure, Bull. Soc. Ent. Suisse, III, pp. 55, 63.

Included species, *I. iridipennis* and *glauca*, the former being the type, as the latter was later removed to *Micromantis* by Saussure.

Iridopteryx infumata Saussure.

1872. [*Gonypeta*] (*Iridopteryx*) *infumata* Saussure, Mélanges Orthoptérologiques, IV, p. 30. ["L'Egypte (suivant l'étiquette; mais pourrait être des Indes?)"]

Two specimens, male and female; Trong, Lower Siam; January-February, 1899. (Dr. W. L. Abbott.) [U. S. N. M.]

Genus **AMELES** Burmeister.

1838. *Ameles* Burmeister, Handb. d. Entom., II, p. 531.

Included *nana*, *minima*, *aurantiaca* and *flavicincta*. The first of

these was removed to *Parames*, and of the remaining three *minima* may be selected as the type.

Ameles malaccana n. sp.

Type: ♀; Trong, Lower Siam. (Dr. W. L. Abbott.) [Cat. No. 6,955, U. S. N. M.]

This species is probably related to *A. abjecta* Cyrillo (= *spallanzania* Rossi et auct.) and *A. decolor* Charpentier of southern Europe. While quite distinct from either of these forms, no satisfactory comparison can be made without good figures or accurate descriptions, and as the existing ones are based chiefly on the males, no comparative diagnostic characters can be given. The central Asian *A. alata* Saussure is an entirely different insect, the female having wings as long as the body.

Size rather small; form rather robust, abdomen moderately expanded. Head very slightly broader than deep; vertex subtruncate, juxta-ocular lobes rounded; eyes ovate when viewed laterally; ocelli disposed in a small triangle; facial shield moderately transverse, the superior margin very slightly arcuate.¹ Pronotum over twice as long as broad; collar broad and gradually expanding into the rather well-marked, but evenly curved, supra-coxal expansion; shaft contracting posteriorly; surface with sparse tubercles, median carina slightly marked on the shaft, at the posterior margin flanked by a pair of moderate-sized blunt tubercles; margins, except the anterior and posterior, with rather even, short dentiform spines. Tegmina very short, not equal to the pronotum in length; apex obtuse, narrowly rounded. Wings very slightly exceeding the tegmina in length. Abdomen sub-fusiform, the apex rather strongly constricted, the whole bearing a distinct dorsal median carina. Supra-anal plate transverse, the apical margin subrotundate. Cerci not exceeding the subgenital plate in length, depressed. Subgenital plate large, apex rostrate, compressed. Anterior coxæ very slightly longer than the pronotum, the lower margin finely denticulate; femora slightly longer than the pronotum, very heavily built, external margin bearing five large spines, one of which is blunt and apical, internal margin bearing thirteen unequal spines, discoidal spines three in number; tibiæ very slightly more than half the length of the femora, the external margin bearing nine spines, the basal ones much smaller than the apical, the internal margin bearing eight spines, the basal ones smaller than the apical; metatarsi slightly exceeding the remaining tarsal joints in length. Median limbs slender, tibiæ shorter than the femora, the metatarsi not equal to the remaining tarsal joints in length.

General color dull umber, obscurely and irregularly spotted and

blotched with dull ochraceous. Anterior femora with the internal face shining black.

Measurements.

Total length,	20.5 mm.
Length of pronotum,	6 "
Greatest width of pronotum,	3.1 "
Length of tegmina,	4.5 "
Length of anterior femora,	7 "

Genus **STATILIA** Stål.

1877. *Statilia* Stål, Bihang till K. Svenska Vet.-Akad. Handlingar, Band 4, No. 10, pp. 36, 55.

Included *Pseudomantis nemoralis* and *Mantis apicalis* Saussure, of which the former may be selected as the type.³

Statilia maculata (Thunberg and Lundahl).

1784. *M[antis] maculata* Thunberg and Lundahl, Dissert. Entomolog., Pt. III, p. 61. [Japan.]

Thirty-eight specimens; fourteen males, twenty-four females:

Yokohama, Japan. (Loomis.) [A. N. Caudell.]

Kioto, Japan. (Y. Hirase, No. 29.) [A. N. S. Phila.]

Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

Goenong Soegi, Lampong, Sumatra. October–November, 1901. (A. C. Harrison, Jr., and Dr. H. M. Hiller.) [A. N. S. Phila.]

After a critical examination of the above rather extensive series, I agree with Bolivar⁴ that *maculata* and *huani* are inseparable. The difference in size in the series examined is, I admit, rather startling, the extremes in total length being 39.5 and 61.5 mm., but intermediates between these form a completely connected series. The Kioto series alone contains the two extremes and a great number of intermediates. The coloration of the whole series is rather uniform, but several are dull blackish-brown instead of the usual grayish-brown.

Genus **TENODERA** Burmeister.

1838. *Tenodera* Burmeister, Handb. der Entom., II, p. 534.

Included *fasciata* Olivier (= *superstitiosa* Fabricius), *chloreudeta* (= *aridifolia* Stoll), and *tessellata* (= *australasiae* Leach). Of these the first may be selected as the type.

³ The genus *Pseudomantis* Saussure (Bull. Soc. Ent. Suisse, III, pp. 56, 228) contained two species, *albofimbriata* Stål and *nemoralis* Saussure. As Stål removed *nemoralis* to *Statilia* and left *albofimbriata* in *Pseudomantis*, the latter can be regarded as the type of Saussure's genus.

⁴ Ann. Soc. Ent. France, LXVI, pp. 309–310.

Tenodera superstitiosa (Fabricius).

1781. [*Mantis*] *superstitiosa* Fabricius, Species Insect., I, p. 348. [Æquinoctial Africa.]

One female; Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

Genus **PARATENODERA** n. gen.

Type.—*Tenodera sinensis* (Saussure).

This genus can readily be separated from *Tenodera* s. s. by the stouter and heavier form, much less elongate pronotum, the broader head, the higher facial shield and the heavier anterior limbs. The principal differential characters would be as follows:

A.—Head with the facial shield about three times as broad as high; pronotum with the collar about one-fifth of the total length of the pronotum; anterior coxæ with the lower margin with very obsolete denticles, *Tenodera* Burm.

AA.—Head with the facial shield about twice as broad as high; pronotum with the collar not less than one-fourth of the total length of the pronotum; anterior coxæ with the lower margin strongly denticulate, *Paratenodera* Rehn.

Paratenodera aridifolia (Stoll).

1787. [*Mantis*] *Aridifolia* Stoll, Natuurlijke Afbeeldingen en Beschrijvingen, Spoken, pp. 65, 78, Pl. XXII, fig. 82. [East Indies.]

Ten specimens; one male, nine females:

Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

Goenong Soegi, Lampong, Sumatra. October–November, 1901. (A. C. Harrison, Jr., and Dr. H. M. Hiller.) [A. N. S. Phila.]

These specimens are quite constant in size, and in the series examined both the brown and green phase of coloration are present, and in about equal proportion.

Paratenodera sinensis (Saussure).

1871. [*Tenodera*] *aridifolia* var. *sinensis* Saussure, Mélanges Orthoptérologiques, III, Suppl., p. 419. [Ningpo, China.]

Thirty-two specimens; twelve males, twenty females:

Kioto, Japan. (Y. Hirase, Nos. 32 and 33.) [A. N. S. Phila.]

Yokohama, Japan. (Loomis.) [A. N. Caudell.]

The above excellent series shows that the full brown phase of coloration is apparently rather scarce in *sinensis*, as it is present in but two out of thirty-two specimens. In a series of eighteen specimens of this species, taken from the introduced colony at Mt. Airy, Philadelphia, the proportion is two in eighteen. The variation in size is rather great,

the females in the series ranging from 25 to 30.5 mm. in the length of the pronotum.⁵

After a comparison of *sinensis* with *aridifolia* there can be no doubt but that they represent very distinct species.

Genus **POLYSPILOTA** Burmeister.

1838. *Polyspilota* Burmeister, Handb. der Entom., II, p. 534.

Included *conspersa*, *albimacula* (= *Mantis domingensis* Palisot), *varia* (= *pustulata* Stoll), *variegata* (= *striata* Stoll), and *catenata* (= *pustulata* Stoll). As only one, *albimacula*, has been removed from the genus, the type must be selected from the remaining four species. As probably the best known and most representative form of the genus is *striata* Stoll, *variegata*, which equals *striata*, may be selected as the type.

Polyspilota striata (Stoll).

1787. [*Mantis*] *Striata* Stoll, Natuurlijke Afbeeldingen en Beschrijvingen, Spoken, pp. 34, 78, Pl. XI, fig. 41. [Coast of Angola.]

Two females; Gaboon River, West Africa. (Rev. M. Nassau.) [A. N. S. Phila.]

While these specimens have been dried from alcohol, still it is evident that two color phases, a light and a dark type, are present in this species.

Genus **LEOMANTIS** n. gen.

Type.—*Leomantis ignota* n. sp.

Allied to *Sphodropoda* Stål,⁶ but differing in the very much stouter form, the very much wider costal field of the tegmina, the strongly depressed head and peculiarly developed anterior femora.

Leomantis ignota n. sp.

Type: ♀; Zulu Mission, South Africa. [A. N. S. Phila.]

Size medium; form very stout and robust. Head strongly compressed, subocular in outline, though slightly longitudinal; vertex very narrowly rounded, arcuate when viewed from the front; eyes ovoid in outline; ocelli small, disposed in a triangle; facial shield over twice as wide as high, the superior margin very obtuse-angulate, the inferior truncate; antennæ not quite equal to the pronotum in length, filiform. Pronotum very stout, the greatest width equal to half the entire length; collar short, passing without any marked differentiation into the wide

⁵ One female from the Mt. Airy colony exceeds any of the Japanese specimens in size, measuring as follows: Total length 104; length of pronotum 31.4; length of tegmina 64.5; length of anterior femora 24 mm.

⁶ Öfversigt K. Vetén.-Akad. Förhandl., 28, No. 3, p. 399. Type, *Mantis tristis* Saussure.

supracoxal dilation, posterior two-thirds of the shaft subequal; dorsal surface finely tuberculate, a strong longitudinal sulcus present on the posterior half of the collar and the anterior half of the shaft; margins strongly denticulate except on the anterior portion of the collar; acetabular spine erect, robust. Tegmina short and rounded, not reaching the apex of the abdomen; costal margin strongly arcuate, sutural margin moderately so, apex obtuse-angulate; costal field at the widest point equal to one-half the width of the entire tegmina; stigma corneous, slender, subfusiform, longitudinal. Wings about equalling the tegmina in length when in repose. Abdomen strongly expanded. Supra-anal plate triangularly produced, the apex obtuse-angulate. Cerci attenuate, about equal to the subgenital plate in length. Subgenital plate produced, apex rostrate. Anterior coxæ slightly shorter than the pronotum, superior margin serrate, lower margin with elongate dentiform spines; femora equal to the pronotum in length, superior margin bearing a large, rounded, foliaceous expansion on the apical two-thirds of the joint, lower external margin bearing four large spines, two medium-sized apical spines, and a series of small blunt spinous tubercles between the largest spines, discoidal spines four in number, closely placed, internal margin anterior to the discoidal spines bearing a series of thirteen spines, posterior to the discoidal spines a series of five blunt tubercles; tarsi somewhat exceeding half the length of the femora, the superior margin bearing an arcuate foliaceous ridge, external margin bearing a series of seven spines, the basal portion unarmed, the internal margin bearing a series of fourteen spines; metatarsi stout, slightly longer than the remaining joints united. Median and posterior limbs rather robust; femora armed with genicular spines, the genicular lobes rounded; posterior metatarsi not two-fifths of the total tarsal length.

As the specimens examined are all from alcohol, and consequently with the natural colors destroyed, no color notes can be given.

Measurements.

Total length,	50.5 mm.
Length of pronotum,	17 "
Greatest width of pronotum,	8 "
Length of tegmina,	21 "
Greatest width of tegmina,	13 "
Length of anterior femora,	17 "
Greatest width of anterior femora,	6 "

Beside the type three immature specimens from the same locality have been examined.

Genus **SPHODROMANTIS** Stål.

1872. *Sphodromantis* Stål, Öfversigt K. Vetén.-Akad. Förhandlingar, 28, No. 3, p. 390.

Included *bioculata* Burm., *lincola* Burm. and *gastrica* Stål, of which the latter may be selected as the type, Stål having had specimens of it before him when he founded the genus.

Sphodromantis bioculata (Burmeister).

1838. *M[antis] bioculata* Burmeister, Handb. der Entom., II, p. 537. [Egypt, Nubia and Syria.]

One male and one female:

Egypt.⁷ (Dr. H. C. Wood.) [A. N. S. Phila.]

Tunis, Africa. (W. P. Chandler.) [A. N. S. Phila.]

The remark made by Saussure and Zehntner⁸ concerning the small size of Barbary coast specimens holds true regarding the specimen from Tunis.

Sphodromantis gastrica (Stål).

1859. *Mantis gastrica* Stål, Öfversigt K. Vetén.-Akad. Förhandlingar, XV, (1858), p. 307. [Eikhams, South Africa.]

—1901. *Sphodromantis bioculata* Rehn (not of Burmeister), Proc. Acad. Nat. Sci. Phila., 1901, p. 284. [Sheikh Husein, Gallaland.]

Two females, one immature; Zulu Mission, South Africa. [A. N. S. Phila.]

A re-examination of the immature specimen recorded by the author as *bioculata* shows that it is undoubtedly Stål's *gastrica*.

Sphodromantis rudolfæ (Rehn).

1901. *Sphodropoda rudolfæ* Rehn, Proc. Acad. Nat. Sci. Phila., 1901, p. 282. [Near southern end of Lake Rudolf, western Gallaland.]

This species is a member of the genus *Sphodromantis*, and allied to *S. gastrica*, but the two species can readily be differentiated by the following key.

A.—Greatest width of the costal field of the tegmina median; tegmina surpassing the abdomen; pronotum rounded anteriorly.

gastrica Stål.

A.A.—Greatest width of the costal field of the tegmina basal; tegmina not equalling the abdomen; pronotum rather attenuated anteriorly.

rudolfæ Rehn.

Genus **HIERODULA** Burmeister.

1838. *Hierodula* Burmeister, Handb. d. Entom., II, p. 536.

Included *membranacea* Burmeister (= *birivia* Stoll), *hybrida* Burmeister, and *simulacrum* Fabricius. Of these the first may be selected as the type.

⁷ See p. 701, footnote.

⁸ *Hist. Phys. Nat. et Polit. Madagasc.*, XXIII. Pt. I, p. 186.

1903.]

NATURAL SCIENCES OF PHILADELPHIA.

709

Hierodula vitrea (Stoll).1787. [*Mantis*] *Vitrea* Stoll, *Natuurlijke Afbeeldingen en Beschrijvingen*, Spooken, pp. 15, 77, Pl. V, fig. 19. ["Surinam."]

Two females; Batu Sangkar, Tanah Datar, Padangsche Bovenland, Sumatra. August–September, 1901. (A. C. Harrison, Jr., and Dr. H. M. Hiller.) [A. N. S. Phila.]

This species has been recorded from Siam to Celebes.

Hierodula patellifera (Serville).1839. *Mantis patellifera* Serville, *Orthoptères*, p. 185. [Java.]

Nine specimens; three males, six females; Kioto, Japan. (Y. Hirase, No. 35.) [A. N. S. Phila.]

These specimens agree with Serville's original description in having the two brown bars on the basal portion of the lower surface of the pronotum. On account of this character and the more numerous dentiform processes on the anterior coxæ, I have separated this species from *H. bipapilla* (Serville), with which it is usually synonymized. The pronotum and wings in the male also appear to be somewhat shorter than Saussure's measurements of *bipapilla*,⁹ though the other proportions do not differ materially.

One specimen of the above-mentioned series is in the full brown phase, another partially so, and the remainder all in the green condition. The stigma in some specimens is surrounded by an irregular cloud of umber, while in others the cream-colored spot has no surrounding tint.

Hierodula gracilicollis Stål.1877. *Hierodula gracilicollis* Stål, *Bihang till K. Svenska Vet.-Akad. Handlingar*, Bd. IV, No. 10, p. 58. [Sarawak.]

One male; Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

This specimen does not entirely fit Stål's brief and unsatisfactory description which is based on the female. The tegmina and wings are, of course, very different in proportions and shape, but the other characters agree very well. The measurements of this specimen may prove of interest:

Total length (head and body),	66	mm.
Length of pronotum,	21.5	"
Greatest width of pronotum,	6.2	"
Posterior width of pronotum,	4	"
Length of tegmina,	47.5	"
Greatest width of tegmina,	12.2	"
Greatest width of costal field,	3.7	"
Length of anterior femora,	15.5	"

⁹ *Mélanges Orthoptérologiques*, fasc., III, p. 227.

Genus **RHOMBODERA** Burmeister.

1838. *Rhombodera* Burmeister, Handb. d. Entom., II, p. 536.

Included *R. valida* and *R. laticollis* Burmeister.

Rhombodera scutata Karsch.

1892. *Rhombodera scutata* Karsch, Entomol. Nachrichten, XVIII, p. 6.
[Angola and Malange, W. Africa.]

One female; three hundred miles inland from Benguella, Angola.
(Misses M. and H. S. Melville.) [U. S. N. M.]

The specimen agrees very well with Karsch's description of this single African representative of the genus.

Rhombodera basalis (Haan).

1842. *Mantis (Mantis) basalis* Haan, in Temminck, Verhandel. Natuurlijke Geschiedenis Nederlandsche overzeesche bezittingen, p. 67. [Krawang, Java.]

Three specimens; two males, one female:

Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

Batu Sangkar, Tanah Datar, Padangsche Bovenland, Sumatra.
August–September, 1901. (A. C. Harrison, Jr., and Dr. H. M. Hiller.)
[A. N. S. Phila.]

Goenong Soegi, Lampong, Sumatra. October–November, 1901.
(A. C. Harrison, Jr., and Dr. H. M. Hiller.) [A. N. S. Phila.]

The two male specimens have retained all of their original coloration, which is quite striking. The Trong specimen bears more yellowish than the Lampong male, but the amount of rose-color on the wings is about the same. The brown ring encircling the stigma mentioned by Wood-Mason¹⁰ is not completely developed in the specimens examined.

Rhombodera megæra n. sp.

Type: ♀; Trong, Lower Siam. (Dr. W. L. Abbott.) [Cat. No. 6,956, U. S. N. M.]

Belonging to the same group as *flava* Haan, *major* Saussure, *lingulata* and *titania* Stål, *taprobana* Wood-Mason, and *pectoralis* Westwood, but closest related to *major* Saussure. The new form differs chiefly in the less expanded pronotum, and the different armature of the anterior coxæ.

Size large; form robust. Head slightly broader than high; occipital margin broadly arcuate; facial shield very slightly broader than high, the superior margin obtuse-angulate, and narrower than the base; ocelli rather small, the apex of the unequal triangle being inferior; eyes ovoid, moderately prominent; antennæ but slightly exceeding half

¹⁰ Jour. Asiat. Soc. Bengal, LI, p. 32.

the length of the pronotum. Pronotum rather stout, the greatest width at the supra-coxal dilations, the shaft about three times the length of the collar; anterior margin evenly rounded, posterior margin subtruncate; lateral portions very slightly expanded, and evenly decreasing in width both anteriorly and posteriorly from the supra-coxal portion; lateral margins feebly denticulate, more apparent anteriorly; lower face of the slight lateral expansions punctate and coriaceous; median carina moderately distinct on the shaft. Tegmina broad, coriaceous except immediately along the sutural margin and the central portion of the median half of the interspace between the principal branches of the ulnar vein; costal margin evenly arcuate, except the apical third, which is diagonally emarginate; apex narrowly rounded; ulnar vein with three principal rami; stigma elongate-ovate. Wings of moderate length, equalling the apex of the tegmina when at rest; costal margin straight, except in the apical third, where it curves posteriorly to the subangulate apex; anterior ulnar vein with three distinct and equally disposed rami. Abdomen moderately broad, the apex of the subgenital plate visible beyond the tips of the closed tegmina and wings. Supra-anal plate transverse, narrow, the apical margin slightly arcuate, the apex with a very shallow and almost imperceptible emargination. Cerci attenuate, moniliform, slightly exceeding the subgenital plate in length. Subgenital plate very broad, apex strongly compressed, rostrate. Anterior coxæ not quite equal to the shaft of the pronotum in length, superior margins, particularly the internal, denticulate, inferior margin with a series of rather large spines, which decrease in size distally and also take on an alternating large and small character; femora about equal to the shaft of the pronotum in length, apical genicular lobes considerably developed and armed apically with a slight, blunt, dentiform process, external inferior margin with four strong dentiform spines, discoidal spines four in number, internal inferior margin with a series of fifteen alternating large and small spines, the margin with a vacant distal diastema; tibiæ (without apical claw) about half the length of the femora, external margin bearing eleven or twelve spines, internal margin armed with fourteen spines; metatarsi considerably exceeding the remaining tarsal joints in length and almost equal to the tibiæ without apical claw. Genicular spine of median and posterior femora rather small; metatarsi of the median limbs very considerably less than the remaining tarsal joints, posterior limbs with the metatarsi, but slightly shorter than the remaining tarsal joints.

General color pea-green, of the most brilliant hue on the tegmina.

Eyes wood-brown. Stigma of the tegmina proximally and distally bordered with dark brown. Wings with the entire surface hyaline except the apex, which is suffused with pale greenish. Abdomen pale greenish-yellow. Anterior femora with alternate spines on the internal margin basally suffused with reddish-brown.

Measurements.

Total length,	91	mm.
Length of pronotum,	30.5	"
Greatest width of pronotum,	10.5	"
Posterior width of pronotum,	6.5	"
Length of anterior femora,	23	"
Length of tegmina,	51	"
Greatest width of tegmina,	18	"
Greatest width of costal field of tegmina,	6	"

The genus *Rhombodera* contains two structural types; one with the lateral expansion of the pronotum very distinctly developed, somewhat similar in superficial resemblance to that noticed in *Chæradodis* and *Deroplatys*, and the other with these expansions limited or subobsolete. In a species described by Brancsik, *R. tamolana*,¹¹ is found an annectant type, in which the lateral expansions are fairly well marked, but strictly confined to the anterior portion of the pronotum.

Genus **MANTIS** Linnæus.

1758. *Mantis* Linnæus, Syst. Nat., X ed., p. 425.

Type.—*Gryllus (Mantis) religiosus* Linnæus.¹²

Mantis religiosa Linnæus.

1758. [*Gryllus (Mantis)*] *religiosus* Linnæus, Syst. Nat., X ed., p. 426.
["Africa."]

Three specimens; two males, one female:

Chemulpo, Korea. August, 1890. (Dr. W. H. Jones.) [A. N. S. Phila.]

Yokohama, Japan. (Loomis.) [A. N. Caudell.]

Kioto, Japan. (Y. Hirase.) [A. N. S. Phila.]

These specimens are apparently the first Japanese records for this species. Saussure¹³ has recorded individuals of *M. religiosa* from Ning-po, China, and "le sud de la Sibérie jusque sur les côtes orientales de l'Asie."

The specimen from Kioto, although a female, is much smaller than the male from Chemulpo, but this may be a character of the Japanese

¹¹ *Jahresh. Naturwiss. Ver.*, Tréncsen, XIX, p. 62, tab. 1, fig. 8.

¹² See Rehn, *Canadian Entom.*, XXXIII, p. 119.

¹³ *Mélanges Orthoptérologiques*, fasc. III, p. 415.

individuals, as the male from Yokohama is considerably smaller than the Korean specimen.

Genus **CALIDOMANTIS** Rehn (= *Miomantis* Saussure).

1870. *Miomantis* Saussure, Bull. Soc. Entom. du Suisse, III, p. 228. (Not of Blanchard, 1842.)

1901. *Calidomantis* Rehn, Canad. Entom., XXXIII, p. 271.

Type.—*Mantis fenestrata* Fabricius.

Calidomantis menelikii (Bormans).

1881. *M[iomantis] Menelikii* Bormans, Ann. Mus. Civ. Stor. Nat. Genova, XVI, p. 209, fig. [Let Marefia, Scioa.]

1901. *Miomantis fenestrata* Rehn, Proc. Acad. Nat. Sci. Phila., 1901, p. 284. (Not of Fabricius.) [Luku, Gallaland.]

The two specimens recorded in the paper cited above prove to belong to Bormans' species. A very interesting character, omitted from Bormans' brief diagnosis, is the extremely short and transverse supra-anal plate.

Calidomantis equalis¹⁴ n. sp.

Type: ♀; Zulu Mission, South Africa. [A. N. S. Phila.]

Allied to *C. semialata* (Saussure),¹⁵ but differing in the more robust anterior portion of the pronotum, the higher and less depressed head, and the more equal and less arcuate costal field of the tegmina. The species described by Schulthess as *Miomantis saussurei*,¹⁶ while very closely related to the new form, can readily be distinguished by the slender and attenuate anterior portion of the pronotum.

Size rather small. Head broad, compressed, the superior margin arcuate; eyes subtriangular in basal outline, the lateral portion slightly produced; antennæ minute, weak; facial scutellum strongly transverse, superior margin with a median rounded lobe flanked laterally by a concave sinuosity. Pronotum subequal in width, the anterior portion exceeding the posterior part in width and slightly less than half the length of the latter; anterior margin rotundate-truncate, lateral margins finely denticulate; amplification slight, rounded. Tegmina rather short, lanceolate, apex moderately acute; costal field subequal in width; anterior margin evenly and regularly arcuate. Wings about equal to the tegmina in length. Abdomen fusiform, moderately depressed; supra-anal plate elongate, lanceolate, extending to the tip of the compressed subgenital plate; cerci but slightly exceeding the supra-anal plate in length. Anterior coxæ about four-fifths the length of the pronotum, margins finely denticulate; anterior femora very

¹⁴ In relation to the broad and equal anterior portion of the pronotum.

¹⁵ *Mélanges Orthoptérologiques*, IV, p. 71, fig. 14.

¹⁶ *Bull. Soc. Vaudoise Sci. Nat.*, 4e ser., XXXV, p. 197.

slightly shorter than the pronotum, rather heavy, third discoidal spine very robust, external inferior margin with four large spines, internal inferior margin with fourteen spines, one of which is apical and separated from the others by a considerable diastema; anterior tibiae slightly less than half the length of the femora, armed on the external margin with seven spines placed on the median and apical portions, the internal margin armed with eleven to twelve evenly distributed spines; anterior metatarsi equal to two-thirds the length of the tibiae and exceeding the remaining tarsal joints. Median and posterior limbs with the tibiae slightly shorter than the femora, genicular spines slight.

General color dull yellowish-brown (specimen taken from alcohol). Anterior femora with four spots of black on the internal surface, one basal, two parallel and posterior to the ungual sulcus, the superior of these being the largest of any of the spots, and one anterior to the sulcus.

Measurements.

Total length,	28 mm. ¹⁷
Greatest width of head,	5.5 "
Length of pronotum,	11.5 "
Greatest width of pronotum,	2.9 "
Length of tegmina,	12 "
Length of anterior femora,	10 "

Two other female individuals from the type locality have been examined.

Subfamily **Harpaginæ**.

Genus **DEROPLATYS** Westwood.

1840. *Deroplatys* Westwood, in Duncan, Introd. to Entomology, I, p. 234.

Type.—*Mantis* (*Deroplatys*) *desiccata* Westwood.

Deroplatys desiccata Westwood.

1840. *Mantis* (*Deroplatys*) *desiccata* Westwood, in Duncan, Introd. to Entomology, I, p. 234, Pl. 9. [Malacca.]

Two females; Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

These two specimens represent two color phases; one a pale ochraceous and sienna blended to give a very effective "dead leaf" appearance, the other a dull brownish-purple, suffused on the tegmina with very dull greenish-gray.

¹⁷ This is approximate, as the abdomen is considerably distorted.

1903.]

NATURAL SCIENCES OF PHILADELPHIA.

715

Deroplatys angustata Westwood.

1845. *Deroplatys angustata* Westwood, Arcana Entomologica, I, p. 34, Pl. 9, fig. 2. [Java.]

One male; Goenong Soegi, Lampong, Sumatra. October–November, 1901. (A. C. Harrison, Jr., and Dr. H. M. Hiller.) [A. N. S. Phila.]

This specimen agrees exactly in the shape of the pronotum with the specimen figured by Westwood.

Genus **PHYLLOTHELYS** Wood-Mason.

1877. *Phyllothelys* Wood-Mason, Trans. Entom. Soc. London, 1877, p. xviii.

Type.—*Phyllocrania westwoodi* Wood-Mason.

Phyllothelys mitratum n. sp.

Type: ♀ (immature); Trong, Lower Siam. (Dr. W. L. Abbott.) [Cat. No. 6,972. U. S. N. M.]

Closely allied to *P. paradoxum* Wood-Mason,¹⁸ but differing in the form of the facial shield and clypeus, and the shorter head.

Size rather small; form elongate, bacilliform. Head elongate; frontal process almost twice the length of the remainder of head, depressed, superior surface bearing a very distinct median foliaceous longitudinal keel, lateral borders sinuate and bearing a distinct sub-basal and submedian angular lobe, lower surface with a median thickened rib; eyes sub-ovoid, apex inferiorly; facial shield slightly broader than high, inferior margin evenly and slightly arcuate, superior margin decidedly arcuate, surface bearing two blunt longitudinal carinae; clypeus transverse, slightly broader superiorly than inferiorly, lateral margins sinuate, inferior margin subtruncate. Pronotum very slender, subequal, slightly expanding posteriorly; anterior and posterior borders evenly rounded; lateral margins sparsely denticulate; supracoxal lobes very slightly marked; median portion of the entire pronotum bearing a faint longitudinal carina. Mesonotum and metanotum slightly depressed. Abdomen strongly depressed, greatest width at the fifth and sixth segments. Supra-anal plate transverse, the apex rectangularly produced and bearing a short longitudinal median carina. Cerci short, not exceeding the supra-anal plate, fusiform, depressed, apex acuminate. Subgenital plate transverse, evenly arcuate. Anterior coxae slender, but slightly shorter than the pronotum, trigonal in section, the inferior margin very weakly spined; femora slightly longer than the coxae, slender, superior margin straight, external margin with six spines, two of which are smaller than the others

¹⁸ *Jour. Asiat. Soc. Bengal*, LIII, Pt. 2, p. 209, Pl. XII, fig. 3.

and placed on the genicular lobe, discoidal spines four in number, internal margin bearing fifteen spines, of which the apical is the largest; tibiæ about one-half the length of the femora, external margin bearing eleven and the internal thirteen spines; metatarsi about equal to the remaining tarsal joints in length. Median and posterior femora bearing lateral foliaceous crenulate expansions, genicular spines distinct; median and posterior tibiæ almost equal to their respective femora in length, basally inflated and tumid.

General color very dark wood-brown; inner face and lower surface of the anterior coxæ rich red-brown, the lower margin of the coxæ alternating ochraceous and black; anterior femora with the internal face brownish-black, bearing a large spot of ochraceous between the discoidal spines and the apex, and another smaller one at the base of the discoidal spines.

Measurements.

Total length (approximately),	26.7 mm.
Length of head,	5.5 "
Length of cephalic appendage (from the superior margin of the eyes),	3.5 "
Length of pronotum (approximately),	10.6 "
Greatest width of pronotum,	1.5 "
Greatest width of abdomen,	3 "
Length of anterior femora,	6.5 "

Genus **PSEUDOCREOBOTRA** Saussure.

1870. *Pseudocreobotra* Saussure, Bull. Soc. Entom. Suisse, III, pp. 241 and 242.

Type.—*Pseudocreobotra ocellata* (Palisot).

Pseudocreobotra wahlbergii Stål.

1877. [*Pseudocreobotra*] *Wahlbergii* Stål, Bihang till K. Svenska Vet.-Akad. Handlingar, IV, No. 10, p. 85. [Caffraria; Zanzibar.]

Four specimens; adult male and female, two immature individuals; Zulu Mission, South Africa. [A. N. S. Phila.]

On comparison with these specimens, *P. amara* Rehn¹⁹ from western Gallaland is seen to be a very distinct species. The two forms, which occupy quite different regions, may be separated as follows:

- A.—Pronotum with the paired tubercles by the posterior margin distinct and dentiform; head with the frontal process considerably longer than the height of the clypeus; costal margin of the tegmina one and three-fourths millimeters in greatest width,

wahlbergii Stål.

¹⁹ *Proc. Acad. Nat. Sci. Phila.*, 1901, p. 286.

44.—Pronotum with the paired tubercles by the posterior margin subobsolete; head with the frontal process considerably shorter than the height of clypeus; costal margin of the tegmina not over one millimeter in width, *amaræ* Rehn.

Genus **THEOPROPUS** Saussure.

1898. *Theopropus* Saussure, Revue Suisse de Zoologie, V, p. 204.

Included *T. elegans* (Westwood) and *T. praconatrix* Saussure, of which the former may be considered the type.

Theopropus elegans (Westwood).

1832. *Blepharis elegans*²⁰ Westwood, in Griffith's Animal Kingdom, XV, p. 190, Pl. 78, fig. 3. [Tenasserim.]

One somewhat immature female: Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

This species has also been recorded from Java by Saussure. The specimen measures as follows:

Total length (approximately),	27	mm.
Length of pronotum,	8	"
Greatest width of pronotum,	6	"
Greatest width of abdomen,	6.5	"
Length of anterior femora,	10	"

Genus **PARYMENOPUS** Wood-Mason.

1890. *Parymenopus* Wood-Mason, Ann. and Mag. Nat. Hist., 6th ser., V, p. 437.

Type.—*Parymenopus davisoni* Wood-Mason.

Parymenopus davisoni Wood-Mason.

1890. *Parymenopus Davisoni* Wood-Mason, Ann. and Mag. Nat. Hist., 6th ser., V, p. 437, Pl. XVII. [Singapore.]

One female; Trong, Lower Siam. (Dr. W. L. Abbott.) [U. S. N. M.]

This specimen agrees very well with the description of the type except for the fact that the number of spines on the external margin of the anterior tibiae is less (21 and 21 instead of 23), and the individual examined is of larger size.

Subfamily **Vatinæ**.

Genus **POPA** Stål.

1857. *Popa* Stål, Öfversigt K. Vetenskaps-Akademien's Förhandlingar, XIII, p. 169.

Type.—*Popa spurca* Stål. = *Mantis undata* Fabricius.

²⁰ By a typographical error misspelled *elegans* in the text, but the plate bears the correct form.

Popa undata (Fabricius).

1793. [*Mantis*] *undata* Fabricius, Entom. Syst., II, p. 19. ["Tranquebar."]

Four specimens; three females, one immature individual; Zulu Mission, South Africa. [A. N. S. Phila.]

No difference can be detected on comparison with Somaliland and Gallaland specimens.

Genus **DANURIA** Stål.

1857. *Danuria* Stål, Öfversigt K. Vetenskaps-Akademiens Förhandlingar, XIII, p. 169.

Type.—*Danuria thunbergi* Stål.

Danuria thunbergi Stål.

1857. *D[anuria] Thunbergi* Stål, Öfversigt K. Vetenskaps-Akademiens Förhandlingar, XIII, p. 169. [Port Natal.]

One male; South Africa. [A. N. S. Phila.]

Subfamily **Empusinae**.

Genus **IDOLOMORPHA** Burmeister.

1838. *Idolomorpha* Burmeister, Handb. d. Entom, II, p. 547.

Included *lateralis* Burmeister and *gracilis* Burmeister, of which the former may be considered the type.

Idolomorpha wahlbergi (Stål).

1857. *V[ates] Wahlbergi* Stål, Öfversigt K. Vetenskaps-Akademiens Förhandlingar, XIII, p. 167. [Port Natal.]

Two specimens; ♂ and ♀; Zulu Mission, South Africa. [A. N. S. Phila.]