A REVISION OF THE GENUS *COELICCIA* (ORDER *ODONATA*).

By F. F. Laidlaw.

(Plates I—III.)

Introduction.

In this paper I have attempted to give a sufficient description of all the species of *Coeliccia* known to me, and at the same time to arrange them into groups which will indicate as far as possible their relationships to one another.

I have been fortunate in the opportunities provided for examining a very large proportion of the species, nevertheless this account is still incomplete.

I have to acknowledge with my best thanks material from the following sources.—The British, United States National, Indian, Raffles and Sarawak Museums and from the private collections of Mr. E. B. Williamson, the late Dr. F. Ris, Mr. N. M. A. Lieftinck and specimens from Captain Alleyne collected in the Shan States.

Professor C. Kennedy has given me valuable help in studying the genital structures of the males of several species and lastly Lt.-Col. F. C. Fraser has generously allowed me to incorporate in this paper descriptions of new species in his own collection and has further devoted time and trouble to the preparation of plates and figures which largely enhance the value of the paper.

In discussing characters of venation, I have employed the Comstock-Needham notation as this has been employed in former descriptions of species, and thus facilitates comparisons.

General account of the Genus *Coeliccia*.

Definition of the genus.—A genus belonging to the subfamily Platycneminae in which the medio-anal link is as a rule strongly angulated; the quadrangle of the hindwing always a little longer than that of the forewing, and the anal side of the quadrangle in both cases, longer than the costal side, generally markedly so. The outer side is thus more oblique than the inner and this is correlated with the condition of the medio-anal link. The sector *Rs* arises at or shortly distad the vein descending from the nodus (referred to hereafter as the *subnodus*), whilst the sector *Miii* arises from or proximad the same vein, the position of these two sectors relative to the subnodus serving as a character for defining groups of species within the genus. The wings relatively narrow and their petiolation ceasing at or a little proximad the nervure *Ac*, that is to say, the vein *Ab* arises at or immediately proximad the level of *Ac*. The latter lies at a point halfway between the levels of the two antenodal nervures in all species; between the distal end of quadrangle and the subnodus 2 to 4 cells (referred to hereafter as " discal cells "). Pterostigma usually somewhat inflated and covering from 1 to 2 cells.

Antennae with the two basal joints subequal and together equal in length to the third joint which is however more slender; legs with long ciliae; abdomen long and slender. Genitalia differing in the species. Larval characters unknown.

Genotype.—*C. membranipes* (Ramb.).

Taxonomy.—*Coeliccia* agrees with certain genera of the Platycneminae, and differs from all the others in having a strongly angled medio-anal link.

The genera with which it agrees are *Calicnemis*, *Indocnemis* and *Leptocnemis*. To the last it is very closely allied, in fact the two were not originally separated by de Selys.

The species of *Leptocnemis* are found only in the Seychells Is., and I think we may take this distribution as arguing a very high antiquity for both genera.

The two others, *Calicnemis* and *Indocnemis* are both found in occupation of the same territory as *Coeliccia*, but are both of them restricted to a smaller area.

Though it is not altogether easy to separate them on characters which are not sexual, they have a distinct " facies ".

Calicnemis is a more robust insect with a relatively shorter abdomen, and with a different style of colouring; the wings are relatively a little broader, and the venation shows a curious and rather extreme tendency to individual variation amounting to a condition which can be spoken of as freak venation in not a few cases. Further the position of *Ac* relative to *Ab*, much more distal than in any species of *Coeliccia*, save in individuals of *C. chromothorax*, serves to distinguish the two genera.

Indocnemis on the other hand resembles *Coeliccia* in its proportions, but is a larger insect with more dense venation. The wings are relatively long and slender, as in *Coeliccia*, but have the same degree of petiolation as is found in *Calicnemis*. It shows little or no elaboration of the colour pattern of the synthorax, and like *Calicnemis*, has, in the female, a simple hind-margin to the prothorax.

It is not possible to say, on present knowledge, that any one of these genera is ancestral to the others.

It is convenient to arrange the species of *Coeliccia* in three groups, using a venational character for the purpose, and I believe that this arrangement is a natural one.

Group 1.—*bimaculata.*

Rs arising at the subnodus, *Miii* proximal to it.

Group 2.—*didmya.*

Rs arising distal to the subnodus, *Miii* proximal to it.

This group is largely confined to the mainland of tropical Asia, but examples occur in the islands of Formosa and Hainan, and the Philippines.

Group 3.—*membranipes.*

Rs arises distal to the subnodus, *Miii* from it.

This group is massed in the Malay Peninsula and the great Sunda Islands, with an outlying species in the Philippines.

Unfortunately there is a tendency to a considerable amount of individual variation in the point of origin of these sectors, and it is well, where possible, to determine their most usual position in any given species. This I have not always been able to do, and consequently in a few cases the position of a species in one or other group must be regarded as arbitrary, though supported to some extent by other characters.

The genotype is *C. membranipes*, described by Rambur in 1842 (*Ins. Nevrop.* p. 240). He referred the species to *Platycnemis*. The genus was defined by Selys in 1863 (*Syn. Agr.*) as a subgenus of *Platycnemis* and named by him *Trichocnemis* ; the latter name was however preoccupied, and Kirby in 1890, in his Catalogue, proposed the name *Coeliccia* for the genus. The latter author listed five species but at the present time the genus has swollen to some twenty-five named species.

Sexual characters.

1. Colouration.

Like other genera of the *Platycneminae, Coeliccia* has a type of colouring of the synthorax which shows a wide departure from that of other subfamilies.

It is unfortunately impossible to trace the evolutionary history of the development of the colour pattern at present. All that can be attempted here is a very imperfect sketch.

It seems feasible to derive the various colour-patterns of the synthorax from a (theoretic) primitive type in which the dorsum of the synthorax had two pale bands on either side of the middle line (*c.f.* certain Epallaginae).

By the fusing or suppression of parts or of the whole of these lines, it is possible to plot out in a somewhat diagrammatic fashion, a scheme which indicates how the adult pattern of the male of any species has been arrived at. A difficulty arises in that in the case of the female the pattern is as a rule different from that of the male, and does not necessarily show a lesser degree of suppression of one or other of the original elements, though as the females of at least many of the species show a greater resemblance to one another than do the males, one is not unnaturally inclined to think that they must be more primitive in this respect.

It must be noted further that the two presumed primitive pale bands are to be regarded as being wider anteriorly and somewhat suddenly constricted just before their middles.

Taking then such a species as *didyma*, one may regard the pattern of the dorsum of the synthorax of the adult male as consisting of the fused lower ends of the two bands, which form the larger anterior spot ; whilst a vestige of the upper end of the outer band remains as the small upper spot. That this view is in part at least correct is I think demonstrated by the appearance seen in the young male in which a complete outer band is continued up from the anterior spot.

Similarly also in *renifera*, but of course in this species the upper part of the outer band is completely suppressed in the adult, though here again it is to be seen in the young male.

In the females of these species the inner band is completely gone, whilst the outer band, of even width throughout, is retained.

In *erici* and *albicauda* a similar condition is found, and likewise in *cyanomelas*.

The pattern of *scutellum* and of *loringae* has probably developed on similar lines, but in the case of the former the female is unknown.

Slight modifications of the same general plan, *i.e.*, the fusion of the lower half of the two presumed original lines with loss of the upper part of the inner line in part or altogether, and some modification of the upper part of the outer line would give the pattern found in such forms as *macrostigma, nigrohamata, flavostriata, campioni* ; in these the condition of the females is either similar to that of such a species as *didyma*, or in some cases females, whose exact identity is a little doubtful, show an approximation to the condition found in the male.

The cases of *chromothorax* and *poungyi* may be explained by supposing that in the males the two lines have fused for their whole length, so producing the large colour-spot which so strikingly characterizes them. In them again the female has retained only the outer stripe.

On the other hand, in the case of *flavicauda* the female shows a colour pattern identical with that of the male, and one that is very similar to that of (say) the male of *didyma*.

In a number of species both sexes have retained only the outer stripe, such are *membranipes*, and *loogali*.

The only known sex of *vacca* and *dinoceras* show this arrangement.

Lastly in the case of *fraseri* the males appear to have lost both stripes or to have retained the inner stripe only, as have also the young females, whilst the very adult female has almost lost the stripe altogether. In the closely allied *bimaculata* the male has an anterior spot apparently derived chiefly from the lower end of the inner stripe, the female is much as in *fraseri*.

C. pyriformis is not sufficiently known to me.

2. Penile organ.

In all species examined the shaft is devoid of spines ; the inner and terminal lobes are well developed ; the third segment cannot be said to show any form definitely characteristic of the genus.

One series of species has the terminal lobe deeply cleft and ending in a pair of long whip-like processes, which vary in length and slimness according to species. This series includes the following :—*C. fraseri, flavicauda, bimaculata, erici, didyma* and *chromothorax*.

It is to be noted in passing, that the structure of the organ in *Indocnemis orang* is very similar to that of members of this series.

In a second series of species the terminal segment is not deeply bifid, but may terminate in a hood-like process, thus resembling to some extent the condition found in *Calicnemis*. This hood-like process may itself bear paired appendages, usually much shorter than the processes

of the first series. The members of this second series are as follows :— *C. loogali, lieftincki, campioni, flavostriata* and *dinoceras.*

In the following, the third segment carries a short median process, which is perched on the apex of the basal part of the segment, and from under it there arises a pair of short horn-like projections.—*C. nigrohamata, membranipes* and *albicauda.*

A study of the penile structures does not appear to furnish any clue to the relationships of the species beyond that in a general way it supports the evidence furnished by the venation and by other characters as to such relationship.

3. Female prothorax.

This structure shows some of the most interesting features in the morphology of the genus.

In several genera, the Platycneminae have an elaboration of the hinder margin of the prothorax of the female, a character which is shared by the Protoneurinae, though the elaboration is by no means identical in the two subfamilies.

In the case of *Coeliccia* the margin in question presents in general the following characters.

The middle of the margin carries a projection usually of small size and triangular shape, projecting dorsally. On either side of this projection, the margin is more or less deeply incised or notched, and on either side of each notch there is a lateral lobe or projection which I refer to hereafter as the " lappel"

The degree of development of these processes varies of course with the species, and it is entirely absent in the male. In the male of a single species only is there any comparable structure, and in that species, *dinoceras,* the prothoracic horns are not homologous with the processes of females of the genus.

In the female of the new species *vacca* the median process is bifid, in all others, so far as I know, it is simple.

Another point worth mention is that, in the genera most nearly related, the posterior margin is simple (*Calicnemis, Indocnemis*).

This does not exhaust the interest of the prothorax in the females of the genus. In certain of them, apparently only in members of the group *membranipes,* the middle lobe of this structure carries on either side a lateral spur which rises close behind the junction of the anterior and median lobes. This spur or horn is particularly well developed in *campioni,* but can be distinguished also in females allied to *nigrohamata.* I do not know of anything like it in any other Zygopterous genus.

Presumably it functions as a " point d'appui " for the anal appendages of the male during copulation.

The arrangement of the species adopted is as follows :—

Group 1.—*bimaculata.*

Rs arises from subnodus, *Miii* proximal to it ; 2 discal cells in all wings.

Coeliccia bimaculata Laidlaw.
Coeliccia fraseri, sp. nov.
Coeliccia vacca, sp. nov.

Group 2.—*didyma*. *Rs* arises distal to subnodus, *Miii* proximal to it.

3 discal cells in all wings.

Coeliccia didyma didyma Selys.
Coeliccia didyma loringae, subsp. nov.
Coeliccia renifera Selys.
Coeliccia erici Laidlaw.
Coeliccia chromothorax (Selys).
Coeliccia scutellum, sp. nov.
Coeliccia brachysticta Ris.
Coeliccia poungyi Fraser.
Coeliccia pyriformis, sp. nov.

2 discal cells in hindwing, 2 to 3 in the fore.

Coeliccia loogali, sp. nov.
Coeliccia flavicauda Ris.
Coeliccia cyanomelas Ris.

Group 3.—*membranipes*. *Rs* arises distal to subnodus, *Miii* from it.

3 discal cells in all wings.

Coeliccia membranipes (Ramb).
Coeliccia lieftincki, sp. nov.
Coeliccia dinoceras Laidlaw.
Coeliccia flavostriata Laidlaw.
Coeliccia campioni Laidlaw.
Coeliccia nigrohamata Laidlaw.
Coeliccia macrostigma Laidlaw.
Coeliccia octogesima Selys.
Coeliccia borneensis Selys.

2 discal cells in all wings.

C. albicauda Forster.

This account is necessarily incomplete as I have not been able to examine specimens of *octogesima* and *borneensis*, both of which require re-examination.

Quite recently I have received examples of what I take to be a new species from Malaya, a description of this being now in the press. Lastly N. Pendlebury has sent me several specimens from Kina Balu, taken by him at an altitude of 5,000 ft. These too seem to belong to an undescribed species.

The synonymy involved is unimportant save in the case of *C. chromothorax* Selys, which was described by its author as a *Calicnemis*, and in the case of the name *Trichocnemis* which, as has already been noted, was preoccupied. A list of the literature and references consulted is appended.

A. Group **bimaculata.**

Coeliccia bimaculata Laidlaw.

(Plate III, figs. 12, 17.)

Material examined: 3 males and 2 females, Tura, Garo Hills, Assam. *Type* in the Indian Museum.

Length of abdomen ♂ 36 mm. Hindwing 22·5 mm.
„ „ ♀ 35 mm. „ 22·75 mm.

Venation.—Quadrangle of forewing $\frac{3}{4}$ length of that of hindwing. Costal side of quadrangle of forewing $\frac{3}{4}$ length of anal side, of hindwing more nearly equal. *Miii* rises before subnodus, *Rs* at subnodus. *Ab* rises at level of *Ac*; 2 discal cells in all wings.

Postnodals, fore-wings 20, hindwing 18. Pterostigma small, covering scarcely more than one cell, its inner margin more oblique than outer, no deeper than the cell immediately following it, black.

In all the wings examined (24) the number of discal cells is constant. In one female the origin of *Rs* and *Miii* is closely approximated on all four wings, and on one wing both lie before the subnodus. In all the other wings *Rs* and *Miii* are well separated at their origins.

Type ♂ (Sub-adult).

Head: dorsal surfaces black, except the bases of the mandibles, genae, anteclypeus and a pair of small post-ocular transverse spots, which are yellowish-white.

Prothorax: entirely black on dorsum, ventrally yellowish-white.

Synthorax: dorsum black, with a pair of elongate-oval spots of pale blue, lying close against the mid-dorsal carina, and extending along it for nearly its anterior half. Sides pale blue with a black line along the second lateral suture. Ventral surfaces pale.

Abdomen: dorsally very dark brown, tending to black on segments 2 and 8, 9, 10, as well as at the joints. Segments 1-7 whitish-yellow ventrally, 1-2 also with yellow at the sides, whilst 4-7 have small ventro-lateral spots of the same colour apically.

Legs: whitish-yellow, femoral and tibial ridges, joints and ciliae black.

Anal appendages: white or yellowish-white, upper pair club-shaped pointed apically, somewhat excavated internally, each with a very minute, conical black-tipped projection. Lower pair rather longer, slender, together in shape like a pair of pincers.

(A young male has the ninth and tenth segments milky-white, the former with a small black triangle at its base dorsally, as in the type which also is immature.)

♀ (adult). Colouring as in the male with the following differences:—

Prothorax: middle lobe yellowish-white, with a very fine line of black mid-dorsally, joining the black anterior and posterior lobes.

Synthorax: dorsum with oval anterior markings smaller than in the male, narrowing suddenly at their upper ends, continued thence as a very narrow stripe almost to the level of the ante-alar sinus.

Abdomen: pale markings on sides of first and second segments more extensive than in male. Distal two-thirds of 8 milky-white, 9 and 10 black.

A younger female has the stripes on the dorsum of the synthorax of nearly equal width throughout. The black line on the second lateral suture is very narrow and incomplete below. Segments 8, 9, 10 of abdomen entirely white.

Penis: terminal lobe prominent. Inner fold of second segment well developed. Third segment consists of a pair of long whip-like processes, conjoined at their bases.

Female prothorax: median process of hind-margin has the shape of a small isosceles triangle, the two lappels lie close to it on either side and are slightly smaller than it.

Coeliccia fraseri, sp. nov.

(Pl. I, figs. 15, 22; Pl. II, figs. 9, 10; Pl. III, fig. 8.)

Material examined: 7 ♂♂ Shillong, Assam. May-July, 1923 (one of these is the type). 2 ♀♀ Same data (one is the allotype).

All collected by Bainbrigge-Fletcher. At present in my collection; the types will be deposited in the British Museum.

Length of abdomen ♂ 36 mm., of hind-wing 24 mm.
„ „ ♀ 35 mm., „ 24 mm.

Venation: quadrangle of fore-wing about ¾ length of that of hind-wing. Costal side of quadrangle of fore-wing about ¾ length of anal side; *Miii* rises before subnodus, *Rs* at subnodus; 2 discal cells on all wings; *Ab* rises definitely before level of *Ac*. Postnodals, fore-wing 15-18, hind-wing 15. Pterostigma covering one cell, its outer margin slightly more oblique than its inner, not deeper than the cells immediately following and preceding it; gray-brown with fine pale margin.

The number of discal cells is constant in all the wings. In 20 per cent. of the thirty-six wings examined *Rs* rises after instead of at the subnodus.

Type ♂ (Adult).

Head: black, upper lip and post-clypeus with slight metallic lustre. Genae, bases of mandibles and ante-clypeus bluish-white as are a pair of small, linear, postocular spots. Apex of pedicle of antennae white.

Prothorax: dorsum black, sides dull yellow, this colour encroaching on the black of the dorsum in the middle lobe.

Synthorax: dorsum black, with a very fine blue line tapering posteriorly on either side of the mid-dorsal carina and not quite reaching the ante-alar sinus. Sides bluish with a complete black band along the second lateral suture.

Abdomen: black generally, sides of segments 1-2-3 blue or pale yellow. Distal half of 9 and all 10 dull ochre.

Legs: yellow, margins of femora, tarsi and ciliae black.

Anal appendages: brownish yellow, lower pair longer and darker than upper, the latter club-shaped, each with a blunt internal projection near its apex, and a smaller spine-like process a little basal to this.

♂ (younger): similar to this but with the following differences:— yellow of genae and ante-clypeus continuous across frons; a narrow line of yellow runs from eye to eye across the head at the level of anterior ocellus. The dorsum of middle lobe of prothorax with only a very narrow line of black mid-dorsally; dorsal thoracic stripe yellow, black line of second lateral suture of synthorax incomplete below. Small pale basal spots laterally on segments 3-6 of abdomen, segments 9-10 wholely yellow.

♀ (allotype, not fully mature): colour exactly as the young male, with the addition of a pale apical lateral spot on segment 8 of abdomen.

Penis : terminal lobe large, apparently rugose. Inner fold of second segment well developed. Third segment consisting of a pair of long spirally coiled whip-like processes, conjoined at the base.

Female prothorax : hinder margin simple, exactly as in male.

Closely allied in colour and in structure of penis to *bimaculata.*

Coeliccia vacca, sp. nov.

Material examined : 1 ♀ (*type*) from above Tura, Garo Hills, Assam, 3,000-3,900 ft., July-August 1917, coll. S. Kemp.

Type No. 7965/HI in the Indian Museum.

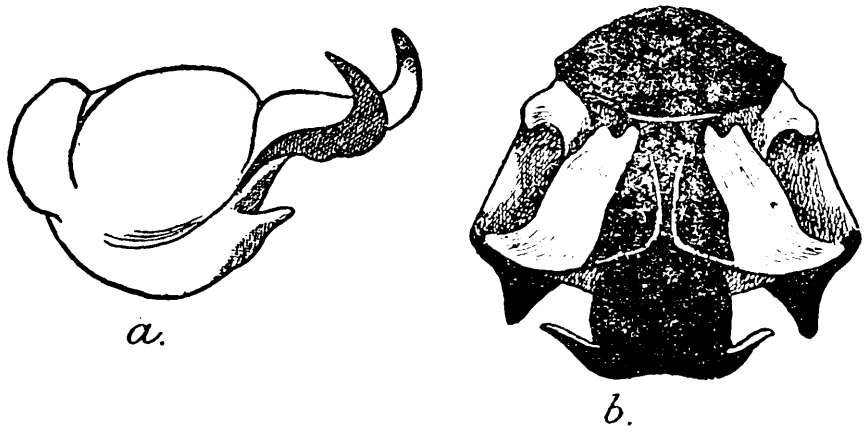
Female (male unknown). Abdomen 36 mm. Hindwing 25 mm.

Venation : quadrangle of forewing perceptibly shorter than that of hindwing ; costal side of quadrangle of forewing and hindwing, at least $\frac{5}{6}$ the length of anal side ; *Ab* arises at level of *Ac* ; *Rs* arises at level of subnodus, *Miii* proximal to it ; 2 discal cells in all wings ; post-nodal nervures 19 in forewing, 17 in the hind ; pterostigma black, covering about $1\frac{1}{2}$ cells, its inner and outer margins oblique, parallel, scarcely deeper than the cells following and preceding it.

♀ (Adult).

Head : black, except genae, anteclypeus, bases of mandibles, a pair of small spots running out and forward on either side of the ocelli and a pair of small postocular spots, all pale yellowish-white.

Prothorax : primrose yellow, broadly marked with black on dorsum.



TEXT-FIG. 1.—*a.* Right lateral view of prothorax of *Coeliccia vacca*, ♂. *b.* Dorsal view of same.

Synthorax : dorsum black, with a narrow antehumeral stripe of pale blue on either side, just internal to the humeral suture. Sides pale blue, with a narrow black oblique stripe along the second lateral suture incomplete below.

Abdomen : brownish-black above, yellowish-brown below, this paler colour extending up the sides of the eighth segment near its apex so as to be visible from above as a pair of apical yellow spots. Basal half of dorsum of segment 9 also marked with yellow.

Legs : yellowish-white, posterior surfaces of femora, anterior mark on lower half of femora, anterior ridges of tibiae, joints and ciliae black.

Female prothorax : posterior lobe very remarkable, the median projection large and bifid, its terminal horns project forward resembling the horns of a cow (hence the specific name), the lappels are quite

isolated from the median part and project backward on either side as a small triangular process.

♂ Unknown to me.

Venationally this species belongs to the same group as *bimaculata* and *fraseri*; in colour pattern of the synthorax and in structure of the posterior margin of the prothorax it stands alone; and the latter character is so striking that I have no hesitation in naming the species from a single specimen.

B. Group **didyma.**

Coeliccia didyma (Selys).

(Pl. I, fig. 24; Pl. III, fig. 6.)

Material examined: 1 ♂ Burma (coll. E. B. Williamson), 2 ♂, 4 ♀ Simla and Cachar, Assam.

Length of abdomen ♂ 40 mm., of hindwing 25 mm.
„ „ ♀ 36 mm., „ 25 mm.

Venation: quadrangle of hindwing longer than that of forewing in the ratio of 6 : 5; costal side of quadrangle of forewing $\frac{3}{4}$ the length of anal side, of the hindwing $\frac{4}{5}$; *Ab* arises just before *Ac*; *Rs* and *Miii* on either side of subnodus; discal cells numbering 3 in all wings; pterostigma black, covering nearly 2 cells, deeper than cells preceding and following it; 18 postnodal nervures in forewing, 16 in the hind.

One specimen, a male from Cachar, Assam, has in all four wings only 2 discal cells but it is in all other respects identical with typical specimens. Another from Simla has 3 in the forewing, 2 in the hind.

♂ (Adult).

Head: black, anteclypeus, genae and small cuneiform postocular spots pale blue.

Prothorax: black above, with a large blue spot on either side of middle lobe; ventral surfaces pale whitish-yellow.

Synthorax: dorsum black, on either side of the middle line a large oblong-oval mark of blue extending about halfway up the dorsum; just in front of the antealar sinus on either side is a smaller blue spot, wedge-shaped, or, in very mature specimens, reduced to a mere point. Sides of thorax blue with a narrow oblique black stripe along the second lateral suture.

Abdomen: black; first segment extensively marked with blue, restricting the black to a dorsal triangle, with its base anterior; second segment marked with blue at the sides; segments 3-7 with minute, paired lunules of blue situated basally on the dorsum, the ventral surface of these segments brownish-yellow; distal two-thirds of 9 and the whole of 10 blue.

Legs: yellowish-white with black lines on anterior and posterior surfaces of femora, and on anterior surfaces of tibiae; tarsi, joints and ciliae black.

Anal appendages: upper pair black, blue on dorsum, slender with pointed apices and a ventral spur tipped with blue (or white), and a smaller basal spur directed ventrally also. Lower pair slightly shorter, stouter, blue.

Young males have a yellowish band running across the vertex from eye to eye, crossing the anterior ocellus. The small upper pair of spots on the dorsum of the synthorax are continued forward as a complete line to meet the large anterior spots on their outer sides, the minute upper spots of the adult thus evidently being vestiges of the dorsal stripe of the female. The blue of the adult is replaced everywhere by yellowish-white.

♀ (Adult). Colouring as in young male but with blue instead of whitish yellow, and without the large anterior spots of the synthorax.

Penis : internal and terminal folds well developed. Third segment deeply and roundly cleft, its apex terminating in a pair of long curving processes which arch back over the second segment on either side.

Posterior margin of female prothorax : median lobe well developed, viewed from above it has the shape of an equilateral triangle, and seen in profile, it shows as a small dorsally directed process ; lateral processes small.

This is perhaps the most widely spread of all species, its range extending from Simla to the north of the Malay Peninsula.

Coeliccia loringae, sp. nov.

(Pl. I, fig. 12 ; Pl. II, figs. 7, 8 ; Pl. III, fig. 3.)

Material examined : several ♂♂ from Gokteik, Upper Shan States, Burma, June and July ; 1 ♀ from the same locality, coll. Col. F. Wall, received from F. C. Fraser.

Type male in Laidlaw collection, *paratype* in Fraser collection, *paratypes* in Br. Museum collection.

Male. Length of abdomen 43 mm. Hindwing 27 mm.

Venation : quadrangle of forewing about three-fourths the length of that of hindwing ; costal side of quadrangle of forewing about three-fourths the length of anal side, of hind-wing about four-fifths ; *Ab* arises barely before the level of *Ac* ; *Rs* and *Miii* one on either side of subnodus, or *Miii* at the subnodus ; 3 discal cells in all wings ; 20 post-nodals in forewings, 19 in the hind ; pterostigma rather large, covering 1 to 1½ cells, deeper than the cells immediately preceding it, with inner and outer margins parallel.

Head : black, bases of mandibles, genae, anteclypeus and lateral part of frons blue ; occiput with elongate pyriform blue or yellow post-ocular spots.

Prothorax : black with a large blue spot on either side of middle lobe.

Synthorax : black on the dorsum, with a large blue spot on either side of the middle line which extends a trifle more than half way up the dorsum, pyriform in outline, the broad rounded end anterior, the tapering end bifid on the outer side. At the upper end of dorsum a small oblong oval blue spot well separated from the lower larger spot ; laterally blue with a narrow oblique black line along the second lateral suture.

Abdomen : black marked with blue.—dorsum of segment 1 black ; sides of segment 2 broadly blue ; 3 to 7 with subapical blue spots ventrolaterally ; on 3 to 6 these show from above as sub-apical lunules ;

a similar subbasal marking on the same segments; distal third of segment 8 and the whole of 9 blue; 10 blue with a large black apical marking, trilobate in shape, the middle lobe extending as far as base of segment.

Legs: bluish-white, coxae of the same colour: posterior surface of femora, anterior surface of tibiae, tarsi, ciliae and articulations black.

Anal appendages: bluish-white, identical in appearance with those of *C. didyma.*

Penis: identical to that of *C. didyma.*

Female: Abdomen 41 mm. Hindwing 27 mm.

Differs in several respects from the male —labrum bright ochreous, its base narrowly black; postclypeus black with a rounded yellow spot on each side; bases of mandibles and genae bright yellow; isolated spots on vertex (usually present in the male on the ocellar space) are replaced by a continuous transverse stripe, very sinuous and traversing vertex between the ocelli; postocular spots always yellow; eyes bordered with yellow beneath.

Prothorax: black, broadly yellow at the sides and beneath; posterior lobe reduced to a small median tongue-like process directed straight back.

Thorax: black marked with bright yellow as follows—a very narrow antehumeral stripe on each side of dorsum and a tiny upper humeral spot; the sides and beneath all yellow save for the narrow black lateral stripe seen in the male.

Legs: yellow marked as in the male, but tibiae, trochanters and coxae entirely yellow.

Wings: with *Rs* and *Miii* arising close together, one on either side of the subnodus; postnodals 17 to 20 in number.

Abdomen: black on dorsum with a bright yellow stripe extending the whole length of side; segment 3 with a pair of subdorsal spots confluent with this yellow stripe; segment 1 broadly yellow marked with a broad triangular dorsal black spot; segments 2 to 6 with the middorsal carina finely yellow; segment 8 with nearly its apical half bright ochreous, the extreme apical border bearing a small triangular black spot; segments 9 and 10 entirely yellow.

Very closely allied to *C. didyma* from which it is distinguished by the following characters—Dorsal thoracic spots differing in shape and very constant in this; subapical blue annules on abdomen very conspicuous; segment 8 with its apical third or half blue; nodal index higher; in most specimens examined *Rs* and *Miii* arise together from the subnodus or *Rs* rarely a shade proximal to it, thus differing from the origins of these nervures in *C. didyma.* Apart from this however, the similarity of the anal appendages and shape of penis rather point to subspecific value.

Coeliccia renifera (Selys).

(Pl. I, figs. 9, 26; Pl. II, figs. 11, 12; Pl. III, fig. 9.)

Material examined: 2 males and 1 female, Pashok, 2,000 ft., Darjeeling District. Coll. F. H. Gravely.

Type in Selysian collection.

Length of abdomen ♂ 44 mm. Hindwing 27·5—28·5 mm.
„ „ ♀ 40 mm. „ 27·5 mm.

♂ (Adult).

Venation: quadrangle of hindwing longer than that of forewing in the ratio 5 : 4. Costal side of quadrangle, of forewing about $\frac{3}{4}$ length of anal side, of hindwing about $\frac{4}{5}$; *Ab* rises distinctly before level of *Ac*; *Rs* and *Miii* rise one on either side of subnodus; 3 discal cells in all wings. Pterostigma black; proximal and distal sides parallel, oblique, covering about $1\frac{1}{2}$ cells, deeper than cells immediately preceding and following. Postnodals—, forewing 20-21, hindwing 20.

Head: black, genae, anteclypeus and cuneiform postocular markings, blue.

Prothorax: dorsum entirely black, sides broadly blue.

Synthorax: dorsum black, with a pair of large oval or slightly reniform marks of pale blue on either side of the middle line, extending from near the anterior margin to half-way up the dorsum. Sides and under-surfaces black, the side with a large subquadrate blue mark divided into two by a black line running along the second lateral suture.

Abdomen: entirely black, second segment with white markings below, segments 3-6 with paired, apical, subventral spots oblong in shape, white or pale blue in colour, 9-10 with minute lateral spots of the same colour.

Legs: white, or bluish-white, ciliae and tarsi black, femora and tibiae heavily lined with black.

Anal appendages: white, upper pair shorter than lower, rather club-shaped with a stout ventral spur beyond the middle of their length. Lower pair incurved apically.

♂ (Teneral). Differs from adult in having pale markings on either side of ocelli; the dorsum of the prothorax is likewise whitish-yellow, whilst the dorsum of the synthorax shows the oval markings of the adult male and the broad humeral band of the adult female combined.

♀ (Adult). Differs from the adult male as follows:—

Head as in young male. *Prothorax* brownish-black, with a pair of large blue spots one on either side of the middle lobe.

Synthorax: dorsum black, with a pair of humeral stripes, which are rather broad. Sides bluish-yellow with a very fine line along the second lateral suture, incomplete below. Ventral surfaces whitish-yellow.

Abdomen: dorsum brownish-black, ventral surfaces whitish-yellow. This latter colour extends up the sides of the first segment; 2-6 have the dorsal colour shading to black apically dorsum whitish-bluey-black. Distal half of 8 and distal of 9 whitish-blue.

Legs as in male.

Penis: Apical process of third segment bilobed, but not so deeply cleft as in *C. didyma*. Terminal lobe large and hood-like.

Posterior margin of female prothorax: median process much reduced scarcely visible in profile. Lateral processes small.

This fine species is readily distinguished by the black ventral surface of the synthorax and the white anal appendages of the male. It is recorded from moderate elevations in the neighbourhood of Darjeeling, and Martin also includes it in his list of species from Tonkin. This latter however I am inclined to query as to the correct identification.

Coeliccia erici Laidlaw.

(Pl. I, figs. 13, 25; Pl. II, figs. 1, 2; Pl. III, fig. 11.)

Material examined: 1 ♂, 1 ♀ (*Type* and *allotype*, both much damaged) Bukit Besar, Johor, (coll. N. Annandale), 1 ♂ (in good condition) Kuala Teku, F. M. S. Museum.

Length of abdomen 42-43 mm., of hindwing 25-26 mm.

Venation: Quadrangle of hind-wing slightly longer than that of forewing. Costal side of quadrangle, of forewing about $\frac{3}{4}$ length of anal side, of hindwing about $\frac{4}{5}$.

Ab rises perceptibly before the level of *Ac*. *Rs* and *Miii* rise one on either side of subnodus. 3 discal cells on all wings. Pterostigma with inner and outer sides parallel, slightly deeper than the cell following it, covering $1\frac{1}{2}$ cells. Postnodals forewing 16, hindwing 15.

♂ (*Type*, in poor condition).

Head: black, genae and bases of mandibles blue, also a pair of small postocular spots.

Prothorax: black, a large whitish spot on either side of the middle lobe. Posterior lobe rather large, projecting backwards and a little dorsally when viewed in profile.

Synthorax: dorsum black, with a pair of very large spots of rich blue lying anteriorly. Sides bright blue with a narrow band of black along the second lateral suture. Ventral surfaces bluish white.

Abdomen: segment 1 blue at the sides dorsally brownish-black. Remaining segments much damaged, black dorsally, brownish beneath.

Legs: yellowish-white, a narrow brown line along the posterior surface of the femora, and on the anterior surface of tibiae; tarsi and ciliae black.

Anal appendages: brownish-black, the upper pair distinctly longer than the lower. The former are shaped like a short-handled lancet, with a rounded apex, the handle excavated semicircularly, just before the blade, on either side of the excavation is a very small tooth directed ventrally.

Lower pair short, stout, blunt and apically incurved.

♀ (*Allotype*, abdomen lost): as for the male, but the round spots of the synthorax are replaced by a very broad humeral stripe on either side of the dorsum.

Penis: resembles that of *didyma*, but the terminal fold is smaller than in that species, and the apical processes of the third segment are shorter and stouter.

Female prothorax: posterior lobe small, its hind margin *rounded*, a small spine projects directly upwards from a point just anterior to the middle of the margin.

Differs from all other species in the character of the armature of the female prothorax, as well as in the colour pattern of the male synthorax. The large spots recall those of *scutellum* but of course differ in colour.

The species appears to be peculiar to the northern half of the Malay Peninsular.

In the male from Kuala Teku, segments 2 to 6 are bronzed brown above fading at the sides to yellow which is paler ventrally.

Each of these segments has a very fine basal and apical ring of black. Segments 7 and 8 are bronzed black dorsally and on the sides ; 9 and 10 are bright blue with rather thick black margins ; anal appendages black.

Coeliccia chromothorax (Selys).

(Pl. I, figs. 11, 21 ; Pl. II, figs. 3, 4 ; Pl. III, fig. 7.)

Material examined : 4 males and 1 female (fragmentary), N. Shan States, July-Nov., Col. F. Wall. 1 male Kalaw, S. Shan States, coll. Capt. F. W. Alleyne.

Type and *co-type* in the Selysian coll.

Length of abdomen ♂ 42-43 mm. Hindwing 26-29 mm.
,, ,, ♀ 40 mm. ,, 28 mm.

Venation : quadrangle of hinder wing longer than that of forewing in the ratio of 5 : 4. Costal side of quadrangle of forewing about $\frac{3}{4}$ length of anal side, of hindwing about-$\frac{5}{6}$.

Ab rises distinctly before level of *Ac*. *Rs* and *Miii* rise one on either side of subnodus ; 3 or 4 discal cells in forewing, 3 in hindwing. Postnodals, forewing 19-22, hindwing 18-22. Pterostigma rather large, its inner and outer margins parallel and oblique, covering about $1\frac{1}{2}$ cells, deeper than cell preceding and following it.

Of the forewings about 40 per cent. have 4 discal cells, and 60 per cent. have 3. The point of origin of *Miii* and *Rs* does not vary in the males but in the female *Rs* rises from the subnodus and *Miii* before it, in 3 wings.

In one male the origin of *Ab* lies much more proximal to *Ac* than it does in the other specimens.

♂ (Adult).

Head : entirely black except for a pair of small cuneiform postocular spots, which are bright chrome yellow.

Prothorax : dorsum black, with a pair of small yellow spots on the middle lobe, sides and ventral surface yellow.

Synthorax : dorsum with a pair of very large chrome-yellow spots occupying almost the whole of it ; separated narrowly by the fine black mid-dorsal carina. Laterally yellow less vivid, with a narrow black line along the second lateral suture, incomplete below. Ventral surfaces whitish-yellow.

Abdomen : black, first segment yellow, with black basal and apical rings and a black mark on the dorsum. Segments 2-6 yellow ventrally, and a minute yellow, lateral-basal spot on each of segments 4-6. Distal third of 9 and whole of 10 chrome-yellow.

Legs : black, with yellow on anterior surface of femora.

Anal appendages : chrome-yellow. Upper pair shorter than lower, rather club-shaped, with strong downwardly-directed spur at their middle below. Lower pair together like a pair of pincers, sloping upwards a little apically.

(According to de Selys' account the male has a fine yellow line between the ocelli and the antennae, and also a longitudinal line of yellow on the dorsum of the second abdominal segment. These marks are obsolete on fully mature specimens.)

♀: resembles the male, but the yellow markings on the dorsum of the synthorax consist merely of a pair of antehumeral stripes instead of the broad area of the male; whilst the markings on the head are more distinct. The distal half of the eighth abdominal segment is also yellow.

Penis: resembles that of *C. didyma.*

Female prothorax: posterior lobe small, margin slightly indented on either side of the small median projection, but this is much less developed than in most species.

Lt.-Col. Fraser who kindly sent me one of Col. Wall's specimens of this species, suggested to me (*in litt.*) that it should be referred to *Coeliccia* rather than to *Calicnemis*; with this suggestion I fully agree, and I find that the species falls naturally into the present genus in every respect. The origin of *Ab* well proximal to *Ac* is perhaps an approach to the condition found in *Calicnemis*, but the general build of the species is utterly unlike that of any *Calicnemis*, whilst as stated above the species agrees well in all other respects with other species of *Coeliccia.*

This is one of the most beautiful of all the species, its splendid colouring is unlike that of any of the species allied to it except perhaps *C. scutellum.* Its range appears to be restricted to the central parts of the Indo-Chinese Peninsular region.

Coeliccia scutellum, sp. nov.

(Pl. III, fig. 18.)

1 ♂ Ngai Tio, 13-iv-24, 4,800 ft. Tonkin.
1 ♂ Bao Ha, 20-iv-24, Tonkin, Coll. H. Stevens.
(In Brit. Mus.).
♂ Length of abdomen 45 mm., of hindwing 27 mm.

Venation: Rs and Miii rise one on either side of the subnodus. In two specimens on one wing of each, *Ab* commences well before the level of *Ac*, in all the remaining wings (18) (*vide* Fraser) *Ab* rises at level of *Ac.*

Pterostigma small, black, covering about $1\frac{1}{2}$ cells; 3 discal cells on all wings.

Postnodals, forewing 21, hindwing 19-20.

Head: entirely black.

Prothorax: black above, yellow below and laterally.

Synthorax: dorsum black above, with a pair of citron or sulphur-yellow marks anteriorly, each shaped like an escutcheon (scutellum), its posterior border concave, rather more than one-third the total length of the dorsum; its inner margin also concave. Sides yellow, ventral surface black.

Legs: black.

Abdomen: black, with ventral border of second segment narrowly yellow. Segments 3-6 each with apical lateral yellow spots; 9 apical half yellow, the black margin undulate; 10 entirely yellow.

Anal appendages: yellow, subequal in length, superiors chopper-shaped as seen from above and with a small spine or tooth on the inner border at the point where the blade begins, apex rounded; inferiors slim, cylindrical, tapering after the base, the apices turned in rather abruptly and forcipate.

Other structures not examined.

This fine species will probably prove to be allied to *C. chromothorax*, of which it is perhaps the eastern race. It is readily distinguished from all its congeners by the colour-pattern of the synthorax.

Coeliccia scutellum hainanense, subsp. nov.

In the British Museum there are four males (Mt. Wuchi, Hainan, 19-v-03) of what appear to be a distinct race of *C. scutellum* and certainly sufficiently distinct to require a name.

The chief difference lies in the greater size of the synthoracic marks which are longer, and more rounded at their upper end. The posterior half of segment 8 of the abdomen as well as the whole of 9 and 10, is yellow.

A single specimen from Bao Ha, Tonkin, a male taken by Mr. H. Stevens, 11-xii-24 is regarded by Lt.-Col. Fraser as representing a distinct but very similar species. It has only 2 discal cells on the wings, the head has more yellow marking than *scutellum*, and the shape of the yellow marks on the dorsum of the synthorax is a little different; they are shorter and squarer than in *scutellum* and with the upper margin straight. There are also small differences in the shape of the anal appendages.

The specimen is teneral, and I do not feel disposed to give it a name. A good series is necessary to determine whether the differences noted are not due to individual variation, age, and shrinkage.

In the four specimens from Hainan, in the British Museum, the number of discal cells is as follows :—

3	3	3	3	3	3	3	3
3	3	3	$2\frac{1}{2}$	3	$2\frac{1}{2}$	3	2.

Coeliccia brachysticta Ris.

1 ♂, 1 ♀. (*type* and *allotype*) Coll. Ris, Naujau, Mindoro, Philippines.

Length of abdomen ♂ 44 mm., ♀ 41 mm.; of hindwing ♂ 30 mm., ♀ 30 mm.

♂. *Venation*: costal side of quadrangle of forewing not less than $\frac{2}{3}$ length of anal side; of hindwing still more nearly equal in length.

Ab rises at or exceedingly near level of *Ac*; *Rs* rises proximal to subnodus, *Miii* proximal to it; 3 discal cells on all wings. Costal side of pterostigma about one-third shorter than anal side, the inner margin more oblique than the outer. Postnodals 19 in forewing, 17 in hindwing.

Head: upper lip greenish-blue, genae and base of mandibles pale greenish-blue. Anteclypeus dark brown, postclypeus black, rest of dorsal surface black, except a reddish-brown stripe between the base of the antennae, and on either side between the posterior ocellus and the eye is a mark of the same colour for its inner half, its outer half being blue. On the occiput there is a blue band along the margin of the eyes. The first and second joints of the antennae are pale brown.

Prothorax : black, the sides bright blue.

Synthorax: dorsum entirely bronze-black, except for a very small stripe at the dorsal end of the humeral suture; the black colour extends a little more than halfway between the same suture and the stigma. Sides dull blue, a black band along the second lateral suture narrowing dorsally. Ventral surfaces pale blue, the median suture outlined with black.

Abdomen: very slender, segment 1 black dorsally, on the sides bright pale blue; 2 dark brown, its sides dull blue and a small blue spot in the mid-dorsal line; 3-7 dark brown, each with two incomplete rings of dull yellow, the anterior quite near the base of the segment, the posterior about one millimetre from its apex; 8 black, rather less than its distal half greenish-blue; 9 greenish-blue with black basal-lateral spots; 10 greenish-blue with broad lateral bands of black.

Legs: pale yellow, with a black line on extensor surface of femora, black articulations and ciliae.

Anal appendages: blackish-brown, the upper pair a trifle shorter than the lower, rather club-shaped with the apex slightly bilobed.

♀ very similar to the male, but all the light markings a little more extensive. Segments 9-10 of the abdomen entirely black.

Penis: not studied.

Female prothorax: not very different from that of the male, its posterior margin is divided by a small median indentation into two flatly curved lobes.

The female specimen has only two discal cells on the left hindwing.

Coeliccia poungyi Fraser.

(Pl. I, figs. 7, 20; Pl. II, figs. 21, 22; Pl. III, fig. 4.)

Material examined:—

4 ♂♂, 13 ♀♀, Maymyo. Upper Burma. May-July, Dec. 1925.

2 ♂♂, 1 ♀, Ani Sakan. All collected by Col. Wall.

Length of abdomen ♂ 39 mm., of hindwing ♂ 24 mm.

,, ,, ♀ 35 mm., ,, ♀ 24 mm.

♂. *Venation:* quadrangle of forewing slightly shorter than that of hindwing. Costal side of quadrangle of forewing about ¾ length of anal side, of hindwing more nearly equal. Origin of *Miii* and *Rs* one on either side of subnodus, rather close together. Angulation of medio-anal link less marked than in other species. *Ab* rises very slightly before level of *Ac*; 3 discal cells on all wings.

Postnodals, forewing 20-21, hindwing 18-19.

Pterostigma black, covering about 1½-2 cells, its outer and inner sides parallel, a little deeper than the cells immediately preceding and following it.

The position of *Miii* and *Rs* with regard to the subnodus does not vary in a series of 40 wings examined, except that in some cases they are placed much nearer together than in others. On the other hand the number of discal cells, especially on the hindwing, varies, in that in about a third of all the hindwings the third cell is not complete, *i.e.*, its distal margin lies some distance beyond the subnodus, so that the number of discal cells on that wing in about 30 per cent. is only 2½ or 2¾.

Head : black, a spot on each side of the genae, one on either side of the ocelli, and a cuneiform postocular mark on either side blue.

Prothorax : dorsal surface entirely black, sides and ventral surface pale blue.

Synthorax : dorsum almost entirely occupied by a pair of very large oblong-oval spots of a beautiful pale blue, narrowly separated in the middle line by the mid-dorsal carina, bounded laterally by a black stripe along the line of the first lateral suture. Sides and under surface pale blue, a fine black stripe along the second lateral suture.

Abdomen : black, distal half of segment 8 and the whole of 9 and 10 chrome yellow. Distal half of sides of 1, ventral surface of 2 and small ventral basal marks on 3 and 4, blue.

Legs : entirely black.

Anal appendages : in well coloured specimens yellow, in very mature individuals deeply tinged with brownish-black. Upper pair rather spatulate, with a ventral spur projecting from each just distal to its middle. Lower pair longer than upper, slender, forcipate.

♀ (Adult).

Head : upper lip yellowish, with a black mark at its base. A transverse, pale yellow line across the frons immediately behind the level of the antennae, the basal joint of these likewise yellow. Otherwise as in the male.

Prothorax : dorsum black, sides and ventral surface yellow.

Synthorax : dorsum black, with a pair of narrow bluish-green antehumeral stripes. Sides and ventral surface yellow, with a complete but narrow black band along the second lateral suture.

Abdomen : black. Sides of segment 1 and ventral surfaces of segments 2-7 yellow. Distal half (or in some cases distal third) of segment 8 and the whole of segments 9 and 10 yellow.

Legs : black, anterior surface of femora and posterior surface of tibiae dull yellow.

Penis : terminal fold well developed and broad. Internal fold well developed. The third segment has a large tongue-like projection at its apex, and from the base of this there rises on either side a slender recurved process, similar to the terminal processes of *C. didyma.*

Female prothorax : median process of hind margin large, having the shape of an equilateral triangle, its extreme apex upturned ; the margin deeply cut on either side of it ; the lappels small.

Known only from Burma.

I understand from Lt.-Col. Fraser that the term "*poungy*" is the Burmese for a priest.

The male of this species resembles in *colour-pattern* though of course not in colour the species *chromothorax.* It is a very beautiful form and quite distinct from any other. Col. Wall writes that *loogali* and *poungyi* rest on bushes or ferns over hanging streams in shady places, or where the sunlight filters through in splashes. The females are found in deeper forest some short distance from streams to which they only come to pair. They rest with wings folded. Lt.-Col. Fraser adds that these habits are entirely similar to those of *Indoneura.*

Coeliccia pyriformis, sp. nov. (Fraser *Mss.*).

1 ♂. Coll. H. Stevens. Bao Ha, Tonkin. 21-xii-24.

The specimen which is the type is in the British Museum. It is fully adult. (Unique).

Length of abdomen 35 mm., of hindwing 22 mm.

Venation: *Rs* rises distal to subnodus, *Miii* proximal to it; 3 discal cells on all wings. Pterostigma black, covering about 1½ cells.

Head: glossy black, genae, bases of mandibles and a small median spot on clypeus, yellow.

Prothorax: black, paler on the sides, without any abrupt delimitation.

Synthorax: dorsum black, the black extending on to the sides and fading gradually to a creamy white below. A pyriform mark of pale blue on either side on the dorsum with its pointed end upwards. (This mark has faded whilst the specimen was undergoing relaxation for setting, and is not now evident in the type, the whole dorsum being uniformly black).

Abdomen: black, 1 and 2, with the sides creamy white, leaving on the dorsum of 1 a narrow hour-glass shaped mark of black; 3—6 with ventral surfaces creamy white, the white extending upwards subapically to show as a pair of small spots when the abdomen is looked at directly from above. 9 and 10 entirely ochreous.

Legs: pale yellow, with a fine black line on extensor surface only of femora.

Anal appendages: ochreous, lower pair much longer than upper, angularly forcipate. Upper pair rather club-shaped, no marked projection.

This species differs from all others in the gradual shading of its colouring on the sides of the synthorax and by the large blue pyriform dorsal thoracic spots which closely resemble those found in *Caconeura botti* Fras.

Coeliccia loogali, sp. nov. (Fraser *Mss.*).

(Pl. I, figs. 4, 27; Pl. II, figs. 17, 18; Pl. III, fig. 1.)

Material examined: 8 ♂♂, 6 ♀♀ Maymyo, N. Shan States, vii-ix-1924. Coll. Col. Wall.

2 ♂ (teneral) Ani Sakan. v-viii-1925. Coll. Col. Wall.

1 ♂ Loimwe Cart Road. S. Shan States. 3,500 ft. Coll. Capt. Drummond. 27-ix-1923.

5 ♂♂, 2 ♀♀ Maymyo. v-vii-1924-1925. Coll. Col. Wall.

The type and allotype are from Maymyo.

Length of abdomen ♂ 43 mm., of hindwing ♂ 28 mm.

,, ,, ♀ 43 mm., ,, ♀ 29 mm.

Venation: (type ♂).

Quadrangle of forewing about ¾ length of that of hindwing. Costal side of quadrangle, of forewing about ¾ length of anal side, of hindwing about ⅘. *Ab* rises perceptibly proximal to level of *Ac.* *Rs* and *Miii* rise on either side of the subnodus, well separated; 2 discal cells

on all wings. Pterostigma grayish-brown, covering 1-1½ cells, its inner and outer borders parallel, rather inflated. Post-nodals, forewing 20, hindwing 19.

Variations in the venation are frequent in respect to the number of discal cells, and position of origin of *Rs*. Instead of 2 discal cells there are in many cases 2½ or 3. Amongst the males examined (11 specimens) all cases of this variation amounted to 18 per cent. of the total, in 9 per cent. the variation was found to be symmetrical. Amongst the females (11 specimens) about 40 per cent. of the whole number showed the same variation which was symmetrical in 18 per cent. Approximately 16 per cent. of all the wings have the origin of *Rs* from the subnodus. In two females it occurs on all four wings, and in the female generally it is twice as common as in the male.

♂ (*Type*, adult).

Head: black, genae, bases of mandibles, anteclypeus and a minute spot on either side of the posterior ocelli blue, as is a cuneiform post-ocular mark.

Prothorax: entirely black on the dorsum; sides blue fading to white ventrally.

Synthorax: dorsum black, the black colour extending nearly to the first lateral suture. A narrow blue stripe on either side, slightly curved and tapering at its extremities lies wide from the mid-dorsal carina, close to the inside of the humeral suture. Sides blue, a small black mark at the upper end of the second lateral suture. Ventral surfaces whitish.

Abdomen: almost entirely black. Sides of first segment extensively marked with yellowish-white, this colour encroaching somewhat on the black of the dorsum. Sides of second segment with whitish markings. Ventral surfaces of 3 and 6 whitish, the white colouring expanding a little at the apex of each of these segments.

Legs: white, or yellowish-white, with a narrow black line along the posterior surface of the femora. Ciliae and tarsi also black.

Anal appendages: black, upper pair shorter than lower rather lancet-shaped; lower pair incurved and decurved apically.

♀ (*Allotype*).

Colour pattern very similar to that of the male, but the bright blue of that sex is replaced by a more yellowish colour. The following differences may be noted. On the head there is a transverse broken line of yellow from the posterior ocellus to the eye on either side. Distal half of segment 8 of abdomen, and distal quarter of 9 yellow.

Penis: internal fold well developed, terminal fold rather small and indefinite. Third segment broadly bilobate at its distal end the lobes being rather flattened laterally and with a very shallow cleft between them.

Prothorax of female: posterior margin with a minute median projection, directed upwards. Margin gently curved on either side of this. The middle lobe has on either side a deep constriction and immediately in front of this an inconspicuous spur, which is provided with a number of hairs. The lappels are placed very laterally.

Range, Upper Burma and Shan States.

Quite distinct from any other species that I have seen; the female is similar in appearance to that of *C. poungyi* from the same region; but apart from structural characters it is readily distinguished by the black mark on the second lateral suture of the synthorax. This in *C. loogali* is incomplete, whilst in *C. poungyi* it is complete.

The word *loogali* is I understand Burmese for a lad or youth.

Coeliccia flavicauda Ris.

(Pl. I, figs. 10, 16; Pl. II, figs. 19, 20; Pl. III, fig. 14.)

Material examined: 1 male, 1 female, Tainan, Formosa, iv. 10, coll. Rolle *ded.* F. Ris.

Length of abdomen ♂ 43 mm. Hindwing 27 mm.
„ „ ♀ 41 mm. „ 29 mm.

Venation: quadrangle of forewing about ¾ length that of hindwing. Costal side of quadrangle, of forewing about ¾ length of anal side, of hindwing more nearly equal. *Miii* rises before the subnodus, *Rs* distal to subnodus. Discal cells, 2 or 3 in forewing, usually 2 in hindwing. Pterostigma small, gray-brown, with a very fine lighter margin, its costal margin barely shorter than the anal. Postnodals 16 in forewing, 14 in hindwing.

♂ (Adult).

Head: upper lip pale yellow with a fine black line at its base. Anteclypeus greenish, postclypeus, genae, and bases of mandibles, greenish-white.

Rest of upper surface black, with a small yellow stripe on either side of the hinder ocelli, and a very small whitish line on the crest of the occiput; postocular spots whitish. Apex of first and second joints of antennae also whitish.

Prothorax: black, with large lateral spots of yellow.

Synthorax: dorsum black, the black colour extending to a line along the middle of the mesepimerite.

On either side of the middorsal carina there is a large oblong-oval spot of a bluish-yellow colour, extending about halfway up the dorsum anteriorly.

Just to the outer side of the humeral suture and lying along its upper half there is, on either side, a cuneiform bluish mark, its apex directed downwards and forwards.

In some specimens this mark is continuous at its upper end with the light colour of the sides.

Laterally the synthorax is bluish-yellow, with a band of black along the second lateral suture. The ventral surfaces are greenish-white.

Abdomen: segments 1-8 black dorsally. First segment greenish yellow at the sides and below; second laterally yellowish and with a very small longitudinal dorsal stripe on its basal half; 3-7 with lateral-apical lunules of bluish-yellow, that on 7 very small; 8 entirely black; 9 variable, either all black, or with a dorsal apical spot of yellow, or entirely yellow; 10 also variable, all yellow, or with small basal-dorsal and basal-lateral spots of black.

Legs : whitish-yellow, femora and tibiae with black carinae ; tarsi and ciliae black.

Anal appendages : yellow. Upper pair a trifle shorter than the lower rather cylindrical, with a squarish ventral process. Lower pair forcipate, a little hooked downwards at the extreme apex.

♀ (Adult).

Colour pattern of head and prothorax as in adult male, but the markings on the head more extensive than in the other sex. Synthorax also as in the male.

Abdomen with segments 1-7 again as in the male ; basal half of 8 black, apical half yellow ; 9 all yellow ; 10 and appendages black.

Penis : inner and terminal lobes well developed. Third segment with short, rounded median process, on either side of this a stout, rather short, lateral process.

Female prothorax : hind-margin with small median projection directed upwards and backwards. Lappels rather small.

Dr. Ris describes two colour varieties of the female Var. α with the oval spots of the synthorax reaching only about ½ of the length of the dorsum, and the mark just external to the humeral suture only represented at its upper end, where it is continuous with the colour of the side.

Var β. Oval spot of synthorax still more reduced, only about ¼ length of dorsum ; and spot outside humeral suture reduced to a very fine line, not continuous with the colour of the side. In the female of this variety the oval spot is represented merely by a fine point of colour.

This species is very distinct, and is remarkable for the close similarity of the colour pattern of the two sexes.

Known from Formosa only.

Coeliccia cyanomelas Ris.

Type and *cotype* from Hoozan, Formosa, v. 10, in Ris collection.
Occurs also in South China (Tsa-Yiu-San).
Length of abdomen ♂ 39-42 mm. Hindwing 26-28 mm.
,, ,, ♀ 40 mm. ,, 29 mm.

Venation : costal side of quadrangle of forewing about a fifth shorter than anal side, of hindwing a little more nearly equal. Three discal cells in forewing, two in hindwing. *Ab* rises just before level of *Ac.*

Miii rises proximal to subnodus, *Rs* distal to subnodus. Costal margin of pterostigma a trifle shorter than anal.

20 postnodals in forewing, 18 19 in hindwing.

♂ (Adult).

Head : upper surfaces black, with blue anteclypeus, genae, and bases of mandibles. A whitish spot on either side between the base of the antennae and the hinder ocellus. Post-ocular spots whitish.

Prothorax : black, laterally bright blue.

Synthorax : dorsum black ; on either side of the mid-dorsal carina there is a light blue spot, extending along about the anterior third of the dorsum, and narrowing at its upper end. Externally to this there lies on either side a small streak of the same colour, parallel to the upper

third of the humeral suture. Laterally the black colour reaches halfway between that suture and the stigma, its margin being rather wavy. The rest of the side light lilac-blue, with a very fine black line along the second lateral suture. Ventral surfaces whitish-yellow.

Abdomen : very slender ; first segment whitish with a small black longitudinal line on the dorsum ; 2-7 black dorsally, sides of 2 whitish-blue, this segment also has a whitish longitudinal line on the dorsum ; 3 has the sides yellowish, with a fine basal ring, interrupted mid-dorsally, of blue ; 4-7 narrow lateral markings of whitish colour, the basal colour extending a little dorsally at the apex of each. Basal half of 8 black, distal half blue ; 9 pale blue, with small lateral basal spots of black ; 10 dorsum blue, sides black.

Legs : whitish-yellow, black lines on the dorsal sides of the femora, and ventral sides of the tibiae, tarsi, ciliae and articulations black.

Anal appendages : upper pair pale blue above, black ventrally ; lower pair black with yellowish markings on the outside and on the ventral-medium margin.

Both pairs almost equal in length, the upper straight, rather conical, with a stout mid-ventral tooth.

♀ Differs from male as follows.—Anterior margin of upper lip yellow. On the synthorax the median pair of spots on the dorsum are absent. Segment 9 of abdomen black save for a greenish apical-dorsal spot ; 10 and appendages entirely black.

Penis : not examined.

Female prothorax : posterior margin, has the median process developed as a very small rather obtuse triangle, with small lappels on either side, not unlike those of *C. flavicauda.*

C. Group **membranipes.**

Coeliccia membranipes (Ramb.).

(Pl. I, figs. 3, 17 ; Pl. II, figs. 15, 16 ; Pl. III, fig. 13.)

Material examined : Several of both sexes from N. Borneo.

Type in the Paris Museum collection.

Length of abdomen ♂ 43 mm. Hindwing 26-28 mm.

„ „ ♀ 40 mm. „ 27 mm.

Venation : quadrangle of forewing $\frac{4}{5}$ length of that of the hind ; costal side of quadrangle of forewing $\frac{3}{4}$ length of anal side but $\frac{4}{5}$ the length in the hind ; *Rs* rises distal to subnodus, *Miii* from the subnodus. Three discal cells in all wings ; 18 postnodals in forewings, 15-16 in the hind.

Pterostigma small, covering scarcely more than one cell, its inner and outer margins approximately parallel. Origin of *Ab* perceptibly distal to *Ac.*

The venation shows a large amount of individual variation more than in any other species perhaps. My account refers only to the Bornean form, and I do not know that material from Sumatra or Java would show the same amount or the same kinds of departures from what I take to be the really typical venation of the species.

The chief variation is in the position of origin of the sectors *Rs* and *Miii*. In at least 30 per cent. of all wings examined (32) these originate one on either side of the subnodus, further, whilst as a rule they are not very closely approximated at their origins, the spacing of the two varies from wing to wing even in the same individual, but in such slight amounts that it is not possible to tabulate. On one hindwing of a female specimen, (and also in the female figured by Dr. Ris) there are only two and a half discal cells.

♀ (Adult).

Head : with yellow genae, and a yellow margin to the eyes, otherwise as in immature males.

Prothorax : as in male but the yellow lateral spots relatively larger.

Synthorax : colour pattern as in male, but the blue replaced by yellow.

Abdomen : brown fading ventrally to yellow, with traces of lunules on segments 3-7. Basal half of 8 darker, almost black ; 9 and 10 wholly black, save for a small subapical yellow mark on 9. The first segment is pale yellowish.

Penis : almost exactly as described below for *C. nigrohamata.*

Female prothorax : posterior margin deeply cut on either side of the median projection, which is directed upwards and a little backwards. Lappels rather large.

Anterior part of the middle lobe with a simple conical boss on either side.

This race is barely distinguishable from the type from Java, which also occurs in Sumatra, the most obvious difference is that, whilst the type specimen from Padang in Java has the anal appendages of the male blue, all the males from Borneo now before me, as well as some others that I have seen, have these structures black.

(In Javan specimens all the abdominal markings are blue and there is also a subapical blue annule on segment 8 ; the sides of segments 9 and 10 are black. All pale markings of thorax are definitely blue. In some specimens only the apical half of segment 9, but the whole, dorsum of 10 is blue.)

Though my grounds are not very secure, I keep the specimens from N. Borneo distinct as a race, to which the name *nemoricola* must be applied.

The following is a description of this race, to which description I add a note pointing out the few features which may serve to distinguish it from the type race which occurs in Sumatra and in Java.

♂ (Adult).

Head : black, with blue post-clypeus, and blue, cuneiform marks postocularly (younger males with an irregular blue stripe on either side of the ocelli).

Prothorax : dorsum black, with a pair of lateral spots of yellow (? blue).

Synthorax : dorsum black, with a pair of stripes one on either side just internal to the humeral suture, blue in colour, slightly crescentic in shape, rather broader anteriorly. Sides blue, with a black band incomplete below along the second lateral suture. Ventrally whitish yellow.

Abdomen: black, segments 9-10 blue, 9 with a black basal triangle, its apex posterior, along the basal half of the segment. Segments 1 and 2 largely yellow at the sides, segments 3-8 yellow below, with subapical, lateral-ventral lunules.

Legs: primrose yellow, with black lines on the femora and tibiae, the tarsi and ciliae also black.

Anal appendages: black, the upper pair shorter than the lower, which have the pincer-like shape characteristic of the genus; the upper pair are slightly club-shaped, or when viewed from above, triangular.

Coeliccia lieftincki, sp. nov.

(Pl. I, figs. 8, 14; Pl. II, figs. 13, 14; Pl. III, fig. 2.)

Material examined: 1 pair *in cop.*, Nusa Kambangan, Java, 18-vi-27, Coll. F. C. Drescher.

Male.—Abdomen 36 mm. Hindwing 24 mm.

♂. *Wings:* hyaline; 16 postnodals in forewings, 14 in the hind; 3 cells between quadrilateral and subnodus in all wings; costal margin of quadrilateral two-thirds the length of anal margin in forewing; three-fourths in the hind; *Miii* arising at the subnodus; *Rs* distad (in both sexes); wings distinctly broader in the middle and with more rounded apices than in *C. membranipes* (Ramb.). Pterostigma dull ochreous with fine pale framing, nearly rectangular, broader than the underlying cells; in the male the sides approximately parallel but in the female, the costal margin much shorter than the anal margin, especially in the forewing; in general the pterostigma less oblique than in other species.

Head: Labium yellowish; labrum and postclypeus glossy black; frons and vertex black; first joint of antennae, and an irregular stripe at level of ocelli yellowish; occiput black, bearing two large postocular rounded spots.

Prothorax: largely bluish white, dorsum with a large X-shaped black mark connected posteriorly with the black middle lobe.

Synthorax: dorsum black with small bluish white antehumeral stripes incurved and pointed below; also a distinct, nearly rectangular bluish white spot at the upper part of each shoulder to outer side of antehumeral stripes along the upper end of humeral suture. Sides yellowish green with a brown line at the second lateral suture extending as far as the stigma. Ventrum yellowish white.

Legs: yellowish, the joints, spines and a minute line on the femora brown.

Abdomen: segment 1 bluish white with a small dorsal brown spot; dorsum of segments 2 to 6 brown with distinct yellowish green rings just before the darker brown ends. These light coloured rings incom plete above but separated by a very small longitudinal line; segment 7 dark brown dorsally; segment 8 blackish brown with a pale bluish green transverse spot near the end; segments 9 and 10 wholly black; 9 with a large scutate pale blue spot above, and 10 also blue dorsally. Ventral side of segments 1 to 7 yellowish, of 8 to 10 black. Abdomen broader and more robust than in *C. membranipes*.

Anal appendages : black ; superiors of the same length as inferiors ; seen from above thick and straight, each with two projections directed inwards and downwards respectively. Inferiors cylindrical, slightly incurved and somewhat broadened at end.

Female. Abdomen 37 mm. Hindwing 27 mm.

Very similar to the male ; wings differing as mentioned above, prothorax with simple posterior lobe, but with a small horn-like protuberance on each side of the anterior lobe, not present in the male.

Abdomen with pale markings at ends of segments 2 to 6 dull yellowish ; basal third of segment 8 black, the remaining portion entirely pale yellow ; segments 9 to 10 black.

Type male and female in Lieftinck collection.

Coeliccia dinoceras Laidlaw.

(Pl. I, figs. 2, 18.)

Material examined : 1 male (*autotype*), Kolambugang, Mindanao, Philippine Islands, in author's coll. (Female unknown.)

Length of abdomen 36 mm. Hindwing 25 mm.

Venation : quadrangle of forewing about length of that of hind. Costal side of quadrangle of forewing about $\frac{3}{5}$ length of anal side, and in hindwing about $\frac{4}{5}$; *Miii* arises at subnodus, *ñs* distal to it. *Ab* arises at level of *Ac* ; 3 discal cells in all wings ; pterostigma almost square, covering 1 cell. Postnodals 16 to 17 in forewing, 15 in the hind.

♂ (Adult).

Head : black, except genae and anteclypeus, which are blue, as are small oval-oblong, postocular spots and small transverse marks on either side of antennae, the basal joints of which are white.

Prothorax : black, with a large blue spot on either side of the middle line. Posterior lobe carries a pair of large horns, projecting upwards and forewards. Colouring ventrally pale yellow.

Synthorax : dorsum black with a pair of narrow blue bands tapering towards their upper extremities. To the outside of these, close to the antealar sinus, is a minute spot of the same colour. Sides blue (in life) with a narrow band of black along the second lateral suture.

Abdomen : long and very slender. Segments 7-8-9 progressively a little stouter than the others. First segment probably blue in life, with narrow longitudinal line of black middorsally. Sides of 2-3, distal third of 8, and whole of dorsum of 9-10, also blue. Otherwise colour generally dull brownish-yellow paler ventrally, and passing to black on the hinder segments.

Legs : yellow, with narrow line of black along hind surface of femora. Tarsi and ciliae black.

Anal appendages : black both pairs long and slender, lower pair decidedly longer than upper, the former cylindrical, hooked downwards, and inclined inwards apically, the upper pair club-shaped with bluntly pointed apices.

Penis : terminal lobe inconspicuous, as is the inner. Third segment hood-like, its apex widening abruptly just before its termination.

A very remarkable species, unique in the genus in that the male possesses a pair of horn-like processes on the prothorax which do not seem to be homologous with the prothoracic processes of females of other species of the genus. It is further remarkable for its very long and slender abdomen and appendages; the penis is, in a general way, not unlike that of *C. campioni*.

On the whole the species seems to stand most naturally in the *membranipes* section of the genus.

Coeliccia flavostriata Laidlaw.

Material examined: 1 ♂ (*paratype*) Mt. Merinjak, Borneo. *Autotype* ♂ in Brit. Mus., Mt. Merinjak.

Length of abdomen 35 mm., of hindwing 21·5 mm.

Venation: quadrangle of forewing very slightly shorter than that of hindwing.

Costal side of quadrangle of forewing $\frac{2}{3}$ length of anal side, of hindwing $\frac{4}{5}$. *Ab* rises scarcely perceptibly before the level of *Ac*. *Miii* rises at (or barely before) the subnodus, *Rs* well after; 3 discal cells in all wings.

Pterostigma covering about one cell, its inner and outer margins parallel, scarcely deeper than the cell next distal to it.

Postnodal nervures, forewing 14-15, hindwing 13.

♂ (Type).

Head: black, anteclypeus, base of upper lip, and a pair of transverse marks one on either side of the posterior ocelli, yellowish-white.

Prothorax: anterior and posterior lobes black, median lobe yellow with a fine median longitudinal line of black dorsally.

Synthorax: dorsum black, with an orange-yellow antehumeral stripe on either side, and immediately in front of the antealar sinus a small yellow spot lying externally to the antehumeral stripe. Sides yellow with a narrow black band incomplete below, along the second lateral suture.

Abdomen: segment 1 yellow with median line of black on dorsum; 2-5 brown, paler below, with terminal black ring on each. The remaining segments progressively darker from before backward, the last two bronze-black.

A young male has a whitish diamond shaped mark on the dorsum of 10.

Legs: femora yellow with black lines, tibiae brown, tarsi and ciliae black.

Anal appendages: black, upper pair about $\frac{2}{3}$ length of lower, rather flattened apically, incurved, each carries a stout spur on its inner side at the end of the first third of its length. Lower pair slender rather cylindrical incurved apically.

(♀ Unknown).

Penis: inner lobe small, terminal lobe large, hood-like; the third segment terminates in a pair of short widely separated processes. The organ resembles closely that of the next species, and to a less extent that of *renifera*.

This pretty little species, with the closely allied *C. campioni*, will probably prove to belong to a distinct section of the genus, characterized by the colouration, open venation and genital structures of the second abdominal segment. Both of them are at first sight very much like a *Copera*, and quite unlike any of their congeners.

Coeliccia macrostigma Laidlaw.

Material examined: 1 male, Baram, Borneo, 20-x-20; 1 female, Baram, 19-x-20.
Holotype male in Brit. Mus. Female *cotype* destroyed.
Length of abdomen ♂ 35 mm. Hindwing 21 mm.
,, ,, ♀ 33 mm. ,, 22 mm.

Venation: quadrangle of forewing about ¾ length of that of hindwing. Costal side of quadrangle, of forewing ¾ length of anal side, of hindwing more nearly equal; *Miii* rises at subnodus, *Rs* distal to it. Three discal cells in all wings. Pterostigma rather large, its proximal and distal sides approximately parallel, gray in colour. 15 postnodals in forewing, 14-15 in hindwing.

Head: upper surface black, except the genae, lateral parts of postclypeus, base of antennae, and a minute spot on either side of ocelli, which are yellow, as are the postocular spots.

Prothorax: anterior and posterior lobes black, middle lobe with lateral and ventral surfaces whitish-blue, black mid-dorsally.

Synthorax: dorsum black with broad blue antehumeral stripes which are indented at the middle by a black mark projecting from the inner side. Laterally the thorax bluish white, ventrally yellowish white; a narrow black oblique stripe extending along the second lateral suture. Legs yellowish white, the joints, spines and a line on the femora black.

Abdomen: segment 1 yellowish white with a dorsal brown spot; segments 2 to 7 brown, becoming darker posteriorly, with narrow black apical rings, 2 has a pair of small basal blue lateral spots; segment 8 black above, yellowish white beneath, 9 and 10 yellowish white with narrow black basal annules.

Anal appendages: yellowish brown (or blue?) tipped with black. Superiors slightly longer than inferiors, each with a large triangular projection inwards and downwards, scarcely visible in profile. Inferiors cylindrical, slightly incurved and with a distinct elbow at the middle.

Female: very similar to the male, differs as follows:—antehumeral stripes of thorax completely divided by the black projecting mark into a broad lower part which is rounded below and pointed above—and a narrower upper part which is linear.

Abdomen: with segment 1 entirely yellowish brown above; segment 8 pale above, probably blue during life; segment 9 black with a pair of pale marks above on either side of the middle line; 10 black.

Prothorax: with an unique crescentic projection on either side the middle lobe attached to main body by its convex border, which as viewed in an oblique direction is lunulate in shape, but as viewed directly from above shows as a single outstanding spur. In addition, the posterior

lobe has a fine black spur at the middle of its posterior margin which projects strongly upwards and forwards. On either side of this process lies a small lappel directed backwards.

Coeliccia campioni Laidlaw.

(Pl. I, fig. 6 ; Pl. II, figs. 5 ad 6 ; Pl. III, fig. 5.)

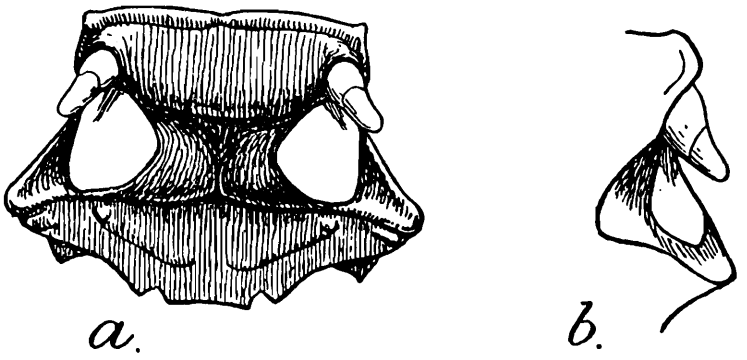
Material examined : 1 male, Long Semiyan, 5-x-20 ; 1 female, same locality, 25-x-20 (fragmentary).
Type male, Lio Matu, Borneo, in Brit. Mus. coll.
Length of abdomen ♂ 37 mm. Hindwing 21 mm.
,, ,, ♀ ? ,, 21·5 mm.

Venation : quadrangle of forewing about $\frac{3}{4}$ length of that of hindwing. Costal side of quadrangle, of forewing about $\frac{2}{3}$, of hindwing $\frac{4}{5}$ length of anal side. 3 discal cells in all wings. Pterostigma black, not inflated, its inner and outer margins almost parallel. *Miii* rises from subnodus, *Rs* a little distal. Postnodals 13 in forewing, 11 in hindwing.

♂ (Adult).

Head : black, genae, bases of mandibles, a small rather square spot on either side of the ocelli, and a pair of very small postocular marks, yellow.

Prothorax : dorsum black, middle lobe with a pair of large yellow spots. The posterior lobe carries a very fine projecting point at either lateral angle. Under surfaces pale yellow.



TEXT-FIG. 2.—*a.* Dorsal view of prothorax of *Coeliccia campioni*, ♀. *b.* Lateral view of anterior portion of same.

Synthorax : dorsum black as far as the level of the stigma, with a stripe of yellow immediately to the inside of the humeral suture, this stripe narrows about halfway and tapers at its upper extremity. To the outside of its upper end, which is a little curved inward, a small spot of the same colour.

Sides and ventral surfaces yellow, with a black line, incomplete below, on the second lateral suture.

Abdomen : segment 1 pale yellow, with a black apical ring ; 2-10 brown becoming progressively darker from before backwards ; the terminal segments bronze-black. Ventrally yellowish brown.

Legs : yellow, the posterior sides of the femora, anterior sides of tibiae, tarsi, and ciliae black.

Anal appendages : black. Upper pair a little longer than the lower, stout and slightly incurved apically, each carries an inwardly directed spur near its middle, and is sharply hooked downwards at its free extremity. Lower pair forcipate.

♀ (Adult, much damaged) differs from the male in having the yellow stripe on the dorsum of the synthorax extremely narrow throughout, whilst the small upper spot is entirely absent.

Penis : inner lobe small, terminal lobe large, hood-like. The third segment bluntly bifid at its apex.

Female prothorax : the posterior lobe is large and collar-like, the median process very broad and truncate, separated by a shallow indentation from the small lappels which are scarcely distinguishable from the rest of the margin.

Laterally between the anterior and middle lobes, but apparently derived from the latter there is a pair of extraordinary, horn-like processes, yellow in colour. These are quite the most highly developed of any such structures that are known in the genus. They are conical, the upper half rising as though jointed on to the stouter basal pedicle-like part.

Coeliccia nigrohamata Laidlaw.

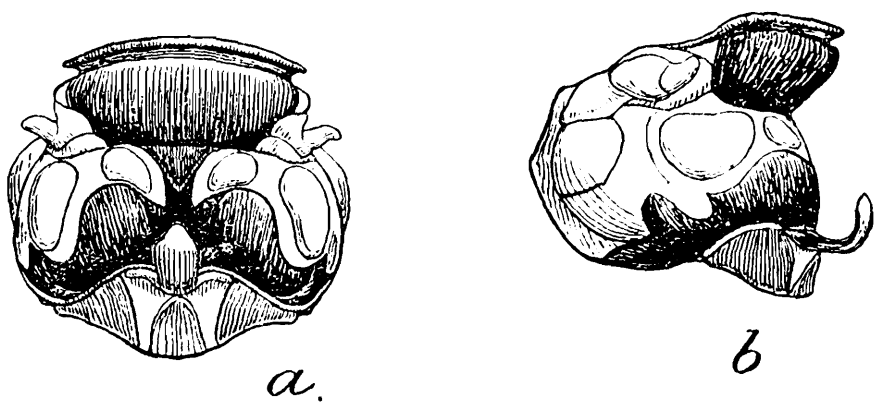
(Pl. III, figs. 15, 16.)

Material examined : 6 males, Mt. Merinjak, 21-v-14, Lio Matu, Borneo, 14-xi-14, and Kuching, Sarawak.

Length of abdomen 38 mm. Hindwing 24 mm.

Venation : quadrangle of forewing about $\frac{4}{5}$ length of that of hindwing. Costal side of quadrangle, of forewing $\frac{2}{3}$ length of anal side, of hindwing $\frac{4}{5}$; *Ac* rises distinctly after the level of *Ab*. *Miii* rises from subnodus, *Rs* distal to it ; 3 discal cells in all wings, pterostigma long covering $1\frac{1}{2}$ cells, gray-brown in colour ; 16-18 postnodal nerves in forewing, 16 in hindwing.

♂ (Adult).



TEXT-FIG. 3.—*a*. Dorsal view of prothorax of *Coeliccia nigrohamata*, ♀. *b*. Lateral view of same.

Head : black except for yellow marks on the genae, the base of the mandibles, and a pair of minute spots on either side of the posterior ocelli, as well as a pair of postocular spots.

Prothorax: dorsum black, sides and ventral surfaces yellow.

Synthorax: dorsum black to the level of the first lateral suture, with a pair of large hook shaped blue marks, the prong of the hooks lying close to the middle line, the shanks occupying the position of the antehumeral band.

Sides between the first and second lateral sutures blue, below the latter yellowish white, with a fine black line incomplete below along the second suture.

Abdomen: first segment yellowish white, with dark basal and apical rings, segments 2-7 bronze black above, yellowish brown ventrally, 8 black above yellow at the sides, 9-10 blue (?) with very fine basal rings of black, 9 has also a minute basal triangle of black mid-dorsally.

Legs: yellowish white, with black lines on the extensor surfaces of the femora and flexor surfaces of the tibiae. Tarsi, joints, and ciliae also black.

Abdomen: segment 1 yellow, with a narrow line of black on the dorsum, 2-7 black above, ventrally yellowish-brown, 8 with yellow at the sides, posteriorly forming a pair of lunules, 9-10 blue.

Anal appendages: black, but a younger male has the upper pair blue, the lower pair are in all cases black. Upper pair a little shorter than lower with each two small internal projections; lower pair more strongly incurved apically than in most species, each with a bend inwards at about its middle, at which point also it is a little flattened, so that it has a small shelf-like process on its inner side.

Penis: inner and terminal lobes large, third segment narrow, ending in a pair of short pointed processes. At the point from where these processes rise there is a curious hood-like projection, recalling that seen in *C. albicauda*, but more prominent than in that species.

[Females belonging to at least two species, neither of which show any character by which I can definitely identify them with the present species, but which may be from their *locale*, one or other of them, the female of *nigrohamata*, are discussed below.]

Coeliccia sp.

2 ♀♀ Kuching. Borneo.

Both these specimens are very much battered and scarcely fit for description. They are probably the female of *nigrohamata* but as this is not definitely ascertainable I prefer to describe as many of their characters as are in condition for description under a separate heading.

The venation is in general the same as that of *C. nigrohamata*. The only other characters sufficiently available for study are those shown by the prothorax and synthorax.

The dorsum of the synthorax is black and has a pair of humeral stripes shaped each like an inverted " ! " but with the upper and lower parts of the mark conjoined. This mark is like the mark on the dorsum of *C. nigrohamata* without the prong of the hook.

The sides and ventral surfaces as in *C. nigrohamata*.

The prothorax is yellowish-white dorsally, with the anterior and posterior lobes black.

The median process of the posterior lobe projects upwards and backwards like a trigger, the lappels are large and lie close to the median process.

On either side of the median lobe there is a conical papilla projecting outwards, lying well forward, similar to, but smaller than, that of *C. campioni.*

Coeliccia sp.

Long Akar, Baram, 1.x.20.

This specimen which is very fragmentary, differs from the two females noted above in the following particulars.

The posterior margin of the prothorax is more markedly arcuate, and the median process is relatively larger, moreover its upper extremity is strongly hooked forward, and the lappels are relatively smaller. The lateral process of the middle lobe are similar but arise as the lower limb of a crescentic ridge.

The humeral marks on the dorsum of the synthorax consist of a pair of blue bands one on either side of the middle line. These bands are rather broad, and each is deeply indented on its inner side at about its middle. The black line on the second lateral suture is incomplete below.

As already stated there is nothing definite either in the venation or in any other character to guide one in placing the three females noted above under any of the species named.

It is quite certain that they are to be referred to two distinct species, and that these species are both of them very closely related to both *C. macrostigma* and *C. nigrohamata* ; in fact it is quite likely that they are the females of those species, but beyond stating this probability I am not able to speak with greater definiteness.

Coeliccia albicauda (Förster).

(Pl. I, figs. 1, 23 ; Pl. II, figs. 23, 24 ; Pl. III, fig. 10.)

Material examined : 1 male, Kampong Jor, Pahang ; 1 female Tamang, Pahang, 2-vi-23. Coll. F. Chasen.

Length of abdomen ♂ 43 mm. Hindwing 25 mm.
,, ,, ♀ 38 mm. ,, 26 mm.

Venation : quadrangle of forewing a little shorter than that of hindwing. Costal side in each case only a trifle shorter than anal side. *Miii* rises from subnodus, *Rs* distal to it ; 2 discal cells in all wings. Pterostigsma almost square, black, covering one cell, very finely margined with white, scarcely deeper than the cell following it.

Postnodals forewing 18, hind wing 17-18.

♂ (Adult).

Head : black; genae, anteclypeus and the transverse postocular spots blue as also are a pair of small square spots on each side of posterior ocelli.

Prothorax : yellowish-white with the posterior margin and a broad band on the dorsum of the middle lobe black ; anterior lobe also black.

Synthorax: dorsum black, with a pair of small triangular blue marks near its anterior end, and posteriorly a very small pair of blue spots near the alar sinuses. The apices of these triangles are directed forward. Sides blue, with a narrow black line along the second lateral suture.

Ventral surface ivory white.

Abdomen: black, the first segment yellowish-white; 2 with the same colour at the sides and below, the white extending dorsalwards subapically to form a small pair of lunules. Ventral surface of the remaining segments also whitish, 3-7 with small apical lunules. Distal third of 10 with a similar pair of spots laterally but much larger.

Legs: yellowish-white, carinae, articulations, and tarsi black.

Anal appendages: ivory-white, upper and lower pairs sub-equal in length; upper pair each with a large ventral spur at about the middle; lower pair forcipate.

♀ (Adult, fragmentary) differs from the male chiefly as follows:— the black band on the dorsum of the prothorax is reduced to an exceedingly narrow line, and on the dorsum of the synthorax there are a pair of narrow yellowish bands in place of the blue spots of the male. Segment 10 of the abdomen is black, whilst the black of the dorsum of segments 8-9 is reduced to a narrow band.

Penis: inner and terminal lobes well developed, the third segment carries at its apex a pair of short strap-like processes, which curve round the sides of the second segment.

Female prothorax: the middle lobe has a pair of blunt processes laterally, one on either side; these are quite inconspicuous, but resemble the homologous processes of such a species as *C. campioni.*

The median process of the hind margin is small and triangular and does not project upwards, nor does it extend backwards so far as the small lappels.

I have seen three females of this species. They differ entirely from the form described by De Selys as *octogesima*, and I think there can be no doubt but that this species is quite distinct, though it belongs to the same group. Förster's name must therefore be retained for the species, which is a very beautiful one. It certainly includes the specimens I described as *C. borneensis* from the Malay Peninsula. The locality, from which the specimens described were taken, is the same as that from which came Förster's type.

Coeliccia octogesima Selys.

Type male from Labuan, now in MacLachlan coll., *cotype* female from Singapore, in Selysian coll.

Length of abdomen ♂ 37 mm., ♀ 32 mm., of hindwing ♂ 21 mm., ♀ 21 mm.

Venation: *Rs* rises distal to subnodus, *Miii* at subnodus.

♂ (Adult).

Head: black, with the genae, postclypeus, a mark on either side of the ocelli, and cuneiform postocular spots yellowish.

Prothorax: black with a large yellow spot on either side of the middle lobe.

Synthorax : dorsum black with two blue spots on either side of the middle line. The lower of these is oval, the upper is smaller and almost round and lies near the antealar sinus. Sides blue with a dark line along the second lateral suture. Ventral surfaces yellowish white.

Abdomen : long and slender, the first segment yellowish with a black line dorsally ; 2-8 shiny-black above, brownish yellow below. This colour paler and more extended on the sides on 8 ; 9-10 pale bluish, with black articulations and a basal lateral black mark on the sides of 9.

Anal appendages : upper pair bluish-white above, darker below, stout at their base, narrowing to a point apically ; the lower, black beyond the base, pincer-shaped, touching each other apically.

♀ (Adult).

Differs from the male as follows :—

Prothorax yellow, with a narrow, longitudinal line of black mid-dorsally ; its posterior margin notched, median process projecting upwards and a little forwards.

Synthorax : the blue markings on the dorsum are less widely separated from one another than in the male, forming on either side almost a figure 8.

Abdomen : brownish-black, segment 8 paler, but dark at the base and dorsum ; 9 black, with an incomplete pale band on either side of the mid-dorsal carina.

Legs : pale, with a trace of a dark line on the posterior surface of the femora.

I think it very unlikely that these specimens should be conspecific. The account given above is translated from De Selys' description, and I have not been able to examine either of the specimens.

Coeliccia borneensis Selys.

(Unknown to me.) *Type* from N. Borneo, in MacLachlan Coll.
Length of abdomen 30 mm. Hindwing 20 mm.
Described from a single female ; male unknown.

Venation : Miii arises from the subnodus, *Rs* distal to it ; 13 post-nodals in forewing.

Head : black, genae and anteclypeus yellow, a blue spot between the posterior ocellus and the eye, on either side.

Prothorax : black with a large blue spot on either side of the middle lobe.

Synthorax : dorsum black as far as the first lateral suture, with a (blue) antehumeral band, narrowing above and not reaching the antealar sinus. The rest of the sides and ventral surface pale yellow, with indications of a black line, incomplete below, on the second lateral suture.

Abdomen : black above, brownish-yellow below as is also the distal half of the eighth segment.

Legs : yellow, a black line on the posterior surfaces of the femora and on the anterior surfaces of the tibiae. Tarsi also black.

Posterior margin of prothorax forms two rounded lobes (the lappels), scarcely separated by a small indentation, in the middle of which lies a small tubercle (the median process).

This species appears to be quite distinct from any of the other described forms. It is distinguished by the small number of postnodal nerves, and by the colour pattern of the synthorax, as well as by the prothoracic margin.

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