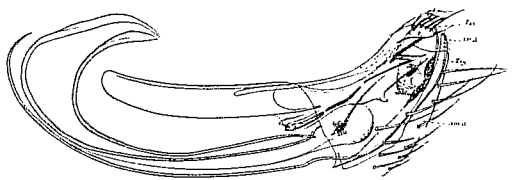
3°) le fourreau du pénis développe du côté dorsal et vers l'extrémité subapicale du tube, un long crochet en forme de dent, dent aussi longue que la partie terminale du tube; du côté ventral se développe une sorte de languette chitineuse (sclérite) en forme de crochet mousse et recourbé postérieurement. La forme de ce sclérite est donc bien différente de celle en queue de poisson qui caractérise l'espèce X. *tortus*.

4°) le lamina, étroit, à bords quasi parallèles, est arrondi à sa partie apicale;

5°) le sternite IX, recourbé vers le haut, s'effile graduellement vers l'apex;

6°) les soies du processus P1 sont comparativement plus courtes que les soies correspondantes de X. *cheopis*.



La figure jointe représente les sternites VIII et IX et les terminalia (Pénis, processus P_1 et P_2).

Le lot expédié de Boma ne contenait pas de spécimens femelles.

C'est la première fois que l'espèce *versuta* est signalée au Congo Belge. Sa présence dans le Bas Congo doit être considérée comme une extension de sa distribution géographique dans l'Angola.

L'un de nos deux spécimens mâles est déposé au Musée du Congo Belge à Tervuren, le second à l'Institut de Médecine Tropicale d'Anvers.

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New species of Macromia from Tropical Africa

by Lt. Col. F. C. FRASER, I. M. S., Retd.

The genus *Macromia* Rambur, 1842, is circumglobar in distribution but the bulk of the species are confined to tropical Asia and Africa; one species is found in southwest Europe, one in Japan and a third in Australia, whilst some nine species are restricted to North America. No well marked characters separate the various faunal groups, but on the whole, the african species are distinguished by the superior anal appendages of the males without an external spine and the terminal segments of the abdomen exhibiting a greater dilatation, whilst segment 10, more often than not, is surmounted by a dorsal spine.

Generally, species of the genus are large robust insects with an incredibly swift flight; their colouring varies from a dark mahoghany brown to black with a more or less pronounced blue or greenish metallic reflex relieved by bold, clear-cut citron yellow markings; thus they include some of the finest insects met with in the order Odonata.

Originally the whole of the species were included under the one genus Macromia, but in the year 1878, Selys removed three species, *africana* Selys, *tropicalis* Selys and *trifasciata* Selys, to a new genus *Phyllomacromia*, giving as characters, All triangles entire, median space of hindwings with at least 3 crossveins, discoidal field of forewings with a single row of cells, 8th abdominal segment of the male campanulate, dilated as lateral rounded wings, 10th segment without a dorsal elevation or spine, and lastly, superior anal appendages of the male without an external tooth. Martin (1906, *Cat. Coll. Selys, Cordulines* : 75) adopted this new classification, but later (1912, *Feuille j. Nat.* (5) 42, 499) expressed some doubt as to its validity. He said, - « The genus *Phyllomacromia* seems to stand apart from *Macromia* but only if the character based on a single row of cells in the discoidal field of forewings is constant in

Phyllomacromia; it is not absolutely constant, especially in the females ». Ris (1920, *Ann. S. Afric. Mus.* 18 : 375) found that the definition of *Phyllomacromia* would not hold good even for a limited amount of material. I am now able to confirm the opinions expressed by these two specialists, after having examined about 300 specimens, or more than five times the number Ris had at his disposal. Only two characters are actually concerned, viz the absence of a dorsal cone or spine on segment 10, and, only a single row of cells in the discoidal field of forewings. The first of these two characters is found to occur in some very large species in which the forewings have a double row of cells in the discoidal field of the forewings, and the second character is not only limited to the males but is also inconstant in that sex, thus it is common to find a single row in one forewing and a double row in the opposite one, and it is the rule rather than the exception to find that males with a single row of discoidal cells possess females in which a double row is found. It is evident that the genus *Phyllomacromia* must now be merged with *Macromia* and in doing this, there will be no necessity to alter the original definition of *Macromia*.

The large amount of material which I have been able to examine has revealed an unexpected richness of the genus in the continent of Africa, more especially so in the tropical areas of the Belgian Congo, Cameroons, Uganda and Kenya; some 28 species have been named in literature but the validity of some of these is open to doubt. In the present paper I have shown five of these as synonyms but have added and described a further nine as new. The determination of species is often frought with great difficulty owing to one or more of the following factors, - 1) The marked differences between the two sexes, this even extending to the colour and venation of the wings, so that a description based on one sex is of little help in the determination of the other; it may indeed be quite impossible unless the two sexes have been taken *in cop.* a comparatively rare event in my long experience of collecting oriental Macromias. Where a species is the sole one of a particular habitat, such as *M. trifasciata* Selys in Madagascar, no difficulty will be met with, but more often than not a number of species are received from a single locality. - 2) The rapidity with which the living colours fade from decomposition after death, especially in a tropical climate; colour and markings are of great importance in determining species, so that a loss of these adds to the difficulties of determination. The case of *M. sophia* Selys may be mentioned, the type and subsequent specimens having been described as with thorax without markings. Dr. Schmidt even employs this negative character in a key for the differentiation of *sophia* from other species. (Schmidt, 1951, *Arq. Mus. Bocage, 20* : 169); actually *sophia* has a brilliant golden yellow band encircling the thorax at its middle as pointed out by Dr Schouteden (1934, *Ann. Mus. Congo Belge* (Zool), *Cat. Faune Ent. III* : 46). In some of the fresh specimens of *sophia* which have been loaned to me for examination from the Musée du Congo Belge, this band has been preserved perfectly, whilst others show no signs of it due to postmortem decomposition. 3. The inadequate descriptions of some authors due to poor or insufficient material, and more particularly where these have been described from the female sex only.

Most of the material on which this work is based has been loaned to me by the authorities of the Musée du Congo Belge, Musée National d'Histoire Naturelle, Paris and British Museum (Natural History), to all of whom I desire to express my thanks and indebtedness. In addition I received either by gift or loan a large number of specimens from Mr Elliot Pinhey of the Coryndon Museum, Nairobi, Kenya, and I am greatly in his debt for lengthy notes and much sound advice, without which much of this work could not have been written. Lastly a small number of specimens in my own collection were collected for me by the late G. Hale Carpenter of Oxford University.

In the following tables, I have selected a large number of characters each represented by a letter of the alphabet from A to W in the first table and by a + or — in the second according to whether the character is or is not present in any particular species. It will be seen that by taking all the + signs and the corresponding letters of designation for any species, a formula can be constructed which will give the characters of that species; for example, - « BCFIKMPQV » is the formula for *sophia* Selys, and a reference to the first table will supply the explanation of the characters. Moreover the tables supply a useful key for the determination of any specimen; all that is necessary is to construct a formula based on its characters and lettering according to the first table in terms of plus and minus and then to compare the result with the second table which, in practice, is a « sliding rule ».

The second table contains a list of all those species which heve been described in literature as well as the following new species, - *bispina, Kimminsi, Lieftincki, occidentalis, Schoutedeni, Scydeli, subtropicalis, sylvatica* and *unifasciata*. All these are described below as well as the unknown opposite sexes of, - *bicornis* Forster, *clymene* Ris, *funicularia* Martin and *pallidinervis* Forster.

CHARACTERS OF THE AFRICAN MACROMIAS TABULATED

A. Only one row of cells in the discoidal field of forewings, at least in the male.
B. Two rows of cells in discoidal field of forewing in both sexes.
C. A dorsal cone, or spine surmounting a cone, on segment 10 of the males.
D. Thorax uniformly coloured, without yellow markings.
E. Thorax with yellow antehumeral stripe and antealar sinus.
F. Sole marking of thorax, a midlateral bright yellow stripe.
G. Thorax with yellow antealar sinus, antehumeral, mediolateral and metepimeral stripes.
H. Male wings with blackish brown markings at base.
I. Female wings with blackish brown markings at base.
J. Frons with at least some yellow on its upper surface.
K. Frons and vesicle metallic or ferruginous and poorly metallic.
L. The greater part of segment 3 yellow in both sexes.
M. Superior anal appendages without ventral or basal spines.
N. Superior anal appendages with a ventral or basal spine.
O. Terebra of female small and inconspicuous.
P. Terebra of female large, projecting conspicuously and forked.
Q. Large species with abdomen at least 50 mm in length.
R. Medium sized species, abdomen over 40 but under 50 mm in length.
S. Small species with abdomen 40 mm in length or less.
T. Costa finely yellow, even in adults.
U. Superior anal appendages yellow or partly so.
V. Pterostigma black.
W. Pterostigma brown or ochreous.

Species	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Aeneothorax	–	+	+	+	–	–	–	–	?	–	+	–	+	–	?	?	+	–	–	–	–	+	–
Aequatorialis	+	–	+	–	–	–	+	–	–	+	–	–	+	–	+	–	–	–	+	+	+	–	+
Africana	+	–	–	–	–	–	+	–	–	+	–	–	+	–	+	–	–	–	+	–	–	+	–
Bicornis	–	+	+	–	–	–	+	–	+	–	+	–	+	–	+	–	+	–	–	–	–	+	–
Bifasciata (♂)	+	–	–	–	–	+	–	–	?	+	–	+	+	–	?	?	–	+	–	+	–	+	–
Biflava	+	–	–	–	+	–	–	–	–	+	–	+	–	+	–	+	–	–	–	–	+	–	–
Bispina	+	–	+	–	–	–	–	+	–	–	–	+	–	+	–	+	–	–	–	+	–	–	–
Bredoi	–	+	+	–	–	–	–	+	–	+	–	+	–	+	–	+	–	–	–	–	+	–	–
Clymene	–	+	+	–	–	–	+	–	–	–	+	–	+	–	+	–	–	–	–	–	+	–	–
Contumax	+	–	–	+	–	–	–	–	?	–	+	–	+	–	?	?	+	–	–	–	–	+	–
Flavicincta	+	–	+	–	–	–	–	+	–	+	–	–	+	–	+	–	–	+	–	–	–	+	–
Funicularia	–	+	+	–	–	–	–	+	–	?	+	–	+	–	?	?	–	–	+	–	–	–	+
Kimminsi	–	+	+	–	–	–	+	–	?	+	–	–	+	–	?	?	+	–	–	–	–	–	+

	A	C	E	G	I	K	M	O	Q	S	U	W
Kochi	+	+	–	+	–	+	+	–	–	–	+	+
Leoni (♀)	–	+	–	+	–	+	+	–	+	–	+	–
Lieftinckі	–	+	–	+	–	?	–	+	?	?	+	–
Maesi	–	+	+	–	–	+	–	+	–	+	–	–
Melania	–	+	?	–	–	+	?	+	–	–	?	+
Monoceros	+	–	+	–	–	+	–	+	?	?	+	–
Nyanzana	–	+	?	+	?	?	–	+	?	?	+	–
Occidentalis	+	–	–	–	–	+	–	+	?	?	+	+
Onerata	–	+	+	–	–	+	–	+	?	?	+	–
Overlaeti	+	–	?	–	–	+	?	–	+	–	+	+
Pallidinervis	–	+	+	–	–	+	–	+	–	+	+	+
Patda	–	+	?	–	–	+	?	+	+	–	?	+
Picta	+	–	+	–	–	+	–	+	–	+	+	+
Reginae halei	–	+	–	+	–	–	+	–	+	–	+	–
Reginae reginae	–	+	–	+	–	–	+	–	+	–	+	+
Schoutedeni	+	–	+	–	–	+	–	–	+	–	+	–
Selysi	+	–	+	–	+	–	?	–	+	–	?	+
Seydeli	–	+	+	–	+	–	+	+	–	+	–	–
Sophia	–	+	+	–	+	–	+	–	+	–	+	–
Sylvatica	–	+	–	–	–	+	–	+	–	+	–	–
Thetis	–	+	+	–	–	+	–	+	–	+	–	–
Tropicalis	+	–	?	–	–	+	–	+	–	+	+	+
Subtropicalis	+	–	–	–	–	+	–	+	?	–	–	–
Unifasciata	–	+	+	–	+	–	–	+	+	–	–	–

Characters of species shown in the above list have been derived from the original descriptions or from the types of new species; where any of these are known from only one sex, the characters of the male or females, as the case may be, will be unknown and are shown as « ? ».

The following species have been found to be synonyms,- *Macromia Bredoi* SCHOUTEDEN a synonym of *Macromia funicularia* MARTIN; *Phyllomacromia biflava* MARTIN a synonym of *Phyllomacromia contumax* SELYS; *Phyllomacromia leoni* FRASER a synonym of *Phyllomacromia bifasciata* MARTIN; *Macromia tropicalis* SELYS and *Phyllomacromia flavicincta* KIRBY are both synonyms of *Macromia picta* HAGEN in SELYS.

The mergence of genus *Phyllomacromia* in *Macromia* has led to *flavicincta* KIRBY from Africa, being preoccupied by *flavicincta* SELYS from the Orient, and to avoid confusion I propose the name of *flavicans* for the former. In the above table, under *tropicalis*, the presence of a spine or horn on segment 10 has been queried; this is because, in the type, segment 10 has been crushed flat and it is impossible to tell with certainty if a horn is present or not; Miss LONGFIELD and myself, after a careful examination, are of opinion that vestiges of a horn can be made out; it is for this reason that I incline to the opinion held by the late Dr RIS that *tropicalis* is a synonym for *picta*.

I have compared the types of *M. funicularia* and *M. Bredoi* and those of *contumax* and *biflava* and find that the characters of the two pairs are identical so that there can be no doubt about the synonymy given above. Regarding *leoni* and *bifasciata*, the former was described from a female, the latter from a male, the two sexes showing the usual broad differences, especially in the shape of the abdomen and the colour and markings of the wings; on the other hand, the dimensions and the venation of the wings agree so closely that the synonymy may be taken as a fact. Karsch has described the supposed male of *melania* SELYS which was described from a single female, but there are several known species, the males of which might equally be that of *melania*. Thus the relationship of Karsch's male can not said to be established and is just as likely to be incorrect as correct. Dr ERICH SCHMIDT (1951), *Arq. Mus. Bocage*, 20 : 169) has given a key for the identification of the african Macromias but has omitted the following species, - *aeneothorax* (NUNNEY), *flavicincta* KIRBY, *leoni* FRASER, *Overlaeti* SCHOUTEDEN and *pallidinervis* FORSTER. He gives the following as synonyms, - *bicornis* FORSTER and *nyanza* GRUNBERG for *paula* KARSCH, and *tropicalis* for *picta* HAGEN in SELYS. The suggested synonymy of *bicornis* is quite unacceptable; the characters given are male, whereas *paula* was described from a female, so that it is evident that he has borrowed the characters of the former to support those for *paula*, and these include a spine on segment 10, an unknown character in the females. Forster certainly did say that his species might be the male of *paula* but then gave good characters to disprove this, and added, - « It appears certain that this synonymy can not be decided ». SCHMIDT arbitrarily ignores this. *Bicornis* has a blue metallic frons, *paula* a dark yellowish brown one; *bicornis* is conspicuously blue metallic, whilst *paula* is said to be generally black without noticeable metallic blue reflex. For *M. sophia* SELYS, he gives, - « Thorax without bright stripes », which is entirely contrary to facts. *M. onerata* is figured from the type in the Paris Museum, but Dr L. BERLAND informs me that this type is now missing. Presumably the figure was made when SCHMIDT visited the Museum during the Occupation ? Lastly I am unable to understand on what grounds he has based a supposed synonymy of *M. nyanzana* GRUNBERG with *bicornis* FORSTER, as the former was described from an incompletely coloured female which unfortunately had been rather mishandled, and in which the colour and markings of the thorax could no longer be discerned. Truly poor material on which to base such important decisions ?

In the same key, he distinguishes *Kochi* GRUNBERG from *picta* HAGEN, by the absence of an antehumeral stripe, but the author stated that

there were three stripes on each side of the thorax in *Kochi*, the most posterior being on the metepimeron; thus is evident that the most anterior was a humeral one, and the second, the usual mediolateral stripe, that is, the basic pattern of the African Macromias. I have determined some specimens of *Macromia* from Entebbe, Uganda as *Kochi* and the most striking feature to distinguish it from *picta* is the blue metallic frons, which is conspicuously marked with yellow above in *picta*.

The African Macromias show little or no tendency to form defined groups, the characters being shared out indiscriminately, thus in the following descriptions of new species or of the opposite unknown sexes of some species, or the amplification of descriptions of known species, no definite order has been adopted. Much more needs to be known before a monograph on this magnificent group of insects can be attempted.

Macromia aeneothorax (NUNNEY).

Ceratogomphus ? aeneothorax NUNNEY, 1895, *Ann. Mag. N. H. 16*:349.
Ceratopyga aeneothorax NUNNEY, 1895, *loc. cit.* : 350.

This species is of interest in that it has been lost sight of since NUNNEY first described it as a new Gomphus. « It was unknown to Dr RIS and it does not appear to have been mentioned even by MCLACHLAN in whose collection it found a resting place; it is not known how it came into this collection, especially as MCLACHLAN ridiculed NUNNEY s astonishing error in classification; possibly NUNNEY presented it in order to stifle criticism? The type is now in the British Museum (N.H.) and still in very fair condition, save that it has lost one of the superior anal appendages and the spine on segment 10 has been fractured off and lost. Fortunately NUNNEY figured this latter organ in his description and we are able to see that it is exactly similar so that of *M. Maesi* SCHOUTEDEN, although it cannot be synonymous as it lacks the clearly defined lateral yellow stripes of the thorax of *Maesi*. There is however a poorly defined metepimeral line which was mentioned by NUNNEY. The habitat is unknown but NUNNEY stated that he believed it to have come from the Cameroons; it bears a label « *Ceratogomphus aeneothorax* NUNNEY, MSS » and on the reverse « Sierra Leone » in red ink, and « TYPE » in black ink. It is certainly a good species, with hindwing about 43 mm and abdomen about 50 mm in length, and stands near the *Maesi-bicornis* group in its general facies.

Macromia clymene RIS. (Fig. 4, 1). = kimminsi ? ♀

Macromia clymene RIS, 1921. *Ann. S. Afric. Mus. 18* : 376, 381.
Phyllomacromia clymene PINHEY, 1951, *Transvaal Mus. Mem.* 5:189.

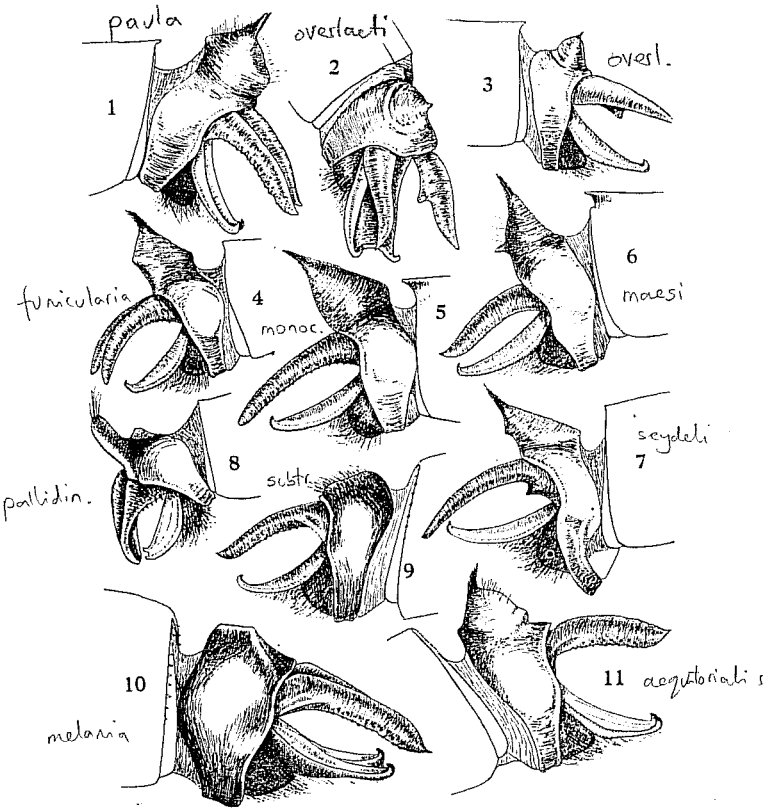

Fig. 1.

Anal appendages of.- 1. *Macromia bicornis* FORSTER, 2. *Macromia Schoutedeni* n. sp., dorsolateral aspect, 3. The same from the left side, 4. *Macromia funicularia* MARTIN (= *Bredoi* SCHOUTEDEN), 5. *Macromia thetis* RIS, 6. *Macromia Maesi* SCHOUTEDEN, 7. *Macromia Seydeli* n. sp., 8. *Macromia pallidinervis* FORSTER, 9. *Macromia subtropicalis* n. sp., 10. *Macromia contumax* (SELYS), 11. *Macromia aequatorialis* MARTIN.

The female of this species was hitherto unknown and is here described from a single specimen in the Coryndon Museum, Nairobi, from Tororo, Uganda, 3-III-52, coll. T. H. E. JACKSON.

Abdomen 49 mm. Hindwing 46 mm.

Lips face and frons bright lemon-yellow, the labrum slightly ferruginous at its centre, the frons with a dark reddish brown crescentic spot along its crest which is distinctly metallic bluish at its centre; vesicle metallic blue black; occiput and behind head glossy black. Thorax as for male, paler on dorsum than on the sides, the citron yellow stripes very sharply defined and not bordered with black; the metepimeral stripe reduced to a small upper posterior spot. Legs black save the anterior pair of femora which are bright citron yellow for the basal two thirds on the inner side. Abdomen stout and cylindrical especially at base and less so on end segments; segment 2 broadly yellow dorsally and subdorsally, this yellow enclosing a transversely oval brown spot except on middorsum where the spot is confluent with basal and apical dark brown rings; segment 3 yellow dorsally and subdorsally save at the apical end and for a baso-dorsal diamond-shaped black spot; segments 4 to 6 with the basal half yellow, this enclosing a black diamond-shaped spot on the dorsum; segment 7 with slightly more than the basal half citron yellow, the rest black. Anal appendages shortly conical, conspicuously yellow as well as the anal valves between them. Wings (rather torn in this specimen) tinted palely with brownish yellow, this deepening between nodus and pterostigma to form a distinct amber tinted belt extending diffusely across the whole breadth of wings. Nodal index — $\frac{8\text{-}16 \mid 15\text{-}8}{11\text{-}12 \mid 11\text{-}10}$, 2 rows of discoidal cells in forewings, *hts* $\frac{4 \mid 4,}{3 \mid 2}$ *cuqs* $\frac{5 \mid 4,}{4 \mid 4}$ anal-loop 12 cells, membrane white. Vulvar scale about half the length of segment 9, deeply bifid into two elongated triangular narrow lobes (differing strongly from the same organ in the nearly related *M. thetis* RIS.).

This specimen differs in some respects from the male of *clymene* and it is possible that it does not actually belong to that species; the whole face is a much brighter yellow and the metepimeral yellow stripe of thorax is almost obsolete. It resembles the female of *thetis* in many respects but the entirely different shape of the vulvar scale rules this species out.

Macromia bispina sp. nov. (Fig. 2, 5).

Male. Abdomen 38 mm. Hindwing 31 mm. Pterostigma 2 mm.

Head : labium bright chrome yellow, borders of lobes blackish, labrum and front of frons bright ferruginous, epistome olivaceous, frons above and vesicle blue black metallic, occiput black. Thorax rather brilliant dark blue metallic marked conspicuously with pale citron yellow,- the middorsal carina, alar sinus, narrow complete antehumeral stripes, a mediolateral stripe centred over spiracle, and finally the posterior half of metepimeron as well as pectus which is traversed anteriorly by a narrow band of dark blue metallic. Legs black; wings hyaline, scarcely tinted, membrane black; only a single row of discoidal cells in forewings; 6 cells in the anal-loop; 3-4 *Hts* in forewings, 2 in the hind; 5 cubital cross-veins in forewings, 4 in the hind; nodal index, — $\frac{6\text{-}17 \mid 16\text{-}7}{9\text{-}12 \mid 13\text{-}10}$. Abdomen black marked with citron yellow as follows, — a narrow transverse stripe on segment 2 broadening anterolaterally so as to include the oreillets; segment 3 with a small crescentic spot on each side of the base, and a still smaller antejugal pair of crescentic spots; segment 4 with only the jugal spots, which are very small; segments 5 and 6 unmarked; segment 7 with its basal third yellow, this annule partially divided in middorsaum; remaining segments unmarked. Dorsum of segment 10 strongly ridged and raised into a steep cone which bears a couple of slightly divaricate spines on its summit. Anal appendages black, superiors about half as long again as segment 10, subcylindrical, broad at base, tapering towards apex from which a small spine is directed upwards and outwards; seen from above these appendages are strongly convergent. Inferior appendage of exactly the same length, triangular, the apex subtruncate and emarginate, its outer angles terminating in short upturned spines.

Female. Abdomen 38-40 mm. Hindwing 34-35 mm.

Resembles the male closely in colour and markings; the antehumeral stripes less conspicuous and the dorsum of thorax bright castaneous with the antealar sinus above conspicuously pale creamy yellow; on the sides, only the mediolateral stripe conspicuous (a male sent at a later date and more teneral has this same paler type of colouring and markings). The transverse stripe on segment 2 much broader and broadly interrupted on middorsum. Base of segment 3 narrowly yellow, the jugal spots larger and prolonged basally so as to enclose a broad, elongated triangle of black on the middorsum and this is repeated on a smaller scale on segments 4 and 5; segment 7 with its basal half yellow; remaining segments black or dark ferruginous, unmarked. Terminal segments rather broadly fusiformy dilated and depressed. Wings hyaline costa and venation black, pterostigma dark reddish brown between black veins; membrane blackish, white at extreme base. Bases of all wings up

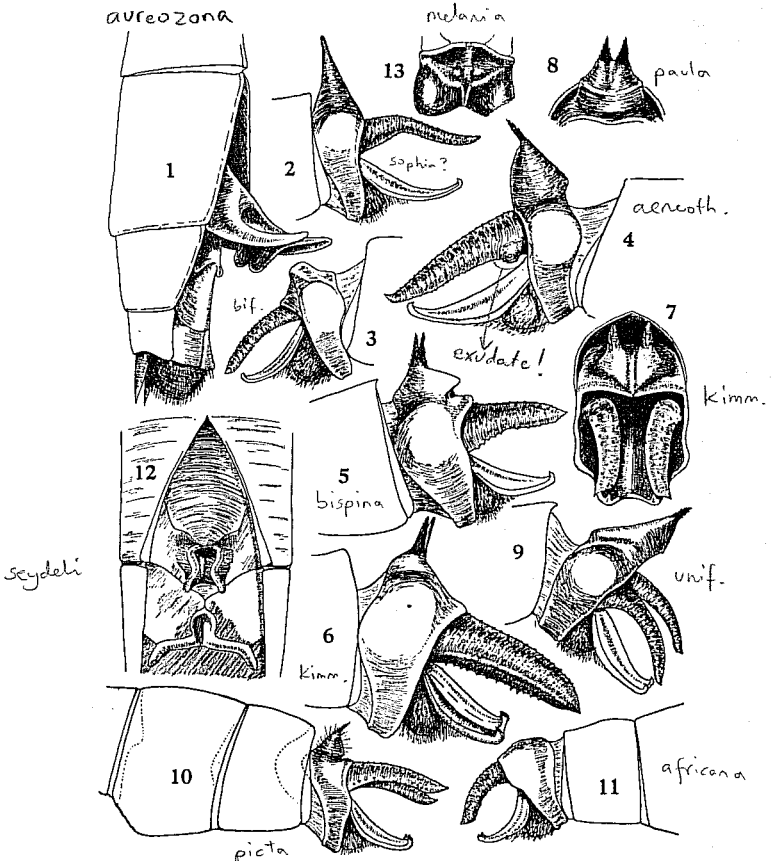

Fig. 2.

1. Genitalia of female of *Macromia sophia* SELYS, viewed from the right side. Anal appendages of,- 2. *Macromia sophia* SELYS, 3. *Macromia bifasciata* (MARTIN), 4. *Macromia Lieftinckі* n. sp., 5. *Macromia bispina* n. sp., 6. *Macromia Kimminsi* n. sp., 7. The same viewed from behind, 8. *Macromia bicornis* FORSTER, dorsal spine on segment 10 viewed from behind, 9. *Macromia unifasciata* n. sp., 10. *Macromia picta* HAGEN in SELYS, 11. *Macromia africana* SELYS, 12. Female genitalia of *Macromia Seydeli* n. sp., 13. Dorsal view of segment 10 of *Macromia contumax* (SELYS).

to the 1st antenodal, *Cuq* and for one cell at membrane a golden yellow; the costal margin of the forcing apex is also clouded with this same colour (In two males recently received, the anal field of the hindwings is palely tinted with yellow). Nodal index, $\frac{6\text{-}13 \mid 14\text{-}5}{9\text{-}9 \mid 9\text{-}8}$ (Two males examined recently, have a similar low index as compared to the type), remaining details of venation similar but slightly variable as in the male. Anal appendages black, very shortly conical; terebra very short, deeply emarginate and quite inconspicuous.

Habitat : type male from Bwamba Forest, Fort Portal, 2400', IV-51, Uganda, collected E. Pinhey; 2 pairs from Sango Bay, Katere, Uganda, X-XI-53, collected T. H. E. Jackson. On the wing this species might be easily mistaken for *picta* but it is a darker insect and without the pale head markings of that species; the bifid spine on segment 10 will serve to distinguish it from all other species save *bicornis* Forster and *kimminsi* Fraser, both of which are much larger insects. The female is not unlike *Kochi* but the golden colour at the base of the wings is more restricted and that at the apex for less conspicuous. Type male and allotype female will be deposited in the British Museum (N. H.).

Macromia Schoutedeni sp. nov. (Fig. 1, 2 and 3). = overlaeti

Male. Abdomen 40 mm. Hindwing 32 mm. Pterostigma 3 mm. Head : labium chrome yellow, labium and lower part of frons ferruginous, epistome dark olivaceous, upper part of frons and its superior surface dark bluish green metallic. Occiput black. Thorax dark blackish brown with a blue metallic sheen and marked with citron yellow as follows, - middorsal carina, antealar sinus, very narrow and rather sinuous antehumeral stripes, a mediolateral stripe centered over the spiracle and finally, the posterior half of the metepimeron. Legs black; hindlegs very long, extending nearly to the middle of segment 3. Wings hyaline; discoidal field of forewings variable, tending to become 2 rows of cells but with occasional single cells interposed; 3-4 *Hts* in forewings, 2 in the hind, 4-5 *Cuqs* in forewings, 4 in the hind; nodal index, $\frac{6\text{-}15 \mid 14\text{-}6}{10\text{-}11 \mid 11\text{-}10}$; anal-loop 6 cells; membrane black. Abdomen black marked with citron yellow,- segment 2 with a narrow transverse dorsal stripe broadening laterally to include the oreillets; segment 3 with a very narrow basal annule slightly interrupted on middorsum, and a pair of antejugal semilunar spots; segment 4 with only the jugal pair of spots; segment 7 with a basal ring covering nearly one quarter of its length; its apical end and segment 8 very broadly expanded (rather more so than in *bispina*). Segment 10 with a small centrally situated cone on the middorsum, from the obtuse apex of which a tiny spine slopes obliquely upwards and posteriorwards. Anal appendages black, superiors half as long again as segment 10, broad at base, tapering to apex which is acuminate and turned slightly outwards; viewed laterally each appendage is seen to possess a robust spine situated at its middle on the inner ventral surface. Inferior appendage of the same length, broadly truncate and rather deeply emarginate at apex, with the outer angles bearing minute spines.

Female. Abdomen 39 mm. Hindwing 37 mm.

Colouring and markings very similar to the male; the wing bases broadly tinted with golden yellow, nearly halfway to nodus in forewings and two thirds of that way in the hind. Venational differences rather broad (as is usual),- nodal index $\frac{8\text{-}17 \mid 16\text{-}7}{9\text{-}12 \mid 13\text{-}10}$. *Hts* $\frac{4 \mid 4,}{2 \mid 3}$ *Cuqs* $\frac{5 \mid 6}{5 \mid 4}$, 12-14 cells in anal-loop. Abdomen with somewhat similar markings but the transverse stripe on segment 2 interrupted at its middle and there is a narrower basal stripe which may become confluent with the expanded portion of the medial stripe to enclose a broad black transverse stripe. Segments 3 and 4 similar but 4 has the basal spots only and these are repeated on segment 5. Anal appendages shortly conical, black; vulvar scale minute, about one fourth the length of segment 9, bifid into two narrow spine-like terebrae; the ventral plate posterior to it, as well as that of segment 10, a bright greenish yellow (evidently an identification sexual mark).

Habitat; *Belgian Congo*, Eala, 4-35, J. Ghesquière; Bambesa, V-38, J. Vrijdagh; Lulua: Thepaza, IV-34, F. G. Overlaet. It closely resembles *bispina* by its colour and markings but is easily determined from all other african Macromias by the medial spine on the superior anal appendages. *Type* in the Musée du Congo Belge.

Macromia sophia Selys. (Fig. 2, 1, 2; fig. 3, 9). = aureozona ♀

Macromia sophia Selys, 1871, *Bull. Acad. Belg.* (2) XXXI : 550. — Id. 1878, *Ibid* (2) XIV : 198.

Pseudogomphus insignis Kirby, 1889, *Proc. Zool. Soc. Lond.* 299.

Macromia sophia Karsch, 1891, *Ent. Nachr. 17* : 72. — Id., 1893, *Berlin Ent. Zeit. 38* : 28, 43. — Id. 1898, *Ent. Nachr. 24* : 344. — Id. 1898, *ibid. 25* : 173. — le Roi, 1915, *Zentr. Afric. Exp. zool.* 348. — Schouteden, 1934, *Ann. Mus. Congo Belge* (Zool.), *Cat. Faune Ent.* (III) : 46. — Schmidt, 1951, *Arq. Mus. Bocage, 20* : 19.

Dr Schouteden has already corrected the original description, which failed to mention the striking band of bright citron yellow which en-

circles the thorax lateraly, and also the faulty figure of the anal appendages given by MARTIN. It remains to correct the description of the female which SELYS made from an entirely different species. This is evident from the description of the vulvar scale and the character of the wing marking.

Female. Abdomen 60 mm. Hindwing 55 mm. Pterostigma 4 mm.

Coloured similarly to the male, including the beautiful yellow band

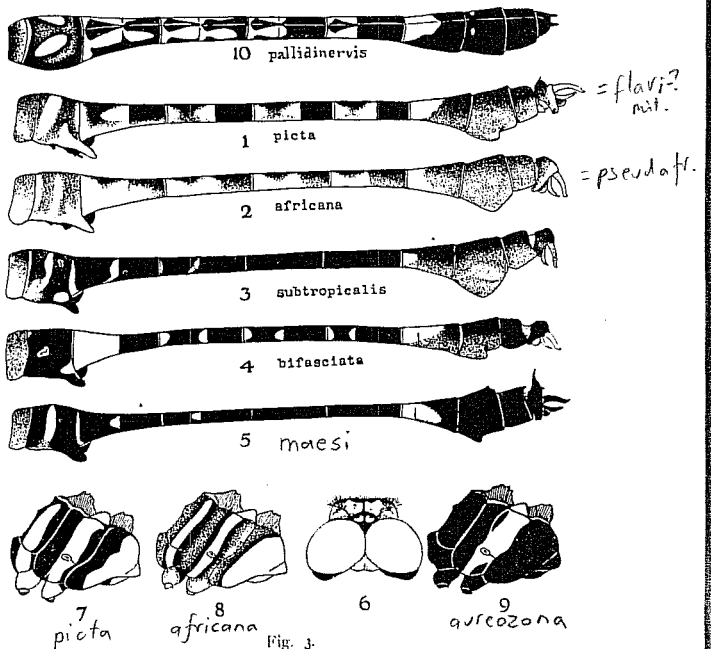

Fig. 3.

Left lateral view of the abdomen of,- 1. *Macromia picta* HAGEN in SELYS. 2. *Macromia africana* SELYS. 3. *Macromia subtropicalis* n. sp., 4. *Macromia bifasciata* MARTIN. 5. *Macromia Maesi* SCHOUTEDEN, 6. Dorsal view of head of *Macromia picta*. Thoracic markings (diagrammatic) of,- 7. *Macromia picta*. 8. *Macromia africana*. and 9. *Macromia sophia*. 10. Abdominal markings of *Macromia pallidinervis* FORSTER, dorsolateral view.

which encircles the middle of the thorax passing up over the tergum between the wing roots and downwards across the pectus. The build of the insect is very massive, more so than any other african Macromia which I know of. The abdomen thick, compressed and the vulvar scale projecting at a right angle to the abdominal axis at the posterior border of segment 8; seen in profile this organ is narrowly triangular and with a small lobe projecting posteriorly from its middle; this latter represents the apex of a fold caused by the infolding of the terebra (fig. 2, 1). Seen from behind, the organ is seen to be deeply bifid, the two forks widely separated but parallel. (From its formation, it would appear that oviposition is carried out by this species in an abnormal manner and probably very similar to the method employed by several species of *Somatochlora-metallica*, *linearis* and *tenebrosa*). The wings are heavily marked at the base with blackish brown to as far as the 3rd antenodal vein in both wings but not to the end of the membrane.

Habitat : Bomboma (Terr. Giri), 23-IX-35, A. BAL; Bambesa, V-37, J. VRIJDAGH and V-39, HENRARD; Thysville, XI-35, J. GHESQUIÈRE; Lulua: Kapanga, V-54, F. G. OVERLAET; Lulua: Thepaza, III-34, F. G. O., and Lulua: Riv. Kapelekese, XI-33, F. G. OVERLAET. The female is at once distinguished by the extraordinary size and shape of its ovipositor.

Macromia Seydeli nov. sp. (Fig. 1, 7; fig. 2, 12).

Male. Abdomen 56 mm. Hindwing 42 mm. Pterostigma 3 mm.

This species is coloured and marked exactly as in *sophia* for which, the male, at least, may be mistaken; the female may be easily differentiated by its small vulvar scale which is minute and does not project like the huge structure of *sophia*. The male is more slender than *sophia*, thus its abdomen is longer but its wings shorter. There are 2 rows of discoidal cells in the forewings, anal-loop 6 cells, 4-5 *Hts* cross-veins in the forewings, only 2 in the hind, 5 cubital cross-veins in forewings, 3 in the hind, nodal index $\frac{8\text{-}18 \mid 18\text{-}9.}{9\text{-}14 \mid 13\text{-}9}$ Anal appendages black, superiors stout at base where is found a very large conical spine with its apex directed posteriorly (absent in *sophia*), long and rather slender, tapering but slightly towards the apex which is subacute; seen in profile, they are strongly and evenly arched downwards. The inferior a little shorter, expanded at the middle, truncate and rather deeply emarginate at apex. Segment 10 bearing a robust compressed cone which is surmounted by a rather slender spine (under a high power, this spine is seen to be made up of for the most part by adpressed thick black setae). Anteriorly the base of the cone projects as an angle and there is a second but much smaller

angulation posteriorly just below the root of the spine. The secondary genitalia on segment 2 moderately large but very small compared to the massive hamules of *sophia* which form a conspicuous projecting lobe. Finally the extreme bases of all wings possess a black vitta, which in the hindwing extends to the 1st antenodal (Quite absent in the male of *sophia*).

Female. Abdomen 59 mm. Hindwing 45 mm. Pterostigma 3.5 mm.

Entirely similar to the male in colouring but differing from the female of *sophia* by its much slenderer abdomen and by the tiny inconspicuous vulvar scale. Venational details, - Reticulation much closer than in the male (or than in the female of *sophia*); 2 rows of cells between *CuP* and *IA* in the hindwings instead of only 1 row; 5 cubital cross-veins in the forewings, 3 in the hind; 4-5 *Hts* cross-veins in forewings, 2 in the hind; 14 cells in the anal-loop; nodal index $\frac{8\text{-}20 \mid 19\text{-}9}{12\text{-}14 \mid 14\text{-}12}$, membrane blackish brown; bases of wings with broad blackish brown vitta extending to the 2nd antenodal in all wings, to the base of *IA* in forewing and to the apex of membrane in the hind. No visible pale markings on abdomen, even on segment 7 but they may be obscured by postmortem decomposition? Vulvar scale a minute, bifid triangular organ about one fifth the length of segment 9. Anal appendages extremely short conical structures.

Habitat. *Belgian Congo*, Lomami : Mwene-Ditu, 26-X-35, Ch. Seydel; Bambesa, VI-38, J. Vrijdagh; Lulua Kalenge, IV-34, F. G. Overlaet. Although this new species resembles *sophia* so strongly in its colouring and especially in the striking thoracic marking, there is no difficulty in separating them. The male is to be distinguished by the presence of small but conspicuous dark basal markings in the wings and the large conical basal spine of the superior anal appendages; the female has the wing markings less extensive than in the female of *sophia* but it has 2 rows of cells between *CuP* and *IA* and the vulvar scale is almost obsolete. Type and allotype in the Musée du Congo Belge.

Macromia sylvatica n. sp. (Fig. 4, 5).

Material examined : a single pair from the Malaba Forest, Kabras, Kenya Colony, VI-32, coll. T. E. Jackson.

Male. Abdomen 42 mm. Hindwing 32 mm. Pterostigma 2 mm.

Head : labium with middle lobe chrome yellow, bordered with black, lateral lobes black to dark reddish brown marked obliquely with a broad oval spot of bright chrome yellow and a more diffuse spot at the external anterior angle; labrum and epistome dark ferruginous, frons dark

violet metallic as well as the vesicle; an elongate spot of pale yellow on the sides of face extending on to the postclypeus laterally; occiput and behind head glossy black. Prothorax and thorax dark purplish brown to black, the whole brilliant with violet, green or blue metallic marked with pale citron yellow, - the mid part of middorsal carina, antealar sinus, linear antehumeral stripes broadening somewhat below, rather narrow sharply defined mediolateral and metepimeral stripes. Wings

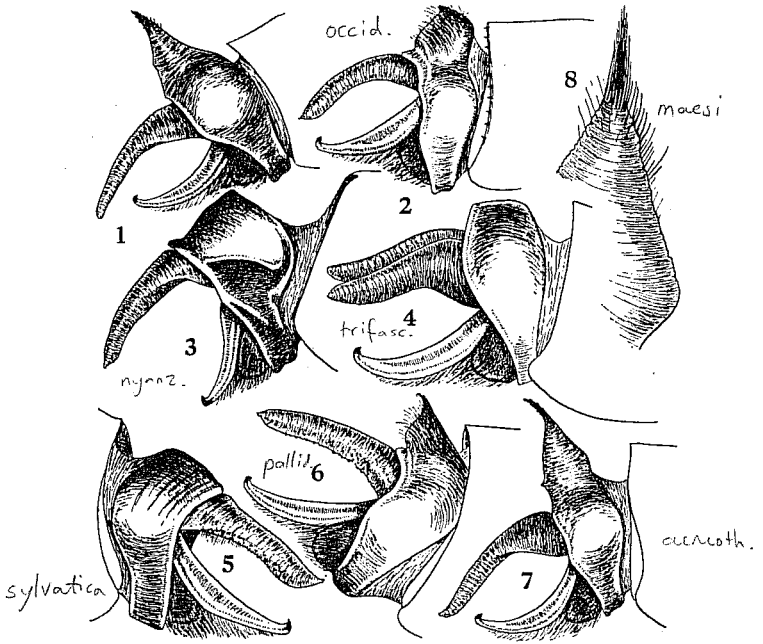

Fig. 4.

Anal appendages of,- 1. *Macromia clymene* Ris, 2. *Macromia occidentalis* n. sp., 3. *Macromia Reginae* le Roi. 4. *Macromia trifasciata* Selys, 5. *Macromia sylvatica* n. sp., 6. *Macromia pallidinervis* Forster, 7. *Macromia Selysi* Kirby, 8. Dorsal spine of *Macromia Maesi* Schouteden, greatly magnified to show its formation from apposed setae.

hyaline, uncoloured, pterostigma black, costa black, membrane sepia or cinereous, white at base; nodal index $\frac{7\text{-}14 \mid 15\text{-}8}{9\text{-}10 \mid 10\text{-}9}$; anal-loop of 7 cells, *Hts* $\frac{4 \mid 4}{3 \mid 2}$, *Cuq* $\frac{6 \mid 5}{4 \mid 4}$; 2 rows of cells in discoidal field of forewings; space between *IA* and *CuP* begins with 2 cells, then continued as a single row to the border of wings. Abdomen black marked with citron yellow, a complete narrow jugal stripe on segment 2 which involves the oreillets, and a small spot on the genital lobes; basal and jugal paired triangular spots on segments 3 to 5, 6 immaculate, 7 with nearly the basal third ringed with yellow, 8 to 10 black. A short ventral spot on segment 8 which has its lateral borders expanded into an obtuse angle, the border emarginate and with a thickening immediately anterior to the notch. Segment 10 short, its dorsum carinated but without either cone or spine. Anal appendages black, superiors twice the length of segment 10, robust, apices curving slightly outwards and upwards, acuminate. Inferior slightly shorter, apex shallowly emarginate. *Type* will be deposited in the British Museum.

Female. Abdomen 42 mm. Hindwing 39 mm. Pterostigma 2 mm.

Head similar to the male but the anterior face of frons a much brighter ferruginous and the pale stripe on the sides of face less conspicuous and of a pale greenish white. Thorax with similar markings but the metallic reflex less marked than in the male. Wings palely and rather evenly enfumed but deepening to a reddish brown distal to the level of nodus to as far as apices, the infuscation forming a fine network corresponding to the reticulation of the wings (In a less adult example and in tenerals the postnodal portion would be tinted with golden yellow). Nodal index, $\frac{8\text{-}15 \mid 15\text{-}8}{10\text{-}10 \mid 11\text{-}11}$; *Hts* $\frac{4 \mid 3}{3 \mid 3}$; *Cuqs* $\frac{6 \mid 5}{5 \mid 5}$; 2 rows of cells in the discoidal field of forewings; anal-loop 13/12; 2 rows of cells between *Cup* and *IA* in hindwings for nearly their whole length. Abdomen with markings similar to the male; segment 7 with its basal third yellow. Anal appendages black, very short, conical. Terebra almost obsolete, minutely emarginate.

This rather nondescript species is best recognised by its medium size associated with a non-spined 10th abdominal segment; it is much larger than *africana* and considerably smaller than *contumax* and *bifasciata*, all of which lack a spine on segment 10. It appears to lie closest to *occidentalis* n. sp., described below, but this species is smaller and more brightly coloured than *sylvatica*. Lastly it is separated from *subtropicalis* by the double row of cells in the discoidal space of forewings (only a single row in *subtropicalis*).

Macromia africana Selys (Fig. 2, 11; fig. 3, 2).

Macromia africana Selys, 1871, *Bull. Acad. Belg.* (2) XXXI : 554. — Id. 1878, *Ibid. XIV* : 199.

Phyllomacromia africana Kirby, 1890, *Cat. Odon.* 56. — Martin, 1906, *Cat. Coll.* Selys, *Cordulines*, 77. — Id. 1912, *Feuille J. Nat.* (5), *42*, 499 : 96.

Macromia africana Ris, 1908, *Jenaische Denkschr. 13* : 327. — le Roi, 1915, *Zentr. Afrik. Exp. zool.* : 348. — Andres, 1928, *Mem. Soc. R. ent. Egypte, 3* : 28.

Phyllomacromia africana Pinhey, 1951, *Mem. Transvaal Mus. 5* : 195.

Macromia africana Schmidt, 1951, *Arq. Mus. Bocage, 20* : 170.

Male. Abdomen 32 mm. Hindwing 29 mm.

This is a very variable species, dry areas producing xerophilous forms, whilst wet forested areas show a much darker melanotic one. The species is the smallest of the african Macromias and may be described as having the thorax with the 3-stripe basic pattern, the stripes being a very pale creamy yellow and margined with dark blue metallic which serves to accentuate their pale colouring. The abdominal markings are of the *picta* scheme, the dark dorsal markings basic to the jugal sutures on segments 3 to 6 being either diamond-shaped spots or produced into complete black bands encircling the abdomen. The terminal four segments are usualy ferruginous but may deepen to almost black. The 10th segment is devoid of a dorsal spine. The venation is very open and there is only a single row of cells in the discoidal space of the forewings in both sexes. Schmidt figures the abdomen of a male from Portugese Guinea, with pale bands on segments 3 to 5 and a middorsal spot on segment 6; the end segments are pale ferruginous and segment 2 is largely yellow. This is a typical xerophilous form. I have seen a very melanised example from the Belgian Congo in which segment 2 is almost entirely black, segment 3 has the prejugal annule incomplete low down on the sides, whilst segments 4 to 6 have broad complete prejugal annules almost obliterating the yellow spots. Finally the end segments are black with only the lateral borders dark ferruginous. This may be described as a typical melanotic form, but it is probable that many intermediate forms link up these two, so that it is doubtful if they can be classed as definite races.

The type is a female in the Selysian collection and is from Nubia. *M. africana* does not appear to be a common insect anywhere although it is apparently widely distributed right across the breadth of Africa. Dr Schouteden has reported with some doubt, a specimen from Baraka in the Belgian Congo. It should be noted that figure 89, in the *Cat. Coll. Selys. Cordulines* represents *africana* and not *tropicalis*.

Macromia subtropicalis sp. nov. (Fig. 1, 9, fig. 3, 3).

Material examined : 2 males, Uele, Bambesa, Belgian Congo, XII-38, collected by J. Vrijdagh. Closely similar to *Kochi* but easily distinguished from that species by the absent spine on segment 10.

Male. Abdomen 43 mm. Hindwing 33 mm. Pterostigma black.

Head : lips, face and lower part of the anterior surface of frons a dark reddish brown, rather more brightly ferruginous on the frons; superior surface of frons and vesicle dark blackish brown with poor bluish metallic reflex; occiput black (yellow in *africana*); thorax very dark purplish brown with metallic blue reflex, marked with citron yellow,- antealar sinus (very pale creamy yellow), very narrow antehumeral stripes, rather broader, sharply defined pale stripes on the meso- and metepimeron. Legs black, hind femora save for the distal ends, bright ferruginous. Wings hyaline, nodal index $\frac{5\text{-}13 \mid 12\text{-}6;}{7\text{-}8 \mid 9\text{-}7}$ *Hts* $\frac{3 \mid 3;}{1 \mid 1}$ *Cuq* $\frac{4 \mid 5,}{4 \mid 4}$ 1 row of cells in the discoidal space of forewings, membrane black, white at base; costa and pterostigma black. Abdomen black marked with yellow,- a narrow medial jugal complete stripe on segment 2 which extends laterally on to the oreillets; a small spot on the genital lobes; paired small triangular spots on segments 3 and 4 at base and jugum; 5 and 6 without yellow markings, 7 with a pair of basal spots on the basal third of the segment, broadly separated by the black dorsal carina; segment 8 very broadly expanded as a slightly obtuse triangular dilatation without any vestige of the conspicuous emargination found in *picta* and in *Kochi*, the margins membranous without distinct thickening as seen in these two; the anterior margin of dilatation and a broad basal spot dull yellow; segment 9 with a basal spot of the same colour; segment 10 and the anal appendages black, the former without any vestige of a cone or dorsal spine, the latter cylindrical, tapering, twice the length of segment 10, slim, apices acuminate and a little everted. Inferior appendage about one fourth shorter, truncate and shallowly emarginate at apex. Female unknown.

This species is confined, so far as is known, to the Belgian Congo. It is a larger and much darker species than *africana* (which latter is both the smallest and palest known of the african Macromias). *Type* in the Musée du Congo Belge.

Macromia occidentalis sp. nov. (Fig. 4, 2).

Material examined : 1 male from the Ivory Coast, the holotype, now in the Musée National d'Histoire Naturelle, Paris. The specimen has been determined by Martin as *aequatorialis* Martin but is markedly

different from the type of the latter which is in the same collection. It bears some resemblance to the last described species and, in some respects, to the supposed *africana* described by Schmidt from Portugese Guinea.

Male. Abdomen 37 mm. Hindwing 33 mm. Pterostigma brown.

Head : lips, espistome and frons ferruginous, the anterior face of the latter bright chestnut brown, the superior surface and vertex brown but the floor of the sulcus bright citron yellow, whilst the apices of the o. the vesicle are tipped with bright metallic blue. Thorax glossy dark metallic blue with the middorsal carina finely yellow, antealar sinus pale yellow, sharply defined antehumeral, mediolateral and metepimeral stripes citron yellow. Wings hyaline, uncoloured, costa finely yellow, pterostigma reddish brown, membrane black, white at base. Nodal index,- $\frac{7\text{-}13 \mid 14\text{-}6,}{9\text{-}10 \mid 10\text{-}9}$ 1 row of cells in the discoidal space of forewings. Abdomen black to the apical end of segment 7, sides of 8-10 ferruginous, 10 with its apical border yellow, its dorsum slightly elevated and with a minute pencil of stiff bristles resembling a spine at the extreme base, the area posterior to this also beset with short stiff setae. Marked with yellow as follows,- a narrow, complete subbasal jugal stripe on segment 2 which extends laterally to include the oreillets, segments 3 to 6 similar to *picta*, with paired basal and jugal yellow spots growing progressively smaller from front to rear segment, segment 7 with the basal third yellow. Anal appendages not differing from those of *picta*, dull yellow to ferruginous.

This species is distinguished from *picta* by the absence of yellow on the posterior aspect of the vesicle and by the absence of the cone and spine on segment 10. The dilatations of segments 8 and 9 are similar to those of *picta*, with a distinct emargination, thus differing from those of *subtropicalis*. The absence of a cone and spine on segment 10 distinguishes it from *Kochi* which otherwise resembles it rather closely in colour and markings.

Macromia picta Hagen in Selys. (Fig. 2, 10; fig. 3, 1 and 7).

Macromia picta Hagen in Selys, 1871, *Bull. Acad. Belg.* (2) *31* : 552.
Macromia africana Selys (*pars*), 1874, *Ibid.* (2) *37* : 21.
Macromia tropicalis Selys, 1878, *Ibid.* (2) *45* : 200.
Phyllomacromia tropicalis Selys, 1878, *Ibid.* : 234.
Macromia picta Kirby, 1890, *Cat. Odon* : 55.
Phyllomacromia tropicalis Kirby, 1890, *Ibid.* 56.
Phyllomacromia flavicincta Kirby, 1898, *Ann. Mag.* N. H. (7) 2 : 241.

Macromia picta Ris, 1920, *Ann. S. Afric. Mus. 18* : 376. — Pinhey 1951, *Mem. Transvaal Mus. 5* : 190.

I have examined the type of *tropicalis* in the British Museum (N.H.); it is a teneral specimen in rather poor condition with the anal appendages broken but appearing to be of a dull yellow; the 10th segment is flattened but seems to possess a carina or even a small spine which has been crushed into the body of the segment (Miss Longfield who made the examination at the same time was inclined to agree with me in this) and if so, then the main character separating it from *picta* disappears. The specimen is of the same size as *picta*, the frons is a bright yellow above as well as anteriorly; the end segments of the abdomen are greatly dilated and ferruginous in colour.

I have also examined the type of *flavicincta* Kirby which Ris thought to be a synonym of *picta* and am inclined to agree with him. Kirby forgot to describe the character of the 10th segment which I now find possesses a dorsal spine similar to that of *picta*; it is perhaps somewhat deeper anteroposteriorly but this is an artefact due to compression in paper I think. Mr Pinhey has given me examples of his supposed *picta* from Rustenberg, which was the *terra typica* of *flavicincta*, and there is no doubt about his diagnosis, nor is there any doubt that they are the same species as Kirby's *flavicincta*. The two points of bright yellow (often fused) behind the vesicle are diagnostic of *picta* and these are found also in *flavicincta*; as regards the female from the Pienaars River described by Kirby as the allotype, the distribution of the golden amber area to the outer third of the wings is entirely typical of *picta*, so that we find both sexes and the habitat all in agreement; there can be no doubt about the synonymy in the face of such facts.

It is unfortunate that Kirby should have named his species *flavicincta*, although it was in a subgenus, since there was already a *Macromia flavicincta* Selys described from India which, now that the two genera are merged, may be confused with *picta*.

Macromia Kochi Grunberg. = picta

Macromia Kochi Grunberg, 1911, *Ent. Rundsch.* 28 : 101.

Material examined, - Several males and females from Lake Victoria, Entebbe, Uganda, collected by G. Hale Carpenter, 15-VII-27 and 28-XII-27; both sexes, Entebbe, V-32, collected E. Pinhey.

There is a strong probability that this species has been mistaken for and reported as *picta* by more than one author, as the two species are closely similar.

Male. Abdomen 36-38 mm. Hindwing 34 mm. Pterostigma dark.

Head : labium, labrum and epistome ferruginous, frons anteriorly bright reddish ochreous to ferruginous, darker above where it has a bluish metallic reflex; vesicle dark blue metallic, unmarked with yellow. Thorax as for *picta*, with dark reddish brown ground-colour which develops a dark blue metallic reflex in adults, marked with citron yellow,- the middorsal carina very finely, antealar sinus, narrow antehumeral, broader mediolateral and metepimeral stripes. Legs black to dark brown. Wings hyaline, usually without colouring but in some examples with a pale amber tinting in the tornal area of the hindwing Nodal index- $\frac{6\text{-}13 \mid 13\text{-}7}{8\text{-}9 \mid 8\text{-}8}$, $\frac{7\text{-}12 \mid 13\text{-}6,}{9\text{-}8 \mid}$ *Hts* $\frac{2 \mid 3,}{1 \mid 1}$ *Cuqs* $\frac{3 \mid 4,}{3 \mid 4}$ I row of cells in discoidal space or forewings. Abdomen black marked with yellow,- a complete subasal jugal stripe on segment 2 extending laterally to include the oreillets and a spot on the genital lobe; base of segment 3 ringed narrowly and sometimes interrupted on the dorsum by an invasion of black, also a pair of triangular dorsal jugal spots, segments 4 to 6 with similar markings but more restricted, segment 7 with its basal third yellow, segments 8 and 9 dilated laterally and here often dark ferruginous, segment 10 black, bearing a dorsal cone surmounted by a short but prominent spine. Anal appendages similar in shape to those of *picta*, pale to dull yellow according to age, more or less dark reddish brown at base and along the sides of the inferior appendage.

Female. Abdomen 39 mm. Hindwing 36 mm. Pterostigma dull brown to ochreous.

Similar to the male in colour and markings but the face with a yellow stripe traversing the epistome and the frons yellow laterally and in its sulcus; the vesicle dark however and without yellow points posteriorly. Wings hyaline, tinted with golden amber at base to as far as 3rd antenodal and nearly to arculus; the costal border of forewings from nodus to apex, and the extreme apex of hindwings similarly coloured; membrane black, white at its base.

Macromia Kimminsi n. sp. (Fig. 2, 6,7).

Male. Abdomen 52.5 mm. Hindwing 45 mm. Pterostigma 3 mm.

Head : labium and labrum bright chrome yellow, the latter centered with reddish brown; rest of face and frons greenish yellow coated with short black hairs; the crest of frons bearing a thick, sharply-defined crescentic spot of dark reddish brown with a coppery reflex, the convexity of the spot directed posteriorly. No dark basal line to frons; vesicle dark purplish brown but slightly metallic; occiput and behind

head glossy black. Synthorax chocolate brown, the sides only with iridescent purplish metallic reflex; marked with citron yellow as follows,- the lower part of the middorsal carina, antealar sinus, complete antehumeral stripes, a mediolateral stripe completely encircling the thorax by fusion on both pectus and tergum between the roots of the wings; finally a narrow stripe interrupted at its middle bordering the metepimeron posteriorly. Legs black, anterior femora on the inner sides and the tibial keels yellow. Wings hyaline, palely tinted throughout with yellow; pterostigma blackish brown; membrane cinereous, white at base; venational details,- nodal index $\frac{8\text{-}17 \mid 16\text{-}9}{9\text{-}11 \mid 11\text{-}11}$, *Hts* $\frac{2 \mid 2,}{1 \mid 1}$ *Cuqs* 5 in the forewings, 4 in the hind, anal-loop of 6 to 7 cells; 2 rows of cells in the discoidal field of forewings; base of wing very deeply notched; costa, nodus and many cross-veins in the anterior part of wing proximal to nodus as well as about the tornus pale yellow. Abdomen black marked with yellow as follows,- a transverse jugal stripe on segment 2 broadening laterally to include the oreillets and lobe of genitalia; segment 3 with a pair of basal spots narrowly separated on middorsum and a second pair of conical jugal spots which are narrowly confluent over the dorsum; segments 4 to 6 similar but the spots becoming progressively smaller until they are mere points on segment 6; segment 7 with its basal half yellow with the jugum outlined finely in black; segments 9 and 10 with small apical lateral spots, the latter segment surmounted by a conical ridge on which are superposed two robust spines, side by side and separated by about their own length (fig. 2, 7). Anal appendages : superiors pale yellow, robust, rather short, about half as long again as segment 10, converging and scarcely narrowing towards apices which are bevelled outwardly to end in a short spine. Inferior about one third shorter, subquadrate, narrowing slightly to a truncated apex which is shallowly emarginate and with a small upturned spine at each outer angle, yellow but the outher borders reddish brown. Genitalia prominent, hamules and lobe of great size, the former ending in a claw-like hook.

Habitat : Tropical Africa : Kaballa, Sierra Leone, one male, the type, 29-V-12, coll. J. J. Simpson. (British Museum, 1921-176). Three african species of Macromia are now know which possess a geminate spine on the dorsum of segment 10, viz, *bicornis* Forster, and *bispina* Fraser, the latter being a very much smaller species than *Kimminsi*. This new species is distinguished from *bicornis*, which is of similar size, by yellow frons, bright yellow superior anal appendages and by the different shape of the twin spine on segment 10, these being finer and approximated at the base in *bicornis*.

Macromia Lieftincki n. sp. (Fig. 2, 4). = f. of aeneothora ?

Male. Abdomen 52 mm. Hindwing 46 mm. Pterostigma 2.75 mm.

Head : labium castaneous, borders of lateral lobes and base of middle lobe bright ochreous; labrum and rest of face dark olivaceous brown, the frons on its upper surface and along the crest bright metallic blue or green; vesicle metallic blue; occiput black, a little tumid posteriorly and shallowly bilobate; behind head glossy black. Synthorax dark castaneous with some blue or green metallic iridescence laterally and marked with bright yellow as follows,- the antealar sinus, a narrow antehumeral stripe deficient in its upper part, a narrow medio-lateral stripe and a third stripe along the posterior border of the metepimeron, all sharply defined. Legs black, the hind femora extending to the apical border of segment 2. Wings palely but evenly infuscated, without basal dark markings; pterostigma small, blackish brown; venational details (from two specimens),- nodal index $\frac{11\text{-}18 \mid 18\text{-}11,}{12\text{-}13 \mid 13\text{-}11}$ $\frac{9\text{-}18 \mid 18\text{-}9}{13\text{-}14 \mid 13\text{-}12}$; *Hts* $\frac{5 \mid 4;}{2 \mid 3}$ $\frac{4 \mid 4;}{3 \mid 2}$ *Cuq* 5 to 6 in all wings; 6 to 7 cells in the anal-loop; anal triangle narrow; space between *CuP* and *1A* begins with 2 rows of cells; discoidal field of forewings with 2 rows of cells; base of hindwing shallowly excavate. Abdomen black marked sparcely with yellow,- segment 2 with a narrow jugal stripe extending outwards to include the oreillets and the ventral border but the apex of genital lobe black; segment 3 with a rather narrow but complete basal annule and a pair of narrow lunules on the jugal suture; segment 4 with the same markings but the basal annule interrupted on the middorsum and the jugal lunules very small; lastly the basal fourth of segment 7. Segment 10 with a large dorsal cone-shaped spine which is laterally compressed and surmounted by a brush or pencil of stiff black setae. Anal appendages black, the superiors about as long as segment 8, broad at base and tapering gradually to a fine slightly everted point; the two appendages converging towards their apices. At the base, on the ventral aspect, a small obtuse tubercle, whilst nearer the apex, the ventral surface is beset with small black spines. Inferior appendage of nearly the same length, triangular, the apex narrowly truncate and with a small upturned spine at each outer angle. Hamules massive, tapering rather abruptly at the apex which ends in a claw-like spine, the hamule extending to the apex of lobe which is truncated at its end.

Habitat : Fernando-Po, Moka, 2 males, 29-I-33, coll. W. H. T. Tams. type in the British Museum (Natural History (B. M. 1933-39). Female unknown. This species is easily recognised by the presence of the ven-

tral tubercle at the base of the superior anal appendages. The only other african species with ventral processes or spines are *Schoutedeni* FRASER which has a medio-ventral robust spine and *Seydeli* FRASER which has a large basal spine directed posteriorly, but in this species, the thorax has the markings limited to a single bright golden yellow band on the sides. I name this new species after Dr M. A. LIEFTINCK for his great work on the oriental Macromiinae.

Macromia bifasciata (MARTIN). (Fig. 2, 3; fig. 3, 4).

Phyllomacromia bifasciata MARTIN, 1912, *Feuille jeune Nat.* (5) 42:96.
Phyllomacromia leoni FRASER, 1928, *Trans. Ent. Soc. Lond.* 1928:138.

Material examined : type female of *leoni* in the British Museum (N.H.), from Yegi, Volta River, Gold Coast, W. Africa; male, Azare, N. Nigeria, 1924, collected Dr L. LLOYD (Bears a note in K. MORTON's handwriting,- Probably near *Macromia reginae* le Roi, but has humeral bands); female, Azare, E. E. Kano, N. Nigeria, 1925, - a rather teneral specimen. Both specimens in the British Museum. Female, Kazenge, IX-35, collected H. BREDO, Musée du Congo Belge. The male type, formerly in the MARTIN collection appears to be lost although SCHMIDT figures it in his paper (loc. cit.).

The species was described from two males, one of which was in very poor condition. The female allotype, described under the name of *leoni*, was fully adult and in good condition but the thoracic markings were lost save for the bright antealar sinus. In the new females and the male examined, a distinct humeral stripe can be discerned as described for the type male.

Male and female. Abdomen 46-47 mm. Hindwing 40-42 mm.

Wings of male palely enfumed; pterostigma reddish brown; membrane dark brown, costa finely yellow, the antenodals and veins framing the anal triangle in hindwing a bright yellow. Nodal index of type male $\frac{5\text{-}14 \mid 15\text{-}5,}{9\text{-}11 \mid 11\text{-}9}$ of the paratype $\frac{6\text{-}14 \mid 15\text{-}6;}{9\text{-}11 \mid 11\text{-}8}$ *Hts* $\frac{3 \mid 3,}{2 \mid 2}$ *Cuqs* $\frac{5 \mid 5,}{4 \mid 4}$ anal-loop 6-celled; discoidal field of forewings with only a single row of cells (as in the type but 2 rows of cells in the female). Abdomen black marked with bright yellow as follows,- segment 2 with a narrow jugal stripe or a small middorsal spot separated from another covering the oreillet, and a third spot on the genital lobe; segment 3 with rather more than its basal half yellow (nearly entirely yellow in the female), segments 4 to 6 with narrow basal annules and paired lunar jugal spots; segment 7 with the greater part of the dorsum yellow; segments 8 and 9 dark ferruginous (but 8 with its base yellow in the female); segment 10 almost black, very small, without either dorsal cone or spine but vestiges of a carina at the base. Anal appendages : superiors black to blackish brown, rather more than half as long again as segment 10, parallel, of almost uniform width, apex with a small everted spine. Inferior yellow, black along borders, broad, truncate and shallowly emarginate along apical border which has a small upturned spine at each outer angle. Hamules large, rounded, ending in a short curved spine (figured by SCHMIDT, loc. cit.).

Female. The teneral female in the British Museum has a fairly well defined humeral stripe and a small point of yellow over the thoracic spiracle. The forewings are broadly tipped with golden yellow for rather more than halfway from pterostigma to nodus (Such a character is common to a large number of species of Macromia in the teneral state and is gradually lost in the majority of specimens as adultage is assumed); in the adult this tinting is partially concealed by infuscation but is still to be discerned. The dark brown markings at the base of the wings is more restricted than in the type of *leoni* and is confined to two cells adjacent the membrane, but the area adjoining it is tinted strongly with amber yellow. The adult female from Kazenge differs only in the smaller venational details.

Habitat : West and Central Africa, Nigeria and Belgian Congo. About the only species with which *bifasciata* is at all likely to be confused, is *Reginae* le Roi which however is a larger insect and with the frons dark metallis blue. In *bifasciata* the frons is distinctly marked with bright greenish yellow above, and this colour descends along the sides of the face. The female has the basal dark markings much more restricted than in *Reginae*, in which they are perhaps the most conspicuous character of the insect. The two species are no doubt very closely related as they possess many characters common to both.

Macromia unifasciata n. sp. (Fig. 2, 9).

Materiel examined : one pair, M. Mubale (1.480 m), 1-20-V-47, coll. G. DE WITTE. The female agrees in most respects with the male and without doubt belongs to it. Type and allotype in the Institut des Parcs Nationaux du Congo Belge; 1 female, R. Luiza, 15.X-33, coll. G. OVERLAET.

Male. Abdomen 54 mm. Hindwing. 40 mm.

Head : labium ochreous with two bright yellow spots at base, labrum and rest of face and frons bright ferruginous, but the lower part of frons and adjacent postclypeus a darker brown; above frons, the floor of the deep sulcus a greenish yellow bordered anteriorly with black at crest of frons which colour extends downwards on each side of face to

join the darker colour of the postclypeus to enclose the bright ferruginous area on anterior face of frons. The black band on the sides again bordered with conspicuous greenish yellow which borders the eyes. Vesicle reddish brown with a poor coppery metallic reflex; occiput black. Thorax mahoghany brown with poor metallic bluish reflex; antealar sinus conspicuously yellow, humeral and antehumeral stripes absent but a single, sharply defined citron yellow band at the sides, encircling the thorax between the wings (as in *sophia*). Legs long and spidery, black except the yellow tibial keels which extend along the distal two fifths of the anterior tibiae and the whole length of the hind pair. Wings hyaline with a faint tinting of yellow in the anal area of the hindwings; membrane cinereous becoming black at apical end; pterostigma black, 2.75 mm in length. Nodal index $\frac{7\text{-}15 \mid 15\text{-}6}{9\text{-}11 \mid 11\text{-}10}$; 2 rows of cells in the discoidal field of forewings; 5 *Cuqs* in forewings, 4 in the hind; anal-loop 5-celled; *Hts* with 4 cross veins in forewings, 2 in the hind; venation unusually open in character, with only a single row of cells between *CuP* and *1A* in hindwing and only one cell between the anal triangle and anal-loop, the former of which is 2-celled. Abdomen black from segment 2 to middle of 7 after which the rest is ferruginous. Yellow markings as follows,- a complete transverse medial stripe on segment 2, narrow on dorsum but broadening laterally to include the oreillets and become confluent with a pair of subdorsal, subapical spots, segment 3 with a basal annule, narrow on dorsum but broadening widely on each side, also a pair of jugal dorsal wedge-shaped spots, segments 4 to 6 with broader basal annules but jugal spots present only on 4 and 5, segment 7 with its basal half yellow, apical half ferruginous, segment 8 with a latero-subdorsal basal spot on each side, the remaining segments ferruginous. Segment 9 with a small medial apical spine, segment 10 with a robust dorsal spine, angulate at base from which it slopes strongly posteriorly to end in a short apical spine; posteriorly the spine presents a second marked angulation (but not produced as in *Maesi*) below which the border drops perpendicularly to end on the dorsum just short of its apical border. Superior anal appendages rather slim, cylindrical curving strongly downwards to end in an obtuse point; inferior broadly truncate, the apical border shallowly emarginate.

Female. Abdomen 50 mm. Hindwing 44-46 mm.

Head similar to the male except that the citron yellow floor of frontal sulcus is completely enclosed by blackish which renders it much more conspicuous than in the male. Thorax similar, the lateral band somewhat broader and tapering below. Wings with slight yellow tinting

at extreme base but no dark vittae; costa black changing to yellow at Nodus; pterostigma black; short, covering from 2 to 2 1/2 cells, nodal index $\frac{7\text{-}19 \mid 17\text{-}8}{12\text{-}11 \mid 12\text{-}00}$; 5 *Cuqs* in forewings, 6 in the hind; 5 *Hts* in forewings, 3 in the hind; 2 rows of cells in discoidal field of forewings; 11-12 cells in anal-loop; membrane white, brown at attached border. Abdomen dark ferruginous with yellow markings,- segment 1 entirely yellow, segment 2 more broadly yellow than in the male, but the jugal stripe narrowly interrupted on middorsum and the whole of the sides yellow; segments 3 to 6 with basal annules and jugal wedge-shaped spots, segment 7 with its basal three fifths yellow, the remaining segments dark ferruginous. Anal appendages dark brown, short and acuminate. Terebra short, shaped like a horse-shoe, barely one fourth the length of segment 9.

This new species in some respects resembles *clymene* Rts but the latter has a well marked antehumeral stripe, the yellow on superior surface of frons is continuous with that on the sides of face, and the shape of the dorsal spine on segment 10 is somewhat different, its anterior border slightly concave and the posterior border with a small spine not amounting to an angulation, lastly segment 9 is not prolonged as a short spine. The single mediolateral yellow band is reminescent of that in *sophia* and *seydeli* but both these species are very black in strong contrast to the generally ferruginous colouring of *unifasciata*.

Macromia paula Karsch.

Macromia paula Karsch, 1892, *Berl. Ent. Z.* 37 : 15. — Schmidt, 1951, *Arq. Mus. Bocage*, *20* : 169.

I have not seen this species which is known only from a single female from Buea in the Cameroons, W. Africa. Type in the Berlin Museum. Abdomen 60 mm. Hindwing 52.5 mm.

Colour generally black without noticeable metallic blue reflex. Face unicolourous dark yellowish brown. Thorax marked with yellow, antehumeral stripes and two rather broad, diffuse oblique lateral stripes; antealar sinus and tergal spots. Legs black, slim and very long. Wings hyaline with dark reddish brown vittae at bases extending to arculus, not sharply defined and with the included cell middles hyaline; apices also tinted with brown. Venation black as well as pterostigma which is 3 mm in length. Nodal index $\frac{10\text{-}21 \mid 21\text{-}11}{14\text{-}15 \mid 16\text{-}14}$; *Hts* $\frac{5 \mid 6}{3 \mid 4}$; *Cuqs* $\frac{7 \mid 8}{5 \mid 6}$ discoidal field of forewings with 2 rows of cells. Abdomen black marked with yellow,- segment 2 with a transverse jugal spot interrupted at its

middle, and a medial transverse stripe on the sides which expands ventrally; 3rd segment broadly yellow at base and with a pair of jugal spots; segment 4 similar but the yellow much more restricted; segment 7 with rather more than its basal half yellow, segment 8 with a ventro-lateral spot, the rest black. Terebra short and inconspicuous. KARSCH stated that this species was most nearly related to *sophia* but that the colour was altogether different and the enormous terebrae of *sophia* were absent. Actually it is a comparatively distant relation of this species and is more nearly related to *Maesi* and *bicornis*: as already mentioned above, SCHMIDT gives the latter as a synonym of *paula* but the broad differences between the two do not support such an opinion. All that one can say is the presence of vittae at the bases of the wings suggest a near relationship.

Macromia bicornis FORSTER. (Fig. 1, 1; fig. 2, 8).

Macromia bicornis FORSTER, 1906, *Jahrb. Nassau. Ver. Naturk.* 59 : 320. — SCHMIDT, 1951, l. c. : 169.

Material examined : some 20 males and 4 females from,- Bobey. (Terr. Giri) of which one pair were in the same packet and marked « in cop », 16-29-IV-35, all collected by A. BAL; Bomboma, 3-18-IV-34 and 29-VIII-35, collected A. BAL : Ebuku, 1-IX-36, A. BAL, and XII-34 : III-IV-35, collected by J. GHESQUIÈRE : Lite, 22-VIII-35, collected A. BAL; Gele (Terr. Giri), 9-II-35, A. BAL; Bambesa, III-39, J. VRIJDAGH and XII-34, collected J. LEROY.

The female was hitherto unknown; two forms are found in the above material but both agree with having the same marking on the dorsum of segment 2. The capture of a pair *in cop* leaves no doubt about the relationship of the sexes.

Female. Abdomen 55 mm. Hindwing 47 mm. Pterostigma 3 mm. Colour and markings very similar to the male. Face including labium (the latter missing in the type) castaneous, the anterior surface of frons especially bright ferruginous, its base and the sulcus dark brown, vesicle metallic bluish black; behind head glossy black. Thorax dark reddish brown to black with the blue metallic reflex less evident than in the male but with the same yellow markings. Wings markedly different than in the male, the bases dark reddish brown to as far as the 2nd or 3rd antenodal in the costal and subcostal spaces and to as far as the level of the arculus in the cubital space, extending posteriorly to the end of the membrane which is blackish brown; pterostigma black; nodal index $\frac{8\text{-}18 \mid 18\text{-}8}{11\text{-}14 \mid 15\text{-}11}$; 5-6 cross veins in the *Hts* of forewing, 3 in

the hind; 6-7 cubital cross-veins in forewings, 4-5 in the hind; 2 rows of cells in the discoidal field of forewing; 13-14 cells in anal-loop. In most specimens the wings are hyaline save for the extreme bases but in some the apices to as for proximal as the nodus are a rich golden yellow in the forewings. Abdomen black, compressed save at base which is swollen, marked with yellow as in the male but in addition, segment 2 has a narrow basal yellow annule notched by the black on middorsum; the transverse saddle-shaped stripe at the jugum is narrower and distinctly interrupted at the middle line and often also laterally, where the lower part of the side is broadly yellow; segment 3 has also a narrow basal annule expanding on the sides, whilst the paired jugal spots on segment 4 are scarcely visible; segment 7 with its basal half yellow. Terebra very short and deeply bifid, extending for less than one fourth the length of segment 9. Anal appendages dark brown, shortly conical.

The female of *bicornis* is extremely similar to that of *M. Maesi* but the two may be differentiated at once by the shape of the dorsal marking on segment 2, which in *bicornis* as viewed from the dorsum is seen to be two transverse fusiform lines narrowly separated in the medial line and not confluent with the basal yellow line; in *Maesi* this is replaced by a longitudinal stripe running from the base where it is confluent with the basal annule, along the medial carina to the apical border of segment and expanding abruptly subbasally into a small quadrate spot, the whole shaped like a spinning-top.

The discovery of this female proves that it is not related to *paula*, which species agrees more with *Maesi* than with *bicornis*.

Macromia funicularia MARTIN. (Fig. 1, 4).

Macromia funicularia MARTIN, 1906, *Cat. Coll. Selys. Cordulines* : 75.
Macromia Bredoi SCHOUTEDEN, 1934, *Ann. Mus. Congo Belge, Zool.* 3, 2, *Cat. Faune Ent.* 3,1 : 43.

I have made a reexamination of the type of *funicularia* and have been able to confront it with the type of *Bredoi* and find that the only differences present are due to postmortem discolouration and fading of yellow markings. Actually in the type of *funicularia* both mediolateral and metepimeral stripes can be seen although not mentioned in MARTIN's description. I found also good traces of large laterobasal and a pair of jugal spots on segment 3, whilst smaller equivalents could be made out on segments 4 and 5. The abdomen is 48 mm in length, not 44 mm as given by MARTIN, and the hindwing 37.5 mm. In the British Museum (N. H.), there is a specimen of this insect labelled by the late HERBERT CAMPION as *Macromia Selysi* KIRBY, the measurements of

which are similar to those given by MARTIN. Dr SCHOUTEDEN has suggested that *Maesi* may be a synonym of *monoceros* FORSTER, but I think that he has overlooked the fact that the latter species has a single row of cells in the discoidal space of the forewings, whilst *funicularia* has two, which quite rules out any possibility of synonymy. The female of *funicularia* was unknwon to MARTIN but has been described by Dr SCHOUTEDEN under the name of *Bredoi*; the only female of this species which I have seen has the wings uniformly fuliginous and the apices of all four tinted with golden amber; the basal dark reddish brown to blackish marking is limited to the costal and subcostal spaces to as far out as the 1st antenodal only.

Habitat : Tropical West Africa; Cameroons; Belgian Congo. The type of *funicularia* from the Cameroons: the British Museum specimen (labelled as *Selysi* KIRBY) from Ka Yuna, Sierra Leone, 23-VII-12, coll. J. SIMPSON; type of *Bredoi* from Bambesa; a male from Uelé : Bambesa, V-39 and another on VII-37, collected by R. HENRARD and J. VRIJDAGH respectively. Type of *Bredoi* in the Musée du Congo Belge; type of *funicularia* in the Musée National d'Histoire Naturelle, Paris.

Macromia Selysi KIRBY. (Fig. 4, 7).

Macromia Selysi KIRBY, 1900, *Ann. Mag. Nat. Hist.* (7) *6* : 77. — MARTIN, 1906, *Cat. Coll. Selys, Cordulines* : 73.

In the British Museum (N. H.) are two specimens labelled as *Macromia Selysi*, the type by KIRBY, and a second quite different species, by the late HERBERT CAMPION; this latter specimen has been determined by me, as mentioned above, as *funicularia* MARTIN. The type of *Selysi* bears a label.- « Mac. Selysi, type. Free Town, Sierra Leone, 16-IX-99. E. E. AUSTEN ». Abdomen 50 mm, hindwing 42 mm. KIRBY failed to note that segment 10 bears a robust dorsal spine (figure 4, 7), but may have inferred such as he stated that the species was closely allied to *sophia*. It appears to be quite a good species, characterised by the thorax almost entirely unmarked, by the single row of postdiscoidal cells and by the size and shape of the dorsal spine on segment 10. The yellow marking on segment 6 mentioned by KIRBY, should be segment 7.

Macromia reginae le ROI.

Macromia reginae le ROI, 1915, *Zentr. Afrik. Exp., Zool.* 318.
Macromia halei FRASER, 1928, *Trans. Ent. Soc. Lond. 76* : 133.
Macromia reginae RIS, 1917, *Rev. Zool. Suisse*, 25 : 247. — LONGFIELD, 1936, *Trans. R. ent. Soc. Lond. 85* : 484.

M. halei FRASER, differs from the type of *reginae* by possessing a pale

antehumeral stripe on the thorax and yellow spots on the upper surface of the frons. An examination of more specimens received from Mr PINHEY, has served to show that the first of these markings is inconstant but that the latter is always present. It is possible that these pale markings are evanescent and tend to disappear with advancing age, and if so, then *halei* can be ranged as no more than a variety of *reginae* and the synonymy suggested by Miss LONGFIELD is correct. The facies of this species is highly characteristic and it is one of the easiest to recognise; the only species which it is at all likely to be confused with, is *M. bifasciata* which is a much smaller species and has the dark basal markings of the wings more restricted.

Macromia Maesi SCHOUTEDEN. (Fig. 1, 6; fig. 3, 5; fig. 4, 8).

Macromia Maesi SCHOUTEDEN, 1916, *Rev. Zool. Afric., 5* : 105. — 1934, *loc. cit.* : 44.

This fine species was originally described from a single pair from Inongo, Belgian Congo but has since been taken in considerable numbers, and I have examined at least 50 examples, the males far outnumbering the females, as is usual. Most specimens were collected at Eala from 1934 to 36, during almost every month in the year, by J. GHESQUIÈRE. Other localities are,- Bambesa, X-30, by J. LEROY; Bobey and Bomboma (Terr. Giri), IV-34, and Buru-Bombenga, 14-25-VIII-35, all by A. BAL.

Macromia contumax (SELYS). (Fig. 1, 10; fig. 2, 13).

Phyllomacromia contumax SELYS, 1879, *Ent. Mon. Mag. 16* : 103. — KIRBY, 1890, *Cat. Odon.* : 56. — MARTIN, 1906, *Cat. Coll. Selys, Cordulines* : 76.
Phyllomacromia biflava MARTIN, 1906, *loc. cit.* : 77. — 1908, *Ann. Mus. civ. Genova, 43*; 664.

The type of *contumax* is in the British Museum (N. H.); that of *biflava* in the Musée National d'Histoire Naturelle, Paris. I have examined both types and am satisfied that they represent an identical species.

Macromia Overlaeti SCHOUTEDEN.

Macromia Overlaeti SCHOUTEDEN, 1934, *loc. cit.* : 45.

I have examined this interesting specimen which resembdes *Schoutedeni* FRASER, females, by having the bases of the wings very broadly

and deeply saffronated. I find the following differences,- discoidal field of forewings with a single row of cells (although a female); always 2 rows in *Schoutedeni*; anal-loop with 3 rows of cells and elongate, instead of 4 rows and nearly quadrate; yellow on the upper surface of frons and side of face, this colour being replaced in *Schoutedeni* by ferruginous and blue metallic. The type is somewhat teneral and it is possible that the pale colours of the frons and face may be due to this and the curious venation an aberration ? The insect is too small to be the female of *clymene* which Dr SCHOUTEDEN says it recalls, but in addition to the disparity in size, many other differences are listed. I note two errors in the original description,- Line 12, for « stigma », « triangle » should be read, and on line 14, for « nodus », « arculus » should be substituted.

Macromia pallidinervis FORSTER.

Macromia pallidinervis FORSTER, 1906, *Jahrb. Nassau. Ver. Naturk.*, 59 : 317.

This species was described from a single subadult female, but so adequately that there has been no difficulty in recognising it from fresh specimens of both sexes taken in Kenya by Mr E. PINHEY, who has kindly placed them at my disposal.

Material examined,- One pair, Thika, Kenya, IV-49, collected by E. PINHEY.

Male. Abdomen 41 mm. Hindwing 35 mm. Pterostigma 2 mm.

In addition to the data, the specimen is labelled « *Macromia* (near *tropicalis*) », and my own serial number « M. 100 ».

Head. lips ochreous, labrum traversed and bordered with ferruginous; postclypeus traversed by a narrow stripe of greenish yellow, above and below which the areas are bright ferrugnous; superior surface and sides of frons greenish yellow but the base of frons, especially in the floor of sulcus is ferruginous. Occiput dark reddish brown. Thorax chocolate brown with bluish metallic reflex and coated with yellowish hairs; marked with pale citron yellow,- antealar sinus conspicuously, a point on the middorsal carina, humeral, mediolateral and metepimeral stripes, the median the most conspicuous and bordered anteriorly and posteriorly by blue black metallic. Legs very long and slim, the posterior femora extending beyond the 2nd abdominal segment, black but anterior femora citron yellow within. Wings hyaline, costa, antenodals, Nodus and many cross-veins including the veins forming the anal triangle bright citron yellow; pterostigma black save its bright yellow costal border (reminescent of the similar complex found in species of

Crenigomphus); membrane pure white. Nodal index, $\frac{5\text{-}11 \mid 12\text{-}5,}{7\text{-}8 \mid 8\text{-}7}$ *Hls* $\frac{2 \mid 2,}{1 \mid 1}$ *Cuqs* $\frac{4 \quad 4,}{3\text{-}3}$ 7 cells in anal-loop, only a single row of cells at proximal end of discoidal space of forewing. Abdomen black becoming blackish brown on the terminal segments, marked with citron yellow as follows,- segment 2 with two fusiform medial dorsal spots nearly confluent and extending laterally onto the oreillets; segment 3 with nearly the basal half yellow, this colour enclosing a large black triangular spot, its base just short of the base of segment, its apex tapering and prolonged along the middorsal carina to as far as the jugal suture; segments 3 to 6 with a similar marking but becoming progressively shorter and the black spot therefore more quadrate or shaped like a spinning-top; segment 7 with about its basal half yellow, the rest unmarked. Segment 10 with a robust medial keel on dorsum from which arises a narrow spine tipped with a few stout setae and bordered posteriorly with yellow. Anal appendages black, the upper surface of inferior yellow. Superiors rather short and stout, apices converging and rather obtuse; on the ventral surface, especially near the base of appendages, a row of short stout spines.

Female. Abdomen 42-44 mm. Hindwing 38 mm. Pterostigma 2 mm.

FORSTER's description agrees with the present female so closely that it might be the type; it only remains to amplify his description. The amber tinting of the bases of the wings is less intense than in the type but that at the apices brighter, deeper and extending over the whole of the outer third of the wings, paling imperceptibly at the margins and extreme apex of same; the discoidal field of forewings has occasional single cells interspersed with 2 cells; anal-loop nearly quadrate, 9-celled: other details of venation as in the type; membrane large, opaque white but with a narrow dark edging on the distal side near its apex. Humeral stripes present although not nearly so bright and distinct as the lateral stripes. Abdomen with the adult colouring and markings fully developed; segment 1 dark redish brown at base, yellowish along apical border; segment 2 black subdorsally, dark ferruginous on dorsum marked with a pair of large fusiform oblique citron yellow spots which partially enclose a dark triangle at base of segment; laterally an irregular stripe slightly interrupted subbasally, and a very narrow line bordering the ventrum; segment 3 similar to the male but with an additional fusiform oblique spot on the dorsum posterior to the jugal suture; segments 3 to 6 similar to 3 but the postjugal spots linear and almost confluent with the basal yellow on 4 and 5 and quite absent on segment 6; segment 7 and rest of abdomen similar to the type.

This beautiful species is easily distinguished from all other african ones by the black pterostigma bordered costally with bright citron yellow and by the bicolorous rather obtuse spine on segment 10. The abdominal markings are shown on figure 3, 10.

Macromia monoceros FORSTER.

Macromia monoceros FORSTER, 1906, *Jb. Nassau. Ver. Naturk.* 59:319.

I have not seen this type which was described from a single male from Nguelo, East Usambara Mts. FORSTER thought that it might be related to *picta* but it is a much larger and darker species agreeing more closely with *thetis* RIS, which species it may indeed be. Mr PINHEY has sent me 2 males and a female of *thetis*, taken in the E. Usambara Mts (Amami Terr.), which is the *terra typica* of *monoceros*. If I am correct in this synonymy, then FORSTER's name has priority.

In the Coryndon Museum, Nairobi collection, is a male from the Shimba Hills, Mombasa, X-XI-51, collected by Mr PINHEY and determined by him as *monoceros*, a determination with which I am inclined to agree. The specimen is not entirely typical however as it has a shorter abdomen, 42 mm instead of 46.5 mm, and a slightly shorter hindwing, whereas the pterostigma is a little longer. The venational details agree closely but it is noticed that the discoidal field of the left forewing has a single row of cells, and the right a double row; in *monoceros* there is a single row but this may be subject to some variation and it may be certain that the female always has two rows. The 9th abdominal segment bears an apical dorsal spine as in *thethis* RIS but the spine on segment 10 is rather different and with a distinct angulation on the posterior border as seen in profile. The spine in *monoceros* is said to arise from the whole of the dorsum of segment 10 and to be producted into a long straight horn, 2 mm in length; this would answer roughly for the present specimen. *M. thetis* agrees in many respects with *monoceros* but it has a double row of cells in the discoidal space of forewing and this character appears to be constant in the species. *M. clymene*, which also agrees with *monoceros* in many respects, is still larger than *thetis* and differs like this species in having a double row of cells in the discoidal space of forewing. For the present, *monoceros* must be considered as a distinct species.

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Description d'un Coléoptère Bostrychide nouveau de l'Afrique Centrale

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Lors de son récent voyage d'études au Congo Belge, Mr. le Professeur R. MAYNÉ, accompagné du Dr. Karl E. SCHEDL, a recueilli de nombreux *Bostrychidae* dont il m'a confié l'étude. Parmi beaucoup d'espèces intéressantes dont l'énumération sera bientôt publiée par le Professeur MAYNÉ lui-même, avec toutes les données écologiques recueillies, se trouvait une forme nouvelle du genre *Xylionulus* que je décris ci-dessous.

Xylionulus Maynéi, n. sp.

Long. 3 mm. — Tête et pronotum d'un brun rouge foncé; élytres d'un testacé brunâtre; dessous plus foncé que les élytres mais plus clair que l'avant-corps; antennes et pattes ferrugineuses, les tarses testacés. Dessus glabre; dessous couvert d'une fine pubescence testacée. Corps remarquablement étroit et allongé.

Front fortement granuleux, sans carène transverse, ni soies; face dorsale convexe; suture clypéo-frontale peu marquée; clypéus nettement échancré à son bord antérieur; yeux convexes, fortement détachés des tempes en arrière. Antennes à articles 3 à 7 réunis nettement plus longs que le 8e qui est à peu près aussi long que large au bord antérieur, le 9e aussi long que large, le 10e large et allongé en palette; dépressions sensorielles des articles 8 et 9 peu marquées.

Pronotum non subcarré comme chez les autres espèces du genre mais