ON SOME PARASITES AND HYPERPARASITES OF *ARTONA CATOXANTHA*, HAMPS.

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The Institute of Plant Diseases at Buitenzorg has been engaged in the study of the well-known coconut pest, *Artona catoxantha*, Hamps., and has sent to the Imperial Institute of Entomology a large and very interesting collection of its parasites and hyperparasites. We understand that Dr. J. v. d. Vecht is preparing a paper on the ecology of this Zygaenid. To complete his studies on the life-histories of all these parasites we have been asked to make a special study of the Chalcids.

Besides the material received from Java and bred by Dr. J. v. d. Vecht, we have also studied all the specimens of Chalcids bred in relation with *Artona catoxantha* and sent in previous years from Java by Mr. T. H. C. Taylor, and from Malaya by Mr. G. H. Corbett and Mr. B. A. R. Gater.

In this large material we have found the following species:

Species	Number of specimens from Java	Malaya
Fam. CHALCIDIDAE		
Brachymeria punctiventris, Cam.	12	16
Brachymeria lugubris, Walk.	3	3
Brachymeria apicicornis, Cam.	1	—
Stomatoceras sp.	—	1
Dirhinus banksi, Rohwer	1	—
Fam. EURYTOMIDAE		
Eurytoma albotibialis, Ashmead	56	23
Fam. EUPELMIDAE		
Eupelmus catoxanthae, sp. n.	13	8
Anastatoidea brachartonae, Gahan	42	4
Fam. EULOPHIDAE		
Neoplectrus bicarinatus, sp. n.	48	—
Neoplectrus maculatus, sp. n.	22	—
Euplectromorpha artonae, sp. n.	23	—
Euplectromorpha viridiceps, sp. n.	51	10
Pleurotropis detrimentosus, Gahan	47	27
Pleurotropis ptychomyiae, sp. n.	66	18
Tetrastichus sp.	—	9
Syntomosphyrum zygaenarum, Ferr.	9	—
and var. *nigricoxis*, nov.	21	—
Syntomosphyrum obscuriceps, sp. n.	42	8
Melittobia hawaiiensis, Perkins	76	175

It will be seen that most species have been found both in Malaya and in Java. Two species from Malaya have been received in too small numbers to be named. It seems that only the EUPLECTRINI, *Neoplectrus* and *Euplectromorpha*, are always primary parasites of *Artona*; *Eurytoma* and *Eupelmus* can be either primary or secondary parasites; all the other species are hyperparasites, either in the Tachinids, *Ptychomyia* and *Cadurcia*, or in the Ichneumonid, *Goryphus* sp., or in the Braconid, *Apanteles artonae*, Rohw.

In the following pages only the new species and varieties, as well as the previously unknown male of *Anastatoidea brachartonae*, Gah., are described.

Eupelmus catoxanthae, sp. n. (fig. 1).

♀. Dark green, almost black or aeneous on mesonotum and scutellum, more bluish-green on cheeks, temples, sides of propodeon and base of abdomen ; face varied green and aeneous ; abdomen aeneous black or more or less cupreous, often greenish at tip. Antennae with the scape yellow, the flagellum black with greenish reflection on the funicle and blue-violaceous reflection on the pedicel. Legs black with faint metallic reflections, trochanters, end of middle and hind femora, fore tibiae (except a brownish band), middle tibiae almost entirely, end of hind tibiae and all tarsi, brownish-yellow. Wings slightly yellowish, nerves light brown. Ovipositor narrowly black at base, broadly white in the middle and brown at tip.

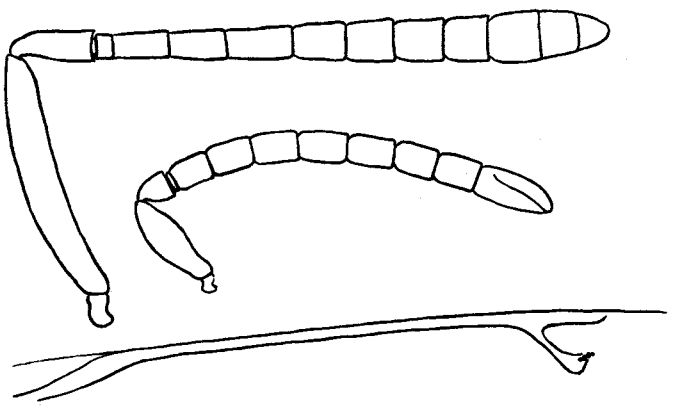

Fig. 1. *Eupelmus catoxanthae,* sp. n. : antenna ♀ (above) ; antenna ♂ and wing nervature.

Head transverse, narrow, eyes short-oval ; lateral ocelli farther distant from each other than from the front ocellus and as near to the eye-margin as their own breadth. Vertex finely transversely striate. Face rugulose, antennal furrow short, shagreened ; cheeks finely striate. Antennae inserted near the sides of the clypeus ; scape slightly curved, short ; pedicel about twice as long as broad or more, annellus broader than long, 1st funicle joint much longer than broad, the following ones gradually shorter and broader, the 6th subquadrate, the 7th a little broader than long. Mesonotum finely reticulate, dull, slightly striate in front and shagreened on the sides, and entirely covered with thick white ciliae, more or less in regular rows. Mesopleurae finely shagreened, more strongly on the hind third. Scutellum more finely sculptured than the mesonotum, with weaker and more scattered ciliae. Propodeon short, smooth in the middle, shagreened on the sides. Wings with the marginal vein about six times as long as the stigmal and postmarginal veins, which are subequal in length. Hind femora a little thickened. Abdomen about as long as the thorax, shagreened above, smooth at base. Ovipositor as long as 40 to 45 per cent. of the length of the abdomen and as long as $\frac{4}{5}$ of the hind tibiae.

♂. Dark green, more or less blackish, abdomen aeneous black ; base of abdomen and propodeon shining green ; antennae and legs black, only the tip of fore and middle tibiae, the anterior tarsi and the middle and hind metatarsi, yellow. Scape short, slightly thickened in the middle, pedicel scarcely longer than broad, funicle joints subequal in length, longer than broad and covered with a dense ciliation. Abdomen small, triangular, narrower and shorter than the thorax.

Length, ♀ 1·5–3 mm. ; ♂ 1·3–1·5 mm.

EAST JAVA : Res. Madioen, Patjitan, 6 ♀ 1 ♂, 1939, ex *Artona catoxantha* pupa ; MIDDLE JAVA : Res. Semarang, 4 ♀ 2 ♂, 1939, ex *Apanteles artonae* (*Dr. J. v. d. Vecht*).

MALAYA : Kuala Depang, 1 ♀, vii.1925, ex *Artona catoxantha* ; Banting, 2 ♀, iv.1932, ex *Apanteles artonae* ; Menglembu, 1 ♀ 3 ♂, iv.1934, ex *Artona catoxantha* pupa ; Menglambu, 1 ♀, iv.1934, ex *Ptychomyia remota* (*G. H. Corbett*).

This species is, like several other *Eupelmus* spp., both a primary and a secondary parasite ; it will probably be found attacking other insects in Java and Malaya.

Eupelmus javae, Girault, parasite of *Araecerus fasciculatus* in the pods of *Tephrosia*, although closely related, is quite distinct. The body is more elongate and especially the ovipositor is much longer, being longer than the hind tibiae and longer than half the length of the abdomen ; the ciliation on the mesonotum is also finer and more sparse.

Eupelmus tachardiae, How., from India and Ceylon, is much more closely related, but may be distinguished by its shorter ovipositor which is scarcely longer than half the length of the hind tibiae and than $\frac{1}{3}$ of the abdomen. Moreover the hind tibiae of these last two species is never black.

Eupelmus orientalis, Ferr., another species from Java, bred from galls on roots of *Ficus*, has the antennae and legs yellow, with only the coxae black, and the antennal club and femora more or less brownish.

We may add that *Eupelmus pictipennis*, Six, is not from Java, as indicated in the Genera Insectorum, but has been collected in Utrecht, Holland ; further it is not a *Eupelmus* but an Encyrtid, and is, according to the description and figures, the same as *Anabrolepis zetterstedti*, Westw.

Anastatoidea brachartonae, Gahan (fig. 2).

The male of this species had never been found or recognised before and is here described.

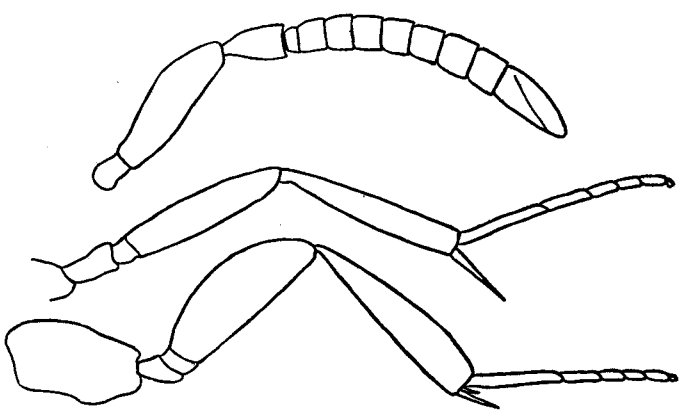

Fig. 2. *Anastatoidea brachartonae*, Gahan : ♂ antenna, middle leg and hind leg.

♂. Body bluish green with the frons, the parapsides partly, the scutellum and the abdomen, except base, aeneous black. Antennae and legs entirely black, only the first two joints of the middle and hind tarsi white.

Head with the vertex narrow and densely ciliate ; fronto-vertex a little more than twice as long as broad ; lateral ocelli near the eye-margins and nearer to each other than to the front ocellus ; scrobes deep and smooth, limited above by a distinct transverse carina. Eyes large, oval, ciliate. Antennae inserted near the sides of the

clypeus ; scape short, thickened in the middle, about three times as long as its median breadth ; pedicel narrow, elongate, almost twice as long as broad ; annellus short, transverse ; funicle joints gradually broader towards the tip, all broader than long ; club truncate, about as long as two preceding joints together.

Mesonotum densely punctate ; parapsidal furrows deep in front, broader and shallow behind ; scutellum finely shagreened, smooth at tip ; propodeon smooth, short, with a median carina. Wings hyaline ; marginal vein about three times as long as the stigmal vein, postmarginal vein a little shorter than the marginal vein. Legs strong, all femora more or less thickened ; middle tibiae narrow, the spur almost as long as the metatarsus ; hind tibiae somewhat broadened and flattened, but without flange along the posterior margin. Abdomen oval, shorter than the thorax.

Length, 1·5–2·5 mm.

Series of males and females were obtained from :—

M. JAVA : Res. Kedoe, 3 ♀ 31 ♂, 1939, ex *Apanteles artonae* ; 1 ♂, ex *Ptychomyia* sp. ; 5 ♀, ex Tachinid ; 2 ♀, ex *Goryphus* sp. (*Dr. J. v. d. Vecht*).

As can be seen here, this species is generally, if not always, a hyperparasite.

The male is very different from the female and is similar in general aspect to the males of *Eupelmus* spp. As we have already pointed out in studying another species, *A. seyrigi*, Ferr., from Madagascar, the males of *Anastatoidea* can be recognised by the following characters : Fronto-vertex narrow, longer than broad ; antennae short, scape thickened, funicle joints subquadrate or transverse, club truncate ; hind legs distinctly thickened, the tibiae slightly flattened.

EUPLECTRINI.

This tribe, which seems to be represented by many more species in the tropical countries than in the temperate regions (we are studying a large number of species from South Asia and Africa still undescribed), may be divided into several groups which could be considered as distinct genera. For the present we recognise three genera, mentioned in the following key.

1. Propodeon with two longitudinal carinae forming a median area..... *Neoplectrus*, gen. nov.
–. Propodeon with only one median carina.....2
2. Scutellum with distinct lateral furrows.....*Euplectromorpha*, Gir.
–. Scutellum without lateral furrows.....*Euplectrus*, Westw.

Neoplectrus, gen. nov.

Vertex broad, not distinctly margined behind. Eyes closely ciliate. Antennal furrow limited by a narrow black line in form of an inverted V, the point below the front ocellus. Prothorax large, margined in front. Scutellum almost flat, with thin longitudinal furrows. Propodeon with a distinct median area, limited on each side by a carina. Abdomen short, oval ; petiole very short, transverse. Spur of hind tibiae reaching the middle of the second tarsal joint. Body generally entirely or almost entirely yellow.

Neoplectrus bircarinatus, sp. n. (figs. 3, 4).

♀♂. Body yellow, with only the transverse carina on the pronotum, the lines on the face and the ovipositor black ; the base of mesonotum and scutellum, the propodeon and the abdomen are more orange-yellow. Antennae brown, scape and pedicel yellow. Legs entirely yellow. The male has the abdomen more or less brown or black on the posterior half ; the abdomen of some females has also some faint brown markings above.

♀. Head transverse, vertex broad ; ocelli small, the lateral ocelli nearer to the front ocellus than to the eye-margins. Eyes with close and rather long ciliation. Antennae with the scape narrow, reaching below the front ocellus ; pedicel one and a half times longer than broad ; first funicle joint longer than the pedicel, about twice as long as broad, the following joints shorter, but all longer than broad ; club entire, not broader and distinctly longer than the preceding joint. Pronotum large, not much shorter than the mesonotum, the lateral margins slightly converging in front, the transverse carina strong. Mesonotum shagreened, like the pronotum, with complete parapsidal furrows. Scutellum almost smooth, broadening behind. Propodeon smooth, with four carinae, the two middle ones delimiting a rectangular area. Wings large ; marginal vein longer than the submarginal vein ; stigmal vein narrow, shorter than the postmarginal vein. Hind legs strong. Abdomen a little narrower and shorter than the thorax, pointed behind. Ovipositor scarcely protruding.

♂. Quite similar but smaller, antennae more ciliate, abdomen very short.

Length, ♀ 1·3–2 mm. ; ♂ 0·8–1·3 mm.

JAVA : Goemingsir, 7 ♀ 2 ♂, vii.1937 ; 16 ♀ 23 ♂, 1939 ; all ex larvae of *Artona catoxantha* (*Dr. J. v. d. Vecht*).

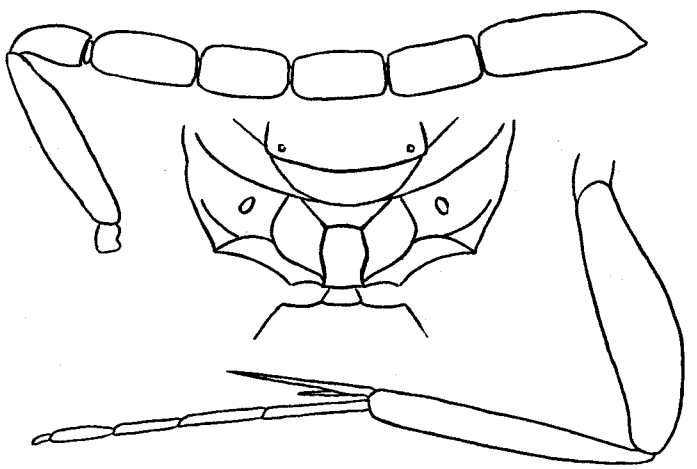

Fig. 3. *Neoplectrus bicarinatus*, sp. n., ♀ ; antenna, propodeon and hind leg.

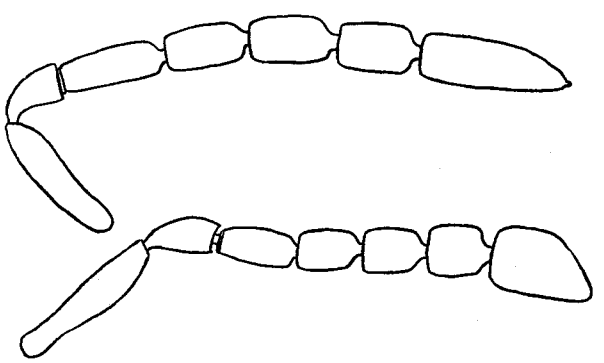

Fig. 4. Antennae ♂ of *Neoplectrus bicarinatus*, sp. n. (above) and *N. maculatus*, sp. n. (below).

Neoplectrus maculatus, sp. n. (fig. 4).

♀♂. This species is in general aspect very similar to *N. bicarinatus*. The female is generally lighter in colour, the carina on the pronotum not or indistinctly black, the thorax more uniformly orange-yellow, the abdomen sometimes more or less brownish on the sides. The males are recognised at once in having the terminal third of the middle tibiae black. But the most important difference between these two species is in the form of the antennae : in *N. maculatus* they are shorter, with the fourth funicle joint subquadrate : the club is specially short, broader than the funicle and broadly truncate.

Length, ♀ 1·3–1·5 mm. ; ♂ 0·9–1·3 mm.

MIDDLE JAVA : 1 ♀ 21 ♂, 1939, ex *Artona catoxantha* larvae (*Dr. J. v. d. Vecht*).

CEYLON : Passara, 1 ♀ 1 ♂, vi.1929 (*Dr. J. C. Hutson*) ; 2 ♀ 1 ♂, ix.1931 (*C. B. R. King*), ; all ex *Natada nararia*.

Euplectromorpha artonae, sp. n.

♀. Head and thorax black, the vertex with very slight dark greenish reflection ; abdomen black with a rounded yellow spot on basal half. Antennae brown, scape whitish. Legs yellow, coxae black, hind femora brownish above.

Head smooth and shining, with long scattered black ciliae ; eyes not ciliate, oval ; lateral ocelli at shorter distance from the front ocellus than from the eye margin. Vertex carinated behind the ocelli. Antennae with the scape narrow, short ; pedicel longer than broad ; first funicle joint a little longer than the pedicel ; the following joints not much shorter and all longer than broad ; club somewhat longer than the preceding joint. Pronotum short, narrowed in front, the anterior portion rugulose, separated from the smooth hind margin by a transverse carina. Mesonotum and scutellum shagreened ; scutellum with the lateral furrows distinct, rather broad and slightly crenulated, ending in a strong transverse furrow along the hind margin. Propodeon finely punctate, with a strong median carina. Wings large ; marginal vein about four times as long as the stigmal vein ; postmarginal vein almost twice as long as the stigmal vein. Hind legs strong, the femora a little thickened, the longer spur of the hind tibiae about as long as the metatarsus with half the following joint. Abdomen short, oval, shorter than the thorax, the petiole very short, broader than long.

Length, 1·2–1·7 mm.

JAVA : Buitenzorg, 6 ♀, 1926 (*T. H. C. Taylor*) ; 17 ♀, 1939 (*Dr. J. v. d. Vecht*) ; all ex *Artona catoxantha*.

Euplectromorpha viridiceps, sp. n.

♀♂. Head dark green, occiput black ; thorax quite black ; abdomen black, yellowish-brown at base above and below. Antennae brown, scape yellow, pedicel light brown. Legs yellow, hind coxae black, hind femora slightly brownish above.

♀. Head finely shagreened, shining, frons and vertex covered with short greyish ciliae. Eyes oval, finely and densely ciliate. Lateral ocelli as far distant from the front ocellus as from the eye-margin. Vertex not margined. Antennae with the scape narrow, pedicel short, not much longer than broad ; first funicle joint about twice as long as the pedicel, the following joints shorter, but all longer than broad ; club not much longer than the preceding joint. Pronotum rounded in front, without transverse carina, rugulose above like the mesonotum. Scutellum and axillae smooth or very finely shagreened ; scutellum with lateral furrows, narrow but distinct. Propodeon smooth, with a strong median carina. Wings large ; marginal vein about

three times as long as the stigmal vein and twice as long as the post-marginal vein. Hind legs strong ; spurs of hind tibiae as long as the metatarsus and not quite half the next tarsal joint. Abdomen oval, a little narrower and shorter than the thorax ; petiole elongate, about three times as long as broad and slightly longer than half the hind coxae.

♂. Similar, but the antennae with the scape broadened on apical half, the abdomen short oval, much shorter than the thorax, similarly petiolate.

Length, ♀ 1·5–2·5 mm. ; ♂ 1·2–1·8 mm.

MIDDLE JAVA : Various localities. 44 ♀ 7 ♂, 1939, (*Dr. J. v. d. Vecht*). MALAYA : Batu Gajah, 10 ♀, iii.1920 (*G. H. Corbett*). All ex *Artona catoxantha*.

This species is probably more widely distributed in the East than *E. artonae* ; we have also seen specimens from India, Dehra Dun, U.P., bred from *Dasychira* sp. on *Tectona grandis*.

Pleurotropis ptychomyiae, sp. n. (fig. 5).

♀♂. Body dark green, blackish on occiput and mesonotum, more shining bluish-green on vertex, hind margin of pronotum, propodeon and base of abdomen ; the rest of abdomen aeneous. Antennae brown, with faint greenish reflection on pedicel and funicle, scape yellow. Legs with coxae and femora greenish black, tibiae yellow, more or less brownish at base, tarsi whitish.

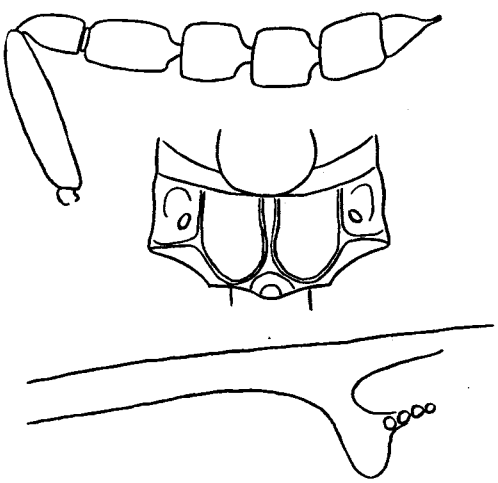

Fig. 5. *Pleurotropis ptychomyiae*, sp. n. ♀ ; antenna, propodeon and stigmal vein.

♀. Head sharply margined behind the vertex and eyes ; occiput excavated; vertex broad, punctate, the lateral ocelli nearer to the eye-margin than to the front ocellus ; eyes shortly ciliate. Antennae with the scape narrow, short, not reaching to the front ocellus ; pedicel about one and a half times longer than broad ; one small annellus ; first funicle joint broader and longer than the pedicel, the two following joints still broader and subquadrate ; club with two joints, longer than the preceding joints, the terminal joint narrower and ending in a point. Pronotum very short, with a transverse carina before the hind margin. Mesonotum finely reticulate ; parapsidal furrows deep in front, ending behind in shallow impressions. Scutellum longitudinally striate all over. Propodeon smooth, the two median carinae running subparallel or converging a little behind and diverging only after the middle of the

propodeon ; lateral carinae distinct. Wings large ; marginal vein longer than the submarginal ; stigmal vein short, subsessile ; postmarginal vein a little longer than the stigmal vein. Abdomen elongate and pointed behind, but not or little longer than the thorax, the second segment occupying almost half the length of the abdomen ; petiole broader than long, punctate, with two dorsal carinae. Ovipositor not protruding.

♂. Very similar but smaller ; antennae with the scape greenish black like the flagellum ; legs a little thicker, with the tibiae more broadly brown ; abdomen very short, the petiole subquadrate and densely punctate, dull, the rest of the abdomen smooth, not or little longer than broad.

Length, ♀ 1·4–2 mm. ; ♂ 0·9–1·6 mm.

EAST JAVA : Res. Madioen, Patjitan, 59 ♀ 3 ♂, 1939, ex *Ptychomyia* sp. ; 2 ♀, 1939, ex *Apanteles artonae* (*Dr. J. v. d. Vecht*) ; 2 ♂, 1926, secondary parasite of Zygaenids (*T. H. C. Taylor*).

MALAYA : Kuala Depang, 2 ♀ 1 ♂, 23.vii.1925, ex *Ptychomyia remota* ; Kuala Langat, 3 ♀, 12.viii.1932, hyperparasite of *Artona catoxantha* ; 11 ♀, 1 ♂, 24.viii.1932, ex cocoon of *Ptychomyia remota* (*G. H. Corbett*).

SUMATRA : Pematang Siantar, 14 ♀ 6 ♂, ix.1931, ex puparium of Tachinid ; 6 ♀, ix.1931, ex cocoons of *Apanteles* sp. (*R. I. Nel*) ; East Coast, Asahan, 3 ♀, 1934/36, hyperparasite of Gambir pest (on *Brachymeria euploeae* Westw.) ; 1 ♀, 1934/36, ex Tachinid puparium on Gambir (*F. Schneider*).

Syntomosphyrum obscuriceps, sp. n.

♀♂. Body orange-yellow ; head, except face and mouth, black with greenish reflection on vertex and frons ; occiput quite black ; sides of each abdominal segment with black markings. Antennae brown, pedicel lighter, scape yellow. Legs entirely yellow. The male is darker, with the pronotum and mesonotum black, the scutellum, axillae and propodeon dark brown ; abdomen dark, with only a yellow spot at base ; antennae and legs yellow, funicle and club light brown.

♀. Fronto-vertex broad, finely punctate ; occiput excavate and margined ; ocelli very small ; eyes short oval ; cheeks as long as half the length of an eye. Antennae with the scape narrow, short ; pedicel elongate, as long as half the scape ; three very short and transverse annelli ; funicle with three joints, the first longer than broad, but shorter than the pedicel, the two others subquadrate ; club elongate, pointed at tip, as long as or a little longer than two preceding joints together. Pronotum rather large, narrowed in front, without transversal carina. Mesonotum and scutellum finely shagreened, the scutellum without longitudinal furrows. Propodeon short, smooth, with a median carina and lateral carinae. Wings reaching a little beyond the tip of the abdomen ; marginal vein about as long as the submarginal vein ; stigmal vein short ; postmarginal vein not developed. Abdomen oval, as broad as or broader than the thorax and as long as head and thorax together. Ovipositor scarcely protruding.

♂. Smaller, the scape slightly broadened, funicle with four joints, all subquadrate and bearing some very long ciliae above ; club narrow and pointed. Abdomen narrower and not or scarcely longer than the thorax.

Length, ♀ 1·1–1·5 mm. ; ♂ 0·8–1·1 mm.

JAVA : Res. Madioen, Patjitan, 11 ♀, 1938, ex *Ptychomyia* sp. ; 4 ♀ 15 ♂, 1939, ex *Cadurcia* sp. ; Japara Kalibordah, 3 ♀ 1 ♂, vi.1939, ex *Artona catoxantha* pupa (*Dr. J. v. d. Vecht*) ; 8 ♀, 1926, secondary parasite of *Artona catoxantha* (*T. H. C. Taylor*).

MALAYA : Banting, 6 ♀ 2 ♂, iv–v.1932, ex pupa of *Artona catoxantha* (*G. H. Corbett*).

BURMA : Yanaungungin Res., 3 ♀, 26.xii.1930, ex cocoon of Braconid (*D. J. Atkinson*).

CEYLON : Batticaloa, 28 ♀ 9 ♂, 25.x.1937, ex puparia of Diptera (*Dr. J. C. Hutson*).

A few other specimens varying somewhat in coloration are considered by Dr. v. d. Vecht as possibly biologically distinct. We do not find real morphological differences, except that the antennae are in average a little shorter, and we prefer to consider them only as varieties. They may be recognised as follows :—

var. a. ♀. Front yellowish, only vertex black ; occiput dark with yellow spot in the middle ; abdomen yellow with transverse dark stripes.

JAVA : Buitenzorg, 7 ♀ 5 ♂, iv.1940, ex *Apanteles artonae* (*Dr. J. v. d. Vecht*) ; 8 ♀, 1926, secondary parasite of *Artona catoxantha* (*T. H. C. Taylor*).

var. b. ♀. Head similar to var. a ; thorax more brownish ; abdomen dark, yellow at base only.

JAVA : Japara Kalibordah, 3 ♀ 1 ♂, vi.1939, ex *Artona catoxantha*, pupa (*Dr. J. v. d. Vecht*).

MALAYA : Banting, 1 ♀ 1 ♂, v.1932, ex *Artona* pupa ; 3 ♀, iv.1932, ex cocoon on *Cocos nucifera* (*G. H. Corbett*).

Syntomosphyrum zygaenarum, Ferr.

Specimens identical with those described from Solomon Islands were received from : JAVA, 8 ♀ 1 ♂, 1926, ex *Artona catoxantha* (*T. H. C. Taylor*) ; SUMATRA, Res. Lampong, 2 ♀ 1 ♂, viii.1938, ex Tachinid (*Dr. J. v. d. Vecht*).

In the typical form the legs are entirely yellow, including coxae. All specimens obtained in Java by Dr. v. d. Vecht have the front and hind coxae, sometimes also the middle coxae, greenish black and the hind femora more or less brownish above. Otherwise they are entirely similar in the form of body and antennae with the type. To distinguish them from the typical form, we call them var. *nigricoxis*, nov. We have seen series from : MIDDLE JAVA : Res. Banjoemas, 2 ♀, 1939, ex *Apanteles artonae* ; Res. Kedoe, 16 ♀ 1 ♂, 1939, ex *Goryphus* sp. EAST JAVA : Res. Madioen, Patjitan, 2 ♀, 1939, ex *Ptychomyia* sp. (*Dr. J. v. d. Vecht*) ; Soember Wadoeng n. Kalisat, 3 ♀, viii.1937, ex *Ferrisia virgata* (*H. J. de Fluiter*).

This species must not be confused with *Melittobia hawaiiensis*, Perk., which has also been obtained in large number from puparia of *Ptychomyia* in Java and Malaya, and from *Cadurcia* sp. in Sumatra. *M. hawaiiensis* has very similar short antennae, but differs by its flattened thorax and its black body, with coxae and femora of all legs black. All specimens examined in long series are females. The males, yellow, short-winged, with very large and broad scape, have only been seen in a series bred at Parit Buntar, Malaya, from pupae of *Megachile disjuncta*, F., by H. T. Pagden.

M. hawaiiensis, Perk., seems to be widely distributed as a parasite of nest-building Hymenoptera and of puparia of Muscid and Tachinid flies. Although all females are alike, it is possible that there are different biological races and that the parasites of Tachinids are parthenogenetic.