II. Western Equatorial African Micro-lepidoptera. By The Right Honble. LORD WALSINGHAM, M.A., LL.D., F.R.S.

[Read Dec. 2nd, 1896.]

#### PLATES II. and III.

I AM indebted to the Rev. Dr. W. J. Holland for the opportunity of making known some interesting additions to the African Micro-lepidoptera from a locality hitherto unvisited by any collector of these small but instructive forms. Kangwé, on the Ogowé River (where the Rev. A. C. Good collected the specimens communicated by Dr. Holland), is situated only two miles south of the equator, and the collection, as might be expected, affords several examples of the more brilliant colouring and abnormal structure which distinguishes the equatorial fauna in other regions. The specimens, unfortunately, for the most part are in only moderate condition, but are sufficient to indicate that an experienced collector could find a rich harvest of novelties if he should possess also the qualifications of a sportsman and be indifferent to the aggressive curiosity of the very numerous lions which, I am informed, make night collecting absolutely impossible, and in this instance confined it exclusively to lamp-light on the upper floor.

This small collection still further emphasises the alliances undoubtedly prevalent between the Microlepidoptera of the two regions lying on opposite sides of the great dividing barrier of the Atlantic Ocean, especially about those degrees of latitude tending southward from the equator. But, while emphasising this fact, the collection possesses a still greater interest from the evidence which it affords that the African continent forms a strong connecting link with the eastern as well as with the western fauna. Some of the genera included in this paper, such as *Idiothauma* and *Mictopsichia*, have repre-

sentative forms in both. The species placed in the genera Choreutis, Simaethis, and Glyphipteryx have near allies among the Amazonian types, but could be matched almost as closely by specimens from Assam and the Malay Archipelago, while Tiquadra, another Brazilian genus (to which a species is here added), is represented in the late Mr. Pryer's collection from Japan. Nematois parvella, in the Adelina, carries us at once to Borneo and Sumatra for a careful comparison to enable us to distinguish it from more than one species equally resplendent; and this is the more remarkable, inasmuch as the Adelinæ are but poorly represented in all collections that have hitherto reached us from the African region, and are apparently unrepresented in South America; while the alliance of Ptilothyris is with Adelomorpha, hitherto only known from a single species occurring in Celebes. Alucita similalis, Wkr., affords a parallel instance, strengthened by the absolute similarity of specimens from both localities. These affinities will probably be more strongly recognised when the mass of material in my hands, illustrating this study from the islands of the Malay Archipelago and the adjacent peninsula, as well as from India and the extreme north of Australia, can be thoroughly worked out and described.

My assistant, Mr. Durrant, has drawn and coloured the figures for the plates which illustrate this paper under circumstances of unusual difficulty, owing to the condition of the specimens and the absence of any lengthened series; the extreme interest which attaches to many of these unique forms being the chief incentive in undertaking a task which he has achieved with remarkable success. To make correct drawings of the neural characters from ill-set and frequently contorted specimens, requires not only much labour and patience, but an intimate knowledge of structure which few possess, yet this portion of the work is of the utmost importance in instituting any comparison between what may be regarded as grades of structural variation, chiefly interesting for the light they may throw upon geographical origin and distribution; I must here express my acknowledgment for the pains that he has taken to ensure accurate delineation, as well as for the skill with

which he has reproduced the natural colouring.

#### PTEROPHORIDÆ.

CROCYDOSCELUS, gen. n.

(κροκύς = a piece of wool, σκέλος = a leg.)

Type. Crocydoscelus ferrugineum, Wlsm.

Antennæ half the length of the forewings, scarcely pubescent in the &, somewhat flattened laterally. Labial palpi slender, projecting about the length of the head beyond it; apical joint nearly as long as the second, which is slightly recurved. Haustellum well developed. Head clothed above with bifid scales. Thorax stout. smooth. Forewings narrow, bilobed, the fissure commencing at about three-fourths from the base; the anterior lobe as wide as the second, slightly uncate at the apex; second lobe square-ended. Neuration, 12 veins; 8 and 9 stalked, 8 to apex; 3 and 4 stalked. Hindwings trilobed, the anterior fissure extending to one-half, the lower fissure not reaching to the base; third lobe filiform, with a spatule of black scales in the cilia at its apex. Neuration, 8 veins; 7 to apex of upper lobe; 5 and 6 short, to fissure; 3 and 4 approximate towards origin, 4 to apex and 3 to angle of second lobe: 1 to apex of third lobe. Abdomen widened in the middle, tapering to the anal segments. Legs, anterior pair with a wide tuft at the end of the tibie; middle pair with a similar tuft; posterior pair with three outspreading fan-like tufts, the first small, near the base of the tibiæ, the other two much larger, arising above the base of the spurs, the inner spurs much longer than the outer, slightly clothed, outer spurs densely clothed.

# Crocydoscelus ferrugineum, sp. n. (Pl. II., fig. 1.)

Antennæ greyish fuscous, with a reduplicated white line and white spots above. Palpi, head, and thorax ferruginous. Forewings ferruginous, banded across the outer half of the lobes with tawny fuscous and reddish cupreous, with a faint indication of a white transverse streak on each lobe; the apical margin of the anterior lobe is slightly uncate, the cilia blackish along their base, their outer half tawny-grey; on the second lobe the cilia are similarly coloured, but the tawny grey does not extend to the tornus, where they are purplish, and behind it they become pale ferruginous on the dorsum. Exp. al., 15 mm.

Hindwings bright shining ferruginous at the base, shading outwardly to cupreous; cilia purplish fuscous at the apex, shading to tawny grey and pale ferruginous towards the base; hind lobe very slender, with a cupreous black spatule at its apex. Abdomen dark ferruginous, shading to tawny fuscous at the sides. Legs, the anterior and middle pairs pale ferruginous with a rich ferruginous fan-shaped tuft towards the end of the tibiæ; posterior pair thickly clothed to the tarsal joints with dark ferruginous scales, the tibial tufts banded at their base with reddish ferruginous, on their outer half bright ochreous.

Type. 3. Mus. Wlsm.

Hab. Yoruba—Idanre (Sir G. Carter, 1894); French Congo—Kangwé, Ogowé River (Rev. A. C. Good).

#### ALUCITA, L.

Type. Phalæna (Alucita) pentadactyla, L. (Poda, 1761).

ALUCITA, L. (nec Meyr.) = ACIPTILIA, Hb. = ACIPTILUS, Z. = \*PTEROPHORUS (Geoffr.) Meyr.

#### Alucita similalis, Wkr.

n. syn. = malacensis, Z.

Aciptilus similalis, Wkr., Cat. Lep. Ins. B.M., XXX., 949 (1864)<sup>1</sup>; Aciptilia malacensis, Z. Hor. Soc. Ent. Ross., XIII., 485-6 (1877)<sup>2</sup>.

Hab. Africa—Sierra Leone, 10, I. (Dr. Clements); French Congo—Kangwé, Ogowé River (Rev. A. C. Good); Asia—Malacca<sup>2</sup>; Borneo—Sarawak<sup>1</sup>; Celebes—Macassar, 500 ft. (W. M. Doherty).

This species has not hitherto been recorded from Africa.

#### Alucita candidalis, Wkr.

Aciptilus candidalis, Wkr., Cat. Lep. Ins. B.M., XXX., 948 (1864)<sup>1</sup>; Wlsm., Tr. Ent. Soc. Lond. 1881, 282<sup>2</sup>.

Hab. Sierra Leone<sup>1, 2</sup>; French Congo—Kangwé, Ogowé River (Rev. A. C. Good); Natal — Spring Vale, III.<sup>2</sup>

#### GELECHIADÆ.

PTILOTHYRIS, gen. n.

 $(\pi\tau i\lambda o\nu = \text{wing}, \theta \hat{\nu} \rho is = \text{a window.})$ 

Type. Ptilothyris purpurea, Wlsm.

Antennæ shorter than the forewings, somewhat thickened beyond the base:  $\delta$  bipectinate  $2\frac{1}{2}$ , each pectination strongly biciliate;  $\circ$ slightly biserrate: basal joint smooth in both sexes. Maxillary palpi slender, drooping. Labial palpi very long, recurved, smooth; second and third joints of about equal length, the former somewhat flattened and sabre-shaped, the latter very slender and sharply pointed. Haustellum long. Head smooth, with side-tufts behind eyes. Thorax smooth. Forewings elongate, of approximately even width throughout, costa slightly depressed at the base and apex, termen slightly oblique, not sinuate, tornus rounded. Neuration, 11 veins (9 absent, coincident with 8); 7 and 8 stalked, 7 to costa above apex; 2, 3 and 4 from a recurved common stem; 5 from lower angle of cell, remote from 6. Hindwings broader than the forewings, scarcely sinuate beneath apex; & with a semi-transparent patch. Neuration, 8 veins; 6 and 7, as also 3 and 4, from a short stalk; 5 straight. Abdomen slightly flattened behind middle; & with genital segments densely hairy; uncus strongly developed. Legs smooth, hind tibiæ with elongate slender tarsi and rather long spurs.

Allied to Adelomorpha [founded by Snellen (Tijd. v. Ent., XXVIII., 31-2, Pl. III., 1-3, 1885) on the characters of a single species from Celebes] but differing chiefly in the shorter and distinctly bipectinate antennæ, which in Adelomorpha are biciliate. The occurrence of this genus in tropical Africa is interesting, especially in connexion with other forms from which probably it may have been derived. Idiopteryx, Wlsm., possesses vein 9 in the forewings from the same stem as 7 + 8, while the loss of this vein is characteristic of Adelomorpha and Ptilothyris. A tendency in the same direction is shown in the hindwings, where 3 and 4, which are separate in Idiopteryx, arise from a short stalk in both these genera. It would be interesting to discover a form in which all these stalked veins have become coincident.

Ptilothyris purpurea, sp. n. (Pl. II., fig. 2.)

Antennæ purple on the basal two-thirds, with an ochreous patch behind the basal joint, the outer third white. Palpi bright ochreous, the apical joint shaded with purplish fuscous externally. Head dark purplish, the face paler; the fringes above the eyes bright ochreous. Thorax dark purplish. Forewings shining, dark purplish, with a triangular patch of somewhat roughened scales extending nearly across the wing at one-third from the base (this is bright purplish grey in certain lights, but appears brownish fuscous if held in an opposite direction); beyond this at the upper angle of the cell is a smaller similar patch; a slender subochreous line runs along the base of the dark purplish cilia. Exp. al. 24 mm. Hindwings, &, deep purplish fuscous (varying somewhat according to the angle at which the light strikes them); costal margin from the base to two-thirds shining whitish ochreous; a pale, iridescent transparent elongate patch, lying beneath the costal margin beyond the middle, extends nearly across the width of the cell; a tuft of greyish hair-scales at the base of vein 1; cilia purplish tipped with whitish ochreous towards the abdominal angle and somewhat beyond it: 2 cupreous brown, without the pale patch; cilia purplish grev. Abdomen purplish grey, anal tuft pale ochreous; underside shining whitish ochreous. Legs bright ochreous; hind tibiæ shaded externally with purplish at the base and between the spurs, the outer spurs and the basal joint of the tarsi also purplish externally.

Type. 3. Mus. Wlsm.; 2. Mus. Holland.

Hab. Lagos (♂♂, Sir G. Carter); French Congo—Kangwé, Ogowé River (♀ Rev. A. C. Good); three specimens.

#### EPICHARMA, gen. n.

 $(\partial \pi l \chi \alpha \rho \mu \alpha = \text{an object of malignant joy.})$ 

Type. Epicharma nothriforme, Wlsm.

Antennæ ( $\mathfrak{P}$ ) filiform. Labial palpi strongly recurved, second joint amply clothed above and below, the scales beneath scarcely longer than those above; apical joint as long as the second, slender, smooth. Maxillary palpi short, dependent. Haustellum long. Ocelli obsolete. Head and thorax smooth. Forewings, costa slightly arched at the base, straight beyond, apex depressed, termen scarcely oblique. Neuration, 11 veins (7 and 8 coincident

throughout); 2 and 3 from a recurved common stem, others separate. *Hindwings* slightly broader than the forewings, trapezoidal, costal third of the wing thickly scaled throughout beneath. *Neuration*, 8 veins; 3 and 4 from a point, 6 and 7 closely approximated at base. *Legs*, hind tibiæ thickly clothed, spurs very long.

Allied to Nothris and Ypsolophus, but differing in the coincidence of veins 7 and 8 of the forewings.

Epicharma nothriforme, sp. n. (Pl. II., fig. 3.)

Antennæ stone ochreous, faintly annulate. Palpi, rich brown externally on the second joint; apical joint and a narrow fringe at the end of the second joint stone-ochreous. Head and thorax stone-ochreous. Forewings pale stone-ochreous with three black spots, one on the middle of the fold, one on the middle of the disc above and beyond it, the third at the end of the cell slightly below the line of the previous one; a very faint shade of greyish brown on the apical portion of the wing is interrupted by a pale waved fasciaform mark which extends from the commencement of the costal cilia, bulging outwards and reverting to the dorsum before the tornus; a few ill-defined greyish brown spots around the apex and termen; cilia pale stone-ochreous. Exp. al., 23 mm. Hindwings grey; cilia stone-ochreous with a greyish shade near their base. Abdomen greyish. Legs stone-ochreous.

Type.  $\circ$ .

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

This species has much the appearance of Nothris verbascella, Hb., but the neuration is different.

## Pappophorus, gen. n.

(πάππος = thistle down, φέρειν = to bear.)

Type. Pappophorus eurynotus, Wlsm.

Antennæ  $(\frac{3}{4})$ , unidentate, basal joint without pecten. Labial palpi, second joint porrect, clothed at the end and above and beneath so as to make the joint appear triangular; apical joint slender, recurved, twice the length of the second joint. Maxillary palpi short, distinct. Haustellum well-developed. Head and thorax smooth. Forewings with the costa conspicuously bulged before

the middle, comparatively straight beyond, but slightly depressed before the apex, termen somewhat oblique, tornus rounded, dorsum straight. Neuration, 12 veins; 7 and 8 stalked, 7 to apex; 2 and 3 from a recurved stalk, the others separate. Hindwings trapezoidal, broader than the forewings, slightly sinuate beneath apex, and concave between abdominal angle and tornus, cilia  $\frac{2}{3}$ ;  $\delta$  with a long narrow naked fold on the upper side between vein 1b and 1c containing a pencil of long fine expansible hairs. Neuration, 6 veins; 2 absent, 3 and 4 coincident, 5 nearer to 6 than to 3+4, 6 and 7 closely approximated, 1b with a long and distinct fork. Abdomen slender, somewhat flattened. Legs, hind tibiæ smooth.

Allied to Ypsolophus, F., but differing conspicuously in the hindwings in the absence of vein 2, in the coincidence of veins 3 and 4, in the approximation of 5 to 6, and in the fold containing a long hair-pencil between 1b and 1c.

## Pappophorus eurynotus, sp. n. (Pl. II., fig. 4.)

Antennæ pale fawn, faintly annulate with brown. Palpi pale fawn on their inner sides, with a well-marked triangular brown shade externally on the second joint, leaving a pale margin along the upper edge of the projecting tuft; apical joint dark fuscous. Head and thorax pale fawn. Forewings whitish fawn, shaded with umber-brown along the dorsal half and on the costa beyond the middle; a small black spot at the extreme base of the costa, another, wedge-shaped, at the end of the discal cell, scarcely above the middle of the wing; a larger blackish patch (variable in size and shape) half-way between this and the base (its lower portion sometimes forming a black line in the middle of the fold); along the outer side of the bulged portion of the costa commences an umberbrown shade, which continues to the apex (shading downwards to chestnut-brown along its middle in some specimens) but interrupted by three slender whitish streaks, the first of which is very oblique, passing across the discal nervules and angulated downwards at a point before the termen, but above the middle of the wing, hence it reverts to the dorsum at the commencement of the dorsal cilia; the other two small and inconspicuous whitish streaks precede the apex, and the termen and apex are margined by a line of the same colour, containing a series of three or four blackish spots; cilia chestnut-brown on their basal half, fawn-brown externally. Exp. al, 16 mm. Hindwings dark umber-brown; cilia scarcely paler but chestnut-brown at the apex; & with an expansible white hairpencil between veins 1b and 1c. Abdomen shining, cinereous, anal tuft slightly paler. Legs brown, tarsi annulated with pale fawn.

Type. 3. Mus. Wlsm.

Hab. Sierra Leone, 25, IV. (Dr. Clements); French Congo—Kangwé, Ogowé River (Rev. A. C. Good); two specimens.

#### YPSOLOPHUS, F.

Ypsolophus basistriatus, sp. n. (Pl. III., fig. 13.)

Antennæ pale cinereous, annulated with fawn grey. Palpi, second joint with a conspicuously projecting triangular tuft below, apical joint very long, slender; second joint with a triangular chocolate-brown shade externally, apical joint sprinkled with chocolate-brown scales on the under side. Head and thorax fawn-grey, face slightly paler. Forewings with veins 2 and 3 closely approximate throughout, but especially at their base; pale cinereous sprinkled with fawn-grey throughout, a series of small blackish spots around the apex and termen at the base of the cilia, and a conspicuous outwardly-oblique black half-fascia arising from the dorsum near the base, crossing the fold and terminating at the upper end of the cell at about two-thirds the width of the wing; cilia pale cinereous. Exp. al., 16 mm. Hindwings greyish; cilia scarcely paler, with a faint subochreous parting line along their base. Abdomen grayish. Legs. anterior and middle pairs black, tarsi annulated with white, posterior pair pale cinereous.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); three specimens.

This species differs from the typical forms of Ypsolophus in the approximation of veins 2 and 3 of the forewings.

#### ŒCOPHORIDÆ.

ORYGOCERA, gen. n.

(ὅρυξ = an antelope, κέρας = a horn.)

Type. 3. Orygocera carnicolor, Wlsm.

Antennæ, & simple. Labial palpi very long, evenly recurved, tapering to an acute point, overarching thethorax, apical joint as long

as the second. Maxillary palpi short, stout, dependent. Haust-Head slightly rough above, face smooth. ellum present. smooth. Forewings of approximately even width throughout, apex depressed, somewhat acute, termen slightly concave, oblique, tornus rounded. Neuration, 11 veins (vein 11 absent); 2 and 3 from a short stalk (not recurved), 4, 5, and 6 straight; 7 and 8 from a long stalk enclosing the apex, 12 running to the commencement of the costal cilia. Hindwings as broad as the forewings, slightly lanceolate at the apex, termen not indented. Neuration, 8 veins; 3 and 4 from a point, 5 bent over to near their base; the outer end of the cell forming a deep angle between 5 and 6; 6 and 7 -widely separate, almost parallel, 7 nearly coalescing with 8 beyond the upper angle of cell. Abdomen not flattened. Legs, hind tibiæ clothed with projecting scales above; spurs stout, tarsal joints somewhat coarsely clothed.

## Orygocera carnicolor, sp. n. (Pl. II., fig. 5.)

Antennæ yellowish grey. Palpi white, sprinkled with greyish scales on the second joint. Head white. Thorax yellowish grey spotted with flesh-red. Forewings sericeous, yellowish grey, dappled with flesh-red, with a small triangular mouse-grey spot a little before the middle, of which the apex is slightly turned outwards, the whole bordered with flesh-red; a suffusion of scattered fleshred scales extends over the greater portion of the wing-surface, especially along the fold and in a line beneath it; there is a red spot on the middle of the disc, and a second a little beyond it below the costa; a series of three similar spots running obliquely, parallel with the termen, the first immediately below the costa, the second at the upper angle of the cell, and the third, somewhat lunate, at the lower angle of the cell; another smaller one lies near the tornus, and the termen is mottled throughout with flesh-red; the extreme base of the costa is shaded with fuscous; cilia yellowish grey. Exp. al., 19 mm. Hindwings greyish, somewhat transparent, with a bluish iridescence between the veins, especially near the abdominal margin; cilia yellowish grey. Abdomen grevish. Hindlegs whitish cinereous.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

## THEATROCOPIA, gen. n.

(θεατροκοπία = a courting of applause.)

Type. Theatrocopia roseoviridis, Wlsm.

Antennæ  $\frac{2}{3}$  ( $\mathfrak{P}$  simple). Palpi very long, strongly recurved to above the middle of the thorax, smooth, apical joint shorter than the second and somewhat more slender. Maxillary palpi short. Haustellum present. Head somewhat roughened above. Thorax smooth. Forewings elongate, narrow, scarcely widened outwardly, apex depressed, obtuse but not rounded, costa arched, termen oblique, tornus rounded. Neuration, 12 veins, 7 and 8 from a common stem enclosing the apex, 2 and 3 from a recurved common stem, the others separate. Hindwings as broad as the forewings, apex slightly depressed, obtuse, termen scarcely sinuate. Neuration, 8 veins, 6 and 7 separate, parallel, 3 and 4 from a short stalk. Legs, hind tibiæ clothed with hairs.

Allied to Cryptolechia, Z., but differing in the longer palpi, and in the stalking of 2 and 3 of the forewings.

## Theatrocopia roseoviridis, sp. n. (Pl. II., fig. 6.)

Antennæ roseate, faintly annulate. Palpi pale olive-grey, tinged with rosy externally, especially on the apical joint. Head and thorax pale olive-grey, the latter with a strong roseate tinge. Forewings elongate, narrow, scarcely widened outwardly, apex depressed, obtuse, but not rounded, costa arched, termen oblique, tornus rounded: rosy pink with a strong olive-green band covering the whole base of the wing (except the extreme basal margin) and extending to beyond the end of the cell, where it is deflected to the tornus, its upper edge being impressed before the middle by the rosy ground-colour which continues between it and the costa, occupying the whole apical portion of the wing, and continued very narrowly to the base; beneath the band is a large semicircular olive-green patch on the middle of the dorsum, bordered by a narrow line of purplish scales; between this and the band the rosy ground-colour, commencing in a narrow line at the base, becomes widened towards the middle of the wing, and still more so towards the tornus, its upper edge, adjacent to the angulated green band, being enriched with bright rosy scales; cilia rosy pink. Exp. al., 19 mm. Hindwings olive-grey, cilia the same, slightly tinged with rosy about the apex, and with a narrow paler parting line on the outer half of the margin. Abdomen grey. Legs pale grey, tarsi slightly rosy.

Type. Q. (Paratype, Mus. Br.)

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good), one specimen; Calabar—Old Calabar, one specimen (British Museum).

Theatrocopia elegans, sp. n. (Pl. III., fig. 14.)

Antennæ pale reddish grey. Palpi slender, recurved, second joint very long, apical joint somewhat shorter than the second; pale reddish grey. Head and thorax pale reddish grey. Forewings grass-green, with a dorsal patch before the middle connected with an oblique fascia beyond the middle, which is again connected along the costa and around the tornus, with a patch covering the apical portion—these markings are all reddish grey, with a distinct lilac tinge, and are delicately margined with darker scales; the connexion of the dorsal patch with the central fascia leaves a semicircular patch of the green ground-colour on the middle of the dorsum; cilia reddish grey. Exp. al., 16 mm. Hindwings and cilia brownish grey. Abdomen brownish grey. Legs slightly paler than the abdomen.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

Pseudoprotasis, gen. n. (Protasis, nom. gen.)

Type. Pseudoprotasis canariella, Wlsm.

Antennæ, & biserrate, slender. Labial palpi (as in Protasis, H.-S.), very long, projecting more than three times the length of the head beyond it, clothed with appressed scales throughout; apical joint very short, scarcely visible; second joint straight and laterally compressed. Maxillary palpi short. Haustellum present. Head and thorax smooth. Forewings somewhat narrowed at the base, whence the costa is slightly arched, of approximately even width beyond the bend, apex depressed, rounded, termen slightly convex, oblique. Neuration, 11 veins (10 missing); 2 and 3 stalked; 7 and 8 stalked, 7 to apex. Hindwings as broad as the forewings, apex obtuse, termen evenly rounded. Neuration, 8 veins; 3 and 4 stalked, 5 bent over towards their origin; 6 and 7 separate and parallel. Abdomen rather slender. Hindlegs slender, scarcely clothed.

This genus differs from *Protasis*, H.-S., in its neuration and in the less acute forewings, but greatly resembles it in the form of the palpi, and in general appearance.

Pseudoprotasis canariella, sp. n. (Pl. II., fig. 7.)

Antennæ ochreous. Palpi canary-yellow, tinged with ferruginous internally and externally on the upper edge of the second joint; apical joint fuscous. Head and thorax canary-yellow. Forewings straw-yellow, with a slight ferruginous tinge at the extreme base and along the outer half of the costa, also at the apex; cilia pale straw-yellow, slightly tinged with ferruginous. Exp. al., 14 mm. Hindwings pale greyish ochreous; cilia the same, but tinged with ferruginous at the apex and along the costa. Abdomen ochreous. Legs pale greyish ochreous, with some fuscous shading on the hind tibiæ and tarsi.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

ETHMIA, Hb., (n. syn. = PSECADIA, Hb.)

Ethmia rhomboidella, sp. n. (Pl. III., fig. 15.)

Antennæ stone-grey. Palpi ochreous, apical joint shaded with grey. Head and face ochreous. Thorax mouse-grey, with five black spots (two in front, one in the middle, and two smaller ones behind it). Forewings slaty grey, cilia the same; with six black spots (two small ones beneath the costa on the basal fourth, two larger ones on the disc, and two on the fold); of the discal spots one lies at the end of the cell, the other at the middle of the wing; the first of those on the fold is somewhat further removed from the base than the second subcostal spot, the other lies beyond and below the first discal spot, but nearer to it than to the second; thus these six spots form a series of three pairs, in parallel lines whether counted as pairs or in series of three. Exp. al., 28 mm. Hindwings stone-grey, having a slight ochreous tinge on the abdominal margin, cilia also inclining to ochreous, except towards apex. [Abdomen missing.] Legs greyish ochreous.

Type. 2. Mus. Wlsm.

Hab. Natal—Malvern (Col. Bowker), one specimen; French Congo—Kangwé, Ogowé River (Rev. A. C. Good), two specimens.

The specimens from the Ogowé River have the series of spots in precisely the same places, but they are decidedly of larger size; in all other respects they are similar to the type, and without further evidence cannot be regarded as belonging to a distinct species; these specimens, which are figured, have the abdomen ochreous. Exp. al., 26-27 mm.

#### HYPONOMEUTIDÆ.

#### HYPONOMEUTINÆ.

JOBULA, Wkr.

Jobula? radiata, sp. n. (Pl. III., fig. 16.)

Antennæ & shortly uniciliate, basal joint amply clothed; olivegrey above, ochreous beneath. Palpi, & long, projecting four times the length of the head beyond it, second joint slightly recurved, closely clothed throughout; apical joint short, recurved, slender, also clothed; orange-ochreous on their upper half, olivegrey externally along their middle, cinereous within and beneath: ♀ shorter than in the ♂, and much more recurved; whitish cinereous throughout. Head strongly tufted with long projecting hairs in front, face concave; olive-grey above, mixed with pale cinereous, face pale cinereous. Thorax smooth, olive-grey with three longitudinal orange-ochreous lines; whitish cinereous Forewings, & dark olive-grey, with orange-ochreous lines marking the interspaces between the veins, the extreme base of the costa narrowly orange-ochreous; a distinct orange-ochreous line, commencing near the base beneath the costa, follows the upper edge of the cell to the middle of the wing-length; this is followed by some spots of the same colour about the upper angle of the cell, diverging obliquely downwards and nearly joining the outer end of a median streak of the same colour, which terminates in the direction of the base at half the length of the cell; there is also a line of the same colour along the fold and some suffusion of orange-ochreous scales beneath it; beyond the end of the cell a series of 9 or 10 separate orange-ochreous lines diverge fan-like between the veins, and are margined, at their outer ends, by a distinct semicircle of the olive-grey ground-colour, which is

followed by an orange-ochreous space, also semicircular, but not attaining the margins, the apical space being dark olivegrey; cilia olive-grey, with an ochreous line along their base: ♀ with the orange-ochreous much less distinct than in the ♂, although the same pattern can be traced. Exp. al., 17-18 mm. Hindwings brown, cilia greyish. Abdomen brown. Legs pale cinereous.

Type. 3. Mus. Wlsm.; Q. Mus. Holland.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); two specimens.

This African form differs from any of the Asiatic or Malayan group, so far as known to me, in that vein 8, forming the upper branch of 7 and 8 stalked, terminates at the apex instead of below it. In the palpi of the 3 it approaches Jobula semilinea, Wkr., more nearly than the ordinary forms known under the name of Tortricomorpha, but the palpi of the 2 differ scarcely at all from those of both sexes of the latter genus.

#### EREMOTHYRIS, gen. n.

 $(\tilde{\epsilon}\rho\hat{\eta}\mu\sigma s = \text{destitute of}, \theta\nu\rho s = \text{a window}.)$ 

Type. 3 9. Eremothyris hollandi, Wlsm.

Antennæ, two-thirds length of forewings, basal joint enlarged, flattened, in of biciliate (1). Labial pulpi short, somewhat recurved, moderately slender, smooth, apical joint not longer than second. Maxillary palpi and ocelli absent. Haustellum naked. Head moderately clothed, not roughened above. Thorax smooth. Forewings ovate, somewhat widened outwards. Neuration, 12 veins: 2 and 3 from a short slightly recurved common stem at lower angle of cell, the others separate; 4 from near origin of 2 + 3; 5 further removed at the base from 4 than from 6; 6 and 7 approximated, 7 to below apex; 8 and 9 approximated, but parallel, 8 to costa; 9 and 10 from upper angles of a small supplementary cell, formed by an internal vein running from between 7 and 8 to about midway between 10 and 11; two internal veins, the upper from between 6 and 7, and the lower from immediately above 5, unite at about half the length of the cell, and form a common stem, which is continued nearly to the base, where it runs into the radius. Hindwings slightly broader than the forewings, subovate, the margin evenly rounded, the part occupied by the branches of vein 1

clothed above with long hair-scales, no transparent spot at the base. Neuration, 8 veins: 3 and 4 from a point (or short stalk); 6 and 7 from a short stalk; the cell receding upwards and angulated inwards between 5 and 6 + 7, with an internal vein from the angle to the base; vein 1b basally furcate. Legs smooth, outer spurs longer than the inner ones.

## Eremothyris hollandi, sp. n. (Pl. II., fig. 8.)

Antennæ whitish at the base, tinged with grey beyond. Palpi whitish unspotted. Head, & whitish: \Quad stone-grey. Thorax stone-grey; tegulæ whitish in the &, stone-grey in the \Quad . Forewings stone-grey, the costa narrowly whitish except at the extreme base; cilia whitish. Underside greyish, cilia whitish. Exp. al., 22-25 mm. Hindwings pale stone-grey (scarcely paler than the forewings); cilia whitish, somewhat tinged with grey. Underside slightly paler than in the forewings. Abdomen stone-grey. Legs whitish, somewhat tinged with grey.

Type. 3 9. Mus. Wlsm.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); five specimens.

#### GLYPHIPTERYGINÆ.

## GLYPHIPTERYX, Hb.

Glyphipteryx gemmatella, Wkr. (Pl. III., fig. 17.)

Gelechia gemmatella, Wkr., Cat. Lep. Ins. B.M., XXX., 1022 (1864)<sup>1</sup>. Glyphipteryx (Gelechia) gemmatella, Wlsm., Tr. Ent. Soc. Lond. 1891, 116–7<sup>2</sup>.

Antennæ brownish fuscous, faintly annulated. Palpi porrect, slightly recurved, apical joint very acute, shorter than the second; second joint with a divided fringe beneath, consisting of three or four black tufts separated from each other by white lines. Head leaden grey. Thorax greyish fuscous, with a white spot posteriorly; white on the underside. Forewings bronzy brown mixed with fuscous shading, especially towards the base, a large triangular straw-white dorsal patch near the base, its apex ending in a small straight whitish costal streak at one-fifth from the base, its outer edge slightly convex; this is followed by two straight chalybeous metallic streaks, the first at one-third from the base, the second scarcely beyond the middle; a third slightly oblique towards the apex is preceded by a small white costal dot half-way between it

and the preceding streak, and followed by a larger white costal spot immediately before the apex, a few white scales at the costal extremity of the third chalybeous streak; from the dorsum arises a rather broad straight chalybeous streak immediately before the middle, which terminates on the disc between the lower extremities of the first and second costal streaks; this is followed by a conspicuous black patch at the tornus, margined by a shorter chalvbeous streak at its commencement, and containing two conspicuous shining metallic spots, with some golden metallic scales along the margin; above this patch is a series of five radiating golden ochreous lines following the nervules, but not extending to the termen; termen indented below the apex, the apex itself being somewhat depressed; cilia shining metallic about the tornus (but too much worn above it to admit of description). Exp. al., 12 mm. Hindwings purplish fuscous, with cilia the same colour but inclining to greyish about the abdominal angle. Underside with the cilia distinctly spotted with white along the outer margin. Abdomen leaden grey. Underside white, anal segments fuscous. Legs greyish fuscous. annulated with white on the tarsal joints, spurs inclining to ochreous.

Hab. Sierra Leone<sup>1,2</sup>. French Congo—Kangwé, Ogowé River (Rev. A. C. Good).

Allied to Glyphipteryx grapholithoides, Wlsm., from Natal. These species belong to the group to which Walker gave the generic name Ussara, when describing decoratella from the Amazons. I am unable to discover any structural character by which it can be separated from Glyphipteryx. [When the above description was written I had not recognised the species, but as it supplements Walker's in several particulars I am not willing to suppress it.]

IDIOTHAUMA, gen. n.

(ἴδιος = distinct,  $\theta \alpha \hat{v} \mu \alpha = a$  wonder.)

Type. Idiothauma africanum, Wlsm.

Antennæ, & bifasciculate (at least 2), without pecten. Labial palpi recurved, appressed to face; apical joint blunt, shorter than second. Maxillary palpi absent. Haustellum short. Ocelli present. Head and thorax smooth. Forewings somewhat triangular, narrow at the base, widened outwardly, costa straight or slightly depressed towards apex, dorsum straight, termen oblique,

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indented above vein 5. Neuration, 12 veins, all separate; 2 from commencement of outer third of cell, 3 and 4 somewhat straight, 8 to termen. Hindwings broader than the forewings (or at least equal to the extreme width outwardly), evenly rounded. Neuration, 8 veins; 3 and 4 from a point or short stalk, 6 and 7 from a short stalk, 8 free, 5 straight; outer edge of cell somewhat receding upwards. Legs, hind tibiæ slightly hairy.

Allied to *Hilarographa*, Z., but differing in vein 8 of the forewings running to the termen instead of to the costa, in the much straighter costa and in the conspicuous indentation between veins 5 and 6.

## Idiothauma africanum, sp. n. (Pl. II., fig. 9.)

Antennæ ochreous with greyish cilia. Palpi pale straw-colour. Head brownish fuscous, with some pale straw-coloured scales. Thorax brownish fuscous, streaked at the sides with pale strawcolour. Forewings reddish orange, streaked with brownish fuscous, dark fuscous, pale straw-colour and metallic lilac; the groundcolour of the basal third is brownish fuscous, in which are two conspicuous pale straw-coloured marks, the one from the middle of the base depressed along the fold, thence tending upwards and attenuated to a sharp point below the costa at about one-third the wing length; the second at one-third of the dorsum, cuneiform, oblique, and ending in a point at about the middle of the discal cell immediately beyond the apex of the basal streak already described; separated from the outer edge of this mark, by a narrow line of brownish fuscous, is a rather narrow band of shining cupreous scales illuminating the orange ground-colour of this portion of the wing, this is entirely narrowly margined with brownish fuscous, its upper extremity being above the middle of the wing, but not reaching to the upper edge of the discal cell, and therefore terminating before the apex of the pale straw-coloured wedge; a dark fuscous shade leaves the dorsum at two-thirds from the base. tending outwards to the end of the cell above its middle, its upper portion contains a short orange streak and its extremity is contiguous with a shade of a similar colour which approaches the lower half of the termen extending to the tornus; between these two shades a short cuneiform spot of brilliant cupreous scales leaves the dorsum immediately before the tornus, occupying the central portion of the orange patch of which they form the boundaries; along the costa are seven pale straw-coloured streaks,

the first two within the basal third very oblique, the third and fourth within the middle third also oblique, the fifth straight at the commencement of the apical third, and the sixth and seventh (also straight and more than twice the length of the others) immediately before the apex-all these streaks are narrowly margined on both sides with dark fuscous and with a few lilac-metallic scales at the lower extremities of the third and fifth streaks; in the orange space between the fifth and sixth costal streaks is an isolated, oblique, bright metallic lilac patch similarly margined; cilia purplish fuscous, interrupted at the upper third of the outer margin by a small wedge-shaped pale straw-coloured spot. Underside dirty ochreous all the pale straw-coloured streaks being distinctly white. Exp. al., 5 14 mm.; 9 15-20 mm. Hindwings bronzy ochreous. shaded with brownish fuscous around their margins; cilia slightly paler, with an ill-defined darker parting line along their base. Abdomen bronzy ochreous, whitish cinereous beneath. cinereous with bronzy brown spots and shading on the hind tibiæ and tarsal joints.

Type.  $3 \circ 1$ .

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); three specimens.

[Hilarographa was proposed by Zeller, Hor. Soc. Ent. Ross., XIII., 186-7 (1877) as a subdivision of his existing genus Setiostoma, and having as its types swederiana,

Stoll, and ribbei, Z.

Meyrick, Trans. Ent. Soc. Lond., 1886, p. 286, raised Hilarographa to generic rank, giving a careful structural description, and adding a new species, zapyra from New Guinea, the type of which is in my collection, and it was from this specimen, differing in neuration from swederiana, Stoll, that his generic description was probably taken, as it conforms in every particular, and no reference was made to either of Zeller's original types.

I have not been able to examine the neuration of ribbei, Z. (the type of which is in Staudinger's cabinet), to see whether it agrees in structure with swederiana, Stoll; but of this I have specimens, and I select it as the type of Hilarographa, Z., with the following generic

characters :-

#### HILAROGRAPHA, Z.

SETIOSTOMA (HILAROGRAPHA), Z., Hor. Soc. Ent. Ross., XIII., 186-7 (1877).

Type. Phalæna Tortrix swederiana, Stoll, (Wlsm.).

Antennæ hardly half the length of the forewings, stout, simple, without pecten. Labial palpi recurved, appressed to face, closely scaled; apical joint blunt, shorter than second. Maxillary palpi absent. Haustellum short. Ocelli distinct. Head with loosely appressed hairs. Thorax smooth. Forewings narrow at the base, widened outwardly; costa slightly arched, termen scarcely oblique, slightly sinuate below the apex and convex beneath. Neuration, 12 veins, all separate; 2 from commencement of outer third of cell, 8 to costa. Hindwings broader than the forewings, costa arched, termen evenly convex, not sinuate, cilia short. Neuration, 8 veins; 3 and 4 connate (or from a short stalk), 6 and 7 from a short stalk, 8 free. Abdomen slender, tapering, in Q terminating in a bifid extruded chitinous process (having much the appearance of the anal claspers of the 3), this is armed with short scattered bristles, and is either the ovipositor itself or the sheath of the same, a point I am unable to determine from the specimen before me. Legs smooth, the first pair of spurs on the hind tibiæ longer than the second.

## THAUMATOGRAPHA, n. n.

 $(θα \hat{v}μα = a wonder, γράφω = I write).$ 

= ніцакодкарна, Меуг., Tr. Ent. Soc. Lond., 1886, 286 (nec Z.).

Type. Hilarographa zapyra, Meyr.

I propose the above name for Meyrick's genus *Hilaro-grapha*, which differs from Zeller's in having veins 7 and 8 of the forewings stalked.]

#### CHOREUTIS, Hb.

Choreutis octogemmifera, sp. n. (Pl. III., fig. 18.)

Antennæ whitish beneath, barred with fuscous above. Palpi white tipped with fuscous, the second joint with three diverging points of hair-like scales beneath, mixed white and fuscous. Head greyish fuscous, with a slender white line along each side. Thorax

greyish fuscous, with two slender white lines on each side of the Forewings greyish fuscous, mottled and banded anterior half. with white, with a row of eight bright metallic spots around the apex and termen, each set in an elongate dark fuscous shade; the white markings on the forewings are thus distributed :- a narrow fascia near the base, running obliquely outwards from the dorsum across the fold, angulated a little below the costa and reverting to it; a second a little beyond, rather straighter, reaches only halfway across the wing from the costa; beyond the middle of the wing is a large patch spreading from the outer end of the cell to the costa and dorsum, much interrupted and suffused by greyish fuscous scales, but becoming distinct on the margins at the commencement of the costal cilia and before the commencement of the dorsal cilia; cilia grevish fuscous, with a white spot below the apex and another below the tornus, a slight parting line along their base. Exp. al., 12 mm. Hindwings brownish fuscous, with a white patch on the outer half of the cell, and an oblique white streak reverting from beyond this to the middle of the termen; above and beyond the upper extremity of the second streak is a brilliant metallic lilac streak tapering to its lower extremity, where it almost reaches the margin; a third obscurely whitish streak, from near the abdominal angle, tends outwards and upwards, terminating above the lower extremity of the more conspicuous white streak beyond it; cilia greyish fuscous with three conspicuous white interruptions, the first at the apex, the other two corresponding with the extremities of the lilac streak and the largest white streak respectively. Abdomen brownish fuscous. Legs white, annulated with brownish fuscous.

Type. 3. Hab. Yoruba—Idanre (Sir G. Carter); French Congo—Kangwé, Ogowé River (Rev. A. C. Good); three specimens.

All the white and metallic markings of both fore and hindwings are reproduced on the underside, where they are even more strongly apparent than above.

## SIMAETHIS, Leach.

Simaethis equatoris, sp. n. (Pl. III., fig. 19.)

Antennæ slightly ciliate; greyish fuscous, annulated with whitish. Palpi very short, not projecting beyond the head; cinereous, with three narrow greyish fuscous bands beneath. Head ochreous, mixed

with greyish fuscous. Thorax brownish fuscous. Forewings narrow at the base, much widened outwardly, apex rounded, termen somewhat oblique; brownish fuscous to beyond the middle, thence orange-ochreous; the outer edge of the brownish fuscous portion broken into projecting points, one tending upwards towards the apex from the upper end of the cell, another shorter one tending outwards from the lower angle of the cell, a narrow band of brownish fuscous runs around the apex and termen to the tornus with a slight inward projection below the apex (but in some specimens this is reduced to a slight shade) preceding a more or less distinct brownish line along the base of the pale greyish cilia; a pale grevish speckled transverse fascia crosses the darker portion of the wing at one-third from the base, and is somewhat wider on its lower than on its upper half; a few whitish scales are visible at three points on the costa, the first at the upper extremity of the transverse fascia, the second at the outer edge of the brown portion of the wing, the third immediately before the apex, and these are slightly reproduced on the brownish fuscous underside. Exp. al., 14 mm. Hindwings brown, with pale greyish cilia, a narrow brown parting line running through them near their base; a slight pale marking occurs near the abdominal angle, within the margin, extending outwards parallel with it nearly to one-half. Abdomen, brownish fuscous. Legs brownish, with several conspicuous whitish bands on the hind tibiæ and tarsi, spurs whitish.

Type. β ... Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); three specimens.

Simaethis flavimaculata, Wlsm.

Simaethis flavimaculata, Wlsm., Tr. Ent. Soc. Lond., 1891, 77. Pl. III., 161.

Hab. French Congo—Ogowé River; one specimen. Zanzibar<sup>1</sup>.

This specimen exhibits some slight variation from the type, in that the first orange spot reaches to the costal margin, the two outer spots narrowly touching each other at their outer edge.

#### MICTOPSICHIA, Hb.

Mictopsichia argus, sp. n. (Pl. III., fig. 20.)

Antennæ dull ferruginous. Palpi short, recurved, scarcely projecting beyond the head, apical joint shorter and more slender than

the second; pale ferruginous. Head dull ferruginous. Thorac greyish, with three inconspicuous ferruginous longitudinal streaks and a reddish orange patch posteriorly. Forewings dull ferruginous, paler on the dorsal than on the costal half, much speckled and shaded with greyish fuscous scales and streaked with metallic purplish grey, a triocellated dorsal patch before the tornus; the dorsal half of the wing from near the base to the tornus is minutely reticulated with black wavy lines, and these are concentrated into a somewhat circular patch almost touching the dorsum before the tornus, in which are spots of the ferruginous (almost ochreous) ground-colour, and three or four larger spots of metallic bluish grey, all dark-margined, the more conspicuous of these bluish grey spots lying along its outer edge; from the base, immediately below the costa, runs a bluish grey streak which is deflected at one-third the wing-length, terminating on the cell; beneath it from the base arises a shorter streak of the same colour, almost coterminous with a similar streak arising from near the base of the dorsum, the space between them being brownish; on the outer half of the wing are two conspicuous blue-grey streaks, the first arising below the costa near its middle and tending outwards and downwards towards the tornus, but ending between the ocellated patch and the termen at one-third the wing-breadth, the second commencing on the costa at four-fifths, less oblique than the first, and ending opposite to the middle of the termen above and beyond the apex of the first streak; between them lies a small spot of the same colour below the costa, and beyond the outer one immediately before the apex is a similar spot almost touching the costa; several small brownish fuscous spots are visible along the basal two-thirds of the costa, and a brownish shade precedes each of the blue-grey streaks and extends along the termen to the apex (which is less falcate than in the South American representatives of this genus); cilia brownish grey with a ferruginous parting line near their base. Exp. al., 19 mm. Hindwings reddish orange, speckled around the margins and apex with greyish fuscous, and having a conspicuous ocelloid black patch within the middle of the termen, divided by streaks of the ground-colour, and illuminated along its lower edge by metallic steel-grey spots; cilia greyish ochreous, spotted with blackish, with a reddish orange parting line along their base. Abdomen orange-ochreous. Legs pale orange-ochreous, hind tarsal joints spotted with black and whitish.

Type. 32.

Hab. French Congo—Kangwé, Ogowé River; three specimens.

It may be necessary ultimately to distinguish this species, and its allies, from *Mictopsichia*, on the ground of the somewhat longer and more recurved palpi, and the less falcate apex of the forewings, but the same form occurs in Mexico and the Malay Archipelago.

# TORTRICIDÆ. OLETHREUTINÆ.

= OLETHREUTÆ, Hb., = GRAPHOLITHINÆ, Fern. = EPIBLEMIDÆ, Meyr.

Eccopsis, Z.

Eccopsis præcedens, sp. n. (Pl. III., fig. 21.)

Antennæ stout and densely but shortly pubescent in &; Palpi projecting the length of the head beyond it, moderately clothed; cinereous. Head cinereous, mixed with dark Thorax cinereous. Forewings, costa arched near the base, depressed in the middle, thence again convex and depressed towards the apex, termen oblique, slightly convex; pale cinereous, mottled and blotched with dark umber tending to blackish along the costa, and with a series of spots and blotches; five costal spots on the basal third are followed by a median triangular shade interrupted a little beyond its middle, this is followed by another narrow costal spot, which is succeeded by a shade extending to the apex; beneath this apical shade is an oblique band angulated at its upper extremity and reaching the termen below the middle, the space between it and the apex shining chalybeous; a few shining chalybeous scales scattered over the surface of the wing, especially on its outer half, the greater part of the wing-surface is also streaked and dotted with dark umber scales somewhat evenly distributed: cilia cinereous, slightly shining on their outer half. Underside brownish. Exp. al., 22 mm. Hindwings with the abdominal angle strongly lobed, the abdominal margin deeply indented and with a small hanging appendage near its base (somewhat more strongly developed than in Eccopsis wahlbergiana Z.); coppery-brown, cilia greyish with a slight parting shade along their middle. Underside brownish ochreous. Abdomen cinereous, much shaded with dark umber, anal tuft coppery-brown. Legs worn, apparently cinereous, tarsal joints broadly banded with dark umber.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); two specimens.

In comparing this species with the better-known Eccopsis wahlbergiana, Z., it may be distinguished by the somewhat longer palpi, by the stronger costal marks on the basal half of the forewings, by the less conspicuous dorsal shading and by the hindwings being of a much lighter and more cupreous colour, as well as by its somewhat larger size.

## ANCYLIS, Hb.

(= PHOXOPTERIS, Tr.)

Ancylis argenticiliana, sp. n. (Pl. III., fig. 22.)

Antennæ (3) rather stout, simple; stone-grey. Palpi very closely appressed to the face, the short apical joint scarcely projecting beyond it; stone-grey. Head stone-grey. Thorax pale olive-grey. Forewings, costa evenly arched, apical margin strongly indented on vein 6; pale olive-grey, with a few inconspicuous darker mottlings indicating a pale basal patch at one-third, its irregular outer edge slightly oblique, nearer to the base on the costa than on the dorsum; from the middle of the costa a slender umber-brown line (slightly convex outwardly below the middle of the wing) extends obliquely to the dorsum within the tornus; this is followed by a paler space extending to the termen, showing a silvery sheen with a few slender lines of black scales following the nervules across it in the direction of the apex, this space is narrowed towards its costal extremity by an oblique brown line extending from the indentation on the termen inwards and upwards to the costa and along the base of the cilia both upwards and downwards; above it the costa before the apex is chestnut-brown, with three or four slender oblique silvery-white streaks, a faint indication of smaller streaks can be traced along the whole of the outer two-thirds of the costa; cilia pure silvery-white, tending to greyish about the tornus, and tipped along their upper half with chestnut-brown. Exp. al., Hindwings stone-greyish, with scarcely paler cilia, a very faint line along their base. Abdomen stone-greyish. Legs pale stone-grey, inclining to ochreous.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

## LASPEYRESIA, Hb.

Laspeyresia hemisphærana, sp. n. (Pl. III., fig. 23.)

Antennæ black. Palpi scarcely roughened beneath, apical joint short, porrect; snow-white, second joint blackened above towards the base. Head black, white above posteriorly. Thorax greyish, with a conspicuous white band across in front. Forewing slaty-grey, shaded with fuscous along the outer half of the costa; with a large semicircular brownish patch on the middle of the dorsum, narrowly outlined with white; several narrow very oblique whitish costal streaks and two very conspicuous clear white ones before the apex, the first very oblique, the second straight and parallel with the termen; a few whitish scales along the extreme base of the costa; cilia whitish, a dark fuscous parting line along their base. Exp. al., 14 mm. Hindwings brownish fuscous; cilia pale whitish grey, a darker parting line along their base. Abdomen brownish fuscous. Legs greyish fuscous.

Type. 3.

Hab. Sierra Leone—21, IV. (Dr. Clements); French Congo—Kangwé, Ogowé River (Rev. A. C. Good); two specimens.

#### CYDIA, Hb.

(= CARPOCAPSA, Tr.)

Cydia? prætextana, sp. n. (Pl. III., fig. 24.)

Antennæ ochreeus. [Palpi missing.] Head and thorax canaryyellow, the latter white with a greyish tinge beneath. Forewings canary-yellow blending to rich orange along the costa, and reddish ferruginous along the termen, with some reddish ferruginous blotches in a wide fasciated band across the middle and along the dorsum; a series of about nine small black dots along the extreme costa, and numerous raised spots of bright steel-grey scales scattered about the darkened portions of the wing; a series of these starting at one-fourth from the base continues nearly parallel with the costa, these are chiefly circular or oblong, those nearest to the costa being smaller than those below them; at one-fifth from the apex is a longer steel-grey spot placed obliquely and pointing to a similar elongate spot within the lower half of the termen; a long narrow spot of the same colour lies parallel with the termen below the apex and a shorter one immediately within the tornus; from the last spot tending towards the base is a series of three large similar metallic circular spots, and another lies upon the fasciated band

which crosses the wing; an orange spot preceded by some fuscous scales lies at the extreme base of the dorsum; cilia shining dark steel-grey. Underside orange, broadly black-margined throughout. Exp. al., 18 mm. Hindwings rich orange, with a rather broad black border; cilia on the abdominal half of the margin orange, on the outer half greyish, with a black parting line at their base. Underside orange, narrowly black-margined throughout. Abdomen orange, canary-yellow at the extreme base, the posterior segments narrowly indicated with black, anal tuft black. Underside whitish. Legs (anterior) yellowish, with blackish spots [posterior legs missing].

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

The neuration of the hindwings differs from Cydia in having 6 and 7 converging, but distinctly separated. As the palpi are missing, I prefer to place the species in Cydia provisionally rather than to create a new genus for its reception.

#### TORTRICINÆ.

TORTRIX, L.

Tortrix viridis, Wlsm.

Argyrotoxa viriāis, Wlsm., Trans. Ent. Soc. Lond., 1891, 68-9. Pl. III., 41.

Hab. Gold Coast—Accra<sup>1</sup>; French Congo—Kangwé, Ogowé River (Rev. A. C. Good).

#### CARPOSINÆ, subfam. n.

Median vein of hindwings pectinate at base; vein 2 of forewings rising from posterior fourth of cell.

Autogriphus, gen. n.

 $(\alpha \dot{\nu} \tau \delta s = \text{of itself}, \gamma \rho \dot{\rho} \circ s = \text{a puzzle.})$ 

Type. Autogriphus luteus, Wlsm.

Antennæ ( $\mathfrak{P}$ ) simple, basal joint slightly enlarged and somewhat roughly clothed. Labial palpi long, porrect, reaching three times

the length of the head beyond it, second joint triangular with a brush of scales above tapering to its apex, apical joint short porrect. Maxillary palpi absent. Haustellum present. Head and Forewings narrow, elongate, costa evenly but thorax smooth. moderately arched throughout, apex depressed, slightly produced, termen oblique, scarcely sinuate, with slight tufts of raised scales. Neuration, 12 veins; 8 and 9 from a common stem, 7 to slightly below apex, 2 from very near angle of cell, 3 and 4 from a very short common stem, 5 from near origin of 3 + 4, 11 bent over at base to very near origin of 10, an internal vein running towards the base from between 5 and 6; vein 1 furcate at base. Hindwings broader than the forewings, apex slightly produced, obtuse, termen evenly rounded, median vein pectinated at base. Neuration, 7 veins (6 and 7 coincident); 3 and 4 from a short stalk, 5 straight, not bent over, and continued through the cell as an internal vein. Abdomen smooth. Legs, hind tibiæ slightly hairy above, spurs rather long and slender.

## Autogriphus luteus, sp. n. (Pl. II., fig. 10.)

Antennæ greyish. Palpi pale cinereous, shaded with fuscous beneath. Head and thorax pale cinereous, the latter mottled with brown and brownish fuscous. Forewings pale cinereous, much suffused and mottled with brown; with six elongate fuscous spots along the outer two-thirds of the costa, a conspicuous dark fuscous spot of slightly raised scales at the end of the discal cell between veins 5 and 6, and a smaller one, also raised, about the lower angle of the cell before and beneath it; a few raised greyish scales a little beyond the middle of the fold on its upper edge, and some also beneath the fold nearer to the base; along the termen is a slight shade or suffusion of brownish fuscous scales, its inner margin sinuate, angulated inwards at its middle, and recurved at both extremities, the upper extremity not reaching to the costa, the lower terminating about the tornus; cilia greyish, a slightly paler line along their base. Exp. al., 21 mm. Hindwings grey, the spaces between the veins, especially about the abdominal margin, semitransparent with a bluish iridescence; cilia pale grey. Abdomen [greasy]. Legs pale greyish, hind tarsal joints faintly annulate.

Type.  $\circ$ .

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

# TINEIDÆ.

Eccompsoctena, gen. n.

(Compsoctena, nom. gen.)

Type. Eccompsoctena secundella, Wlsm.

Antennæ,  $\mathcal{J}$  strongly bipectinate  $(3\frac{1}{2})$ , the pectinations biciliate. Labial palpi short, slender, but roughly clothed, scarcely projecting beyond the rough scales of the face. Maxillary palpi and haustellum rudimentary. Head and face rough. Thorax rather roughly clothed. Forewings scarcely narrower towards the base than beyond it, costa slightly convex, apex rounded, termen oblique, slightly convex. Neuration, 12 veins; 7 and 8 from a long common stem, 7 to apex, 8 to above apex from a small supplementary cell, from which 9 and 10 also arise, these latter meeting at their extremity on the costal margin. Hindwings as broad as the forewings. Neuration, 8 veins, all separate; 6 and 7 separate and parallel. Hind legs thickly clothed, not hirsute.

## Eccompsoctena secundella, sp. n. (Pl. II., fig. 11.)

and palpi brown. Head and face ochreous. Thorax umber-brown. Forewings pale ochreous, thickly mottled, speckled, and suffused with umber-brown scales, the two colours alternating along the costa in unequal spaces throughout; a rather strong patch of umber-brown scales lies at the end of the disc, which appears to be the only point at which this colour is more concentrated than on the remainder of the wing-surface, although it somewhat prevails also towards the apex and tornus; cilia pale ochreous, with an umber-brown parting line along their middle, and another at their extremities. Exp. al., 22 mm. Hindwings purplish fuscous; cilia cinereous, with a dark parting line near their base. Abdomen purplish fuscous, anal tuft inclining to ochreous. Legs dull ochreous.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A.

C. Good); unique.

This has so much the appearance of Compsoctena primella, Z., that it might easily be mistaken for that species, but the neuration differs in the forking of veins 7 and 8, and the meeting of veins 9 and 10 towards the costa of the forewings, and the palpi are very much shorter.

# Mesorolia, gen. n.

(μεσοπόλιος = grizzled.)

Type. & Mesopolia inconspicua, Wlsm.

Antennæ, 3 strongly bipectinate (3-4), the pectinations biciliate, basal joint tufted in front. Labial palpi slender, short, porrect, not reaching beyond the head. Maxillary palpi and haustellum obsolete. Head thickly scaled, but moderately smooth. Thorax smooth. Forewings elongate ovate, costa evenly arched, apex rounded, termen oblique, tornus rounded. Neuration, 12 veins; 7 and 8 stalked, 8 to below the apex, 5 somewhat bent over and approximate to 4 at its base; an internal vein forms a supplementary cell by arising from slightly below 7 + 8 and running to between 10 and 11, and a stalked internal vein from between 11 and the base emits branches to either side of 5. Hindwings as broad as the forewings, ovate, costa slightly convex. Neuration, 8 veins all separate; 6 and 7 closely approximate at base, 5 approximated to 4, a stalked internal vein emits its branches to either side of 5. [Legs and abdomen missing.]

This genus appears to be allied to Narycia, Stph. (Xysmatodoma, Z.), but differs in the form of the antennæ and in neuration. It has very much the appearance of Psilothrix dardoiniella, Mill., but is somewhat larger and there are no veins missing as in that species. Nothing is known at present of its habits, but the larva is probably a case-bearer.

## Mesopolia inconspicua, sp. n. (Pl. II., fig. 12.)

Antennæ ashy-grey. Palpi dark fuscous. Head and thorax ashy-grey, the latter shaded with fuscous anteriorly. Forewings ashy-grey with numerous short transverse striæ and spot-like groups of brownish fuscous scales—these form a rather conspicuous spot below the costa near the base, another beyond and below it extending on both sides of the fold, and a third about the middle of the wing, there is also a slight shade about the upper angle of the cell; the other spots are more or less distributed over the wing surface; cilia ashy-grey with a slight parting shade along their middle. Exp. al., 23 mm. Hindwings pale brownish, cilia slightly paler. [Abdomen and hindlegs missing.]

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

#### COMPSECTENA, Z.

Compsoctena media, sp. n. (Pl. III., fig. 25.)

Antennæ dentate, shortly biciliate; pale cinereous. Palpi projecting less than the length of the head beyond it, brush-like; dull ochreous with a few brownish scales. Head very roughly clothed: Thorax whitish cinereous, transversely banded dull ochreous. with brown. Forewings whitish cinereous mottled and reticulated with brown, a series of brownish patches along the costa; three small ones before the middle, of which the first two form the upper edge of an ill-defined basal patch, a broad one on the middle of the costa, forming the upper end of a somewhat broken transverse fascia inclining slightly inwards to the dorsum, and two beyond the middle, the first small, the second larger, before the apex, also blending with a shade of brownish scales beneath it: the interspaces between these spots on the outer half of the costa are ochreous, the costal cilia immediately above the apex being also ochreous, and a slight ochreous shade runs through the base of the cilia along the termen, in which are three more or less distinct lines of brown scales, the outer extremities of the cilia being greyish. Exp. al., 16 mm. Hindwings purplish grey, cilia pale cinereous with a faint ochreous parting line along their base. Abdomen greyish, anal tuft ochreous. Legs brown, hind tarsal joints annulated with pale cinereous.

Type. 3.

Hab. French Congo-Kangwé, Ogowé River (Rev. A. C. Good); unique.

This species appears to differ somewhat from Compsoctena primella, Z., in the formation of the antennae and in the shorter palpi, but the neuration is the same, and its divergence from the type can be scarcely considered of generic value.

Monopis, Hb.

(= BLABOPHANES, Z.)

Monopis monachella, Hb.

= longella, Wkr.<sup>33</sup> [? = mediella, F.<sup>9</sup>.]

[Alucita mediella, F., Ent. Syst. III. (2), 337, No. 26 (1798) 1: Tinea mediella, F., Sppl. Ent. Syst., 494, No. 73 (1798) 2]; Tinea monachella, Hb. Samml. Eur. Schm., VIII., Pl. XXI., 143 (c. 1800)3; [? Tinea mediella, Turten, Syst. Nat., III., 381

(1806) 4]; Scythropia monachella, Hb. Verz. bek. Schm., 414, No. 4001 (1826) 5; Lita monachella, Tr. Schm. Eur., IX. (2), 100-1 (1833) 6; Tinea monachella, Z, Is., 1839, 1847; Stn. Zool., VII., 2630 (1849) 8: Sppl. Cat. Br. Tin. and Pter., 2, No. 39, 1851 9; Hdnrch., Lp. Eur. Cat. Meth., 79 (1851)<sup>10</sup>; Tinea (Blabophanes) monachella, Z., Linn. Ent., VI., 111-2 (1852) 11; Tinea monachella, Stn. List. Br. An. B. M., XVI., Lp. 9, No. 4 (1854) 12: Ins. Br. Lp. Tin., 27 (1854) 13; Blabophanes monachella, H.-S. Schm. Eur., V., 79, Index, p. 29 (1856) 14; Tinea monachella, Koch. Schm. S. W. Deutschl., 376 (1856)<sup>15</sup>; Stn. Mn., II., 290 (1859)<sup>16</sup>; Stgr. and Wkr., Cat. Lp. Eur., 106, No. 1210 (1861) 17; Wkr., Cat. Lp. Ins. B. M., XXVIII., 465 (1863) 18; Tinea longella, Wkr., Cat. Lp. Ins. B. M., XXVIII., 479 (1863)19; Tinea monachella, de Graaf, Tijd. v. Ent., IX., 44 (1866) 20; Rssl., Nass. Nat. JB., XIX.-XX., 315 (= Verz. Schm. Nassau., 215), No. 1290 (1866) 21; Blabophanes monachella, Hein. Schm. Deutsch. Tin. (I.) 39 (1870) 22; Stgr. and Wk., Cat. Lp. Eur. 269, No. 1369 (1871)<sup>23</sup>; Blabophanes longella, Btl., Ann. and Mag. N. H. (5 s.), VII., 396-7 (1881) 24; Wlsm., Tr. Ent. Soc. Lond., 1881, 243-425; Blabophanes monachella, Snell., Vlind. Ned. Micr. 457-8 (1882) <sup>26</sup>; Meyr., Ent. Mo. Mag., XX., 36 (1883)<sup>27</sup>; Sorh. Kleinschm., Mark Brndbg., 143-4 (1886) 28; Blabophanes longella, Moore, Lp. Ceyl., III., 503, Pl. 209, 1 (1887) 29; Swinh. and Cotes, Cat. Moths Ind., 702, No. 4790 (1889) 30; Wlsm., Tr. Ent. Soc. Lond., 1891, 87<sup>31</sup>; Blabophanes monachella, Wlsm., Tr. Ent. Soc. Lond., 1891, 87<sup>32</sup>; Meyr., Tr. Ent. Soc. Lond., 1894, 2733; Monopis monachella, Meyr., HB., Br. Lp., 785 (1895)34.

Larva—among rubbish,<sup>11, 28</sup>; in birds' nests (Bütt-ner)<sup>28</sup>; in skins<sup>25</sup>.

Hab. Europe—V., 7, 8, 11, 13, 15-6, 21-2; VI., 15, 20, 22, 26, 28; VII., 11, 26; VIII., 7, 11, 13, 15-6, 22, 26, 28; IX., 26, 28; Germany, 1, 2, 4, 6, 7, 11, 14, 15, 21-3, 28; Austria, 6, 11, 14, 23; Holland, 20, 26; England, 8, 9, 11-16, 23-4. India—N. India, 19, 24, 25; Nilghiris, 30; Burmah—Koni, 33; Ceylon, 29, 30. Africa—Gambia

(Bathurst)<sup>31-2</sup>. XI.-XII.,<sup>32</sup>; French Congo (Kangwé, Ogowé River—Rev. A. C. Good); Natal (Spring Vale)<sup>24, 25</sup>; II.,<sup>25</sup>; Zululand,<sup>31</sup>. HAWAIIAN Is. (Honolulu)<sup>24, 27, 33-4</sup>.

When recording monachella as new to the African fauna (l. c., No. 32), I expressed the opinion that longella was probably only a variety, and Meyrick (l. c. No. 33) sunk longella as a synonym. The acquisition of further specimens confirms the opinion that these two forms cannot be rightly separated. I am not aware that the variety longella occurs in Europe, but the ordinary form is certainly met with in other localities, from which I have received it (e. g., India, Africa, and Ceylon), but is apparently not found in the Hawaiian Island, whence I have only received longella. It seems extremely probable that the first description of this species is that of Fabricius, under the name of Alucita mediella (l. c., No. 1). Stainton drew attention to this with a "?" (l. c., Nos. 9, 12, 13), and Herrich-Schäffer endorsed his opinion (Schm. Eur. V., Index, p. 29), while Werneburg, Beitr. Schm. I., 489, 591 (1864), regarded it as a variety, or as a worn specimen of Gracilaria alchimiella, Sc., to which it seems to me impossible that the description could apply. I hesitate to adopt the name mediella, F. (nec Hb.); although if this insect were intended it must undoubtedly have priority, and for the present I prefer to retain it as a probable synonym with a "?", but not without hope that some further evidence may be obtainable to throw light upon the subject. I think however that the description could fairly apply to a worn specimen of that form in which the head assumes a decidedly yellowish colour.

## SCALIDOMIA, WISM.

Scalidomia hirsutella, Wlsm.

Psoricoptera (?) hirsutella, Wlsm., Tr. Ent. Soc. Lond., 1881, 261, Pl. XII., 291.

Hab. Gambia—Bathurst, VIII. (Sir G. Carter); French Congo—Kangwé, Ogowé River (Rev. A. C. Good); Natal <sup>1</sup>.

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#### TIQUADRA, Wkr.

Tiquadra lichenea, sp. n. (Pl. III., fig. 26.)

Antennæ fawn-brown. Palpi, second joint with a loose projecting tuft beneath, apical joint of about equal length, erect, also thickly clothed; fawn-brown. Head and thorax fawn-brown, the latter pale greenish posteriorly. Forewings very hirsute, with patches of upstanding scales, all the margins with rough cilia, except on the basal third; pale bluish green with spots and illdefined cross-streaks of raised coarse hair-like fawn-brown scales, giving a somewhat reticulated appearance; of these some at the end of the disc, and others above and about the outer third of the fold, are more conspicuously raised; the outer half of the costa, which is very roughly fringed, is distinctly chestnut-brown, and this colour extends narrowly towards the base, the termen also has some chestnut-brown scales, but the majority of the cilia are dirty whitish. Underside fawn-ochreous. Exp. al., 24 mm. Hindwings and cilia fawn-ochreous. Underside the same. Abdomen fawnochreous. Legs slightly paler than the abdomen.

Type. 3.

Hab. French Congo—Kangwé, Ogowé River (Rev. A. C. Good); unique.

An interesting species allied to goochii, Wlsm.

#### ADELINÆ.

#### NEMATOIS, Hb.

Nematois parrella, Wkr. (Pl. III., fig. 27.)

Nematois parvella, Wkr., Cat. Lep. Ins. B.M., XXVIII., 504 (1863)<sup>1</sup>.

Antennæ three times as long as the forewings; cinereous. Palpi almost obsolete. Head cinereous, with some metallic scales. Thorax purplish, with metallic scales. Forewings narrow at the base, widened outwardly, costa depressed to the apex; purplish cinereous, richly studded with brassy metallic scales, strongly iridescent in different lights, with three yellowish ochreous patches: the first on the dorsal half at the base; the second triangular, narrowly margined with black scales, extending inwards from the costal margin about the middle to the fold; the third lying beyond the end of the cell, occupying the middle of the apical portion of the wing, and produced narrowly inwards and upwards to the com-

mencement of the costal cilia, a few blackish scales lying around its margins; a line of blackish scales crosses the wing obliquely inwards from the costal to the dorsal margin near the base; cilia iridescent, brassy, with some greenish scales below the apex. Exp. al., 16 mm. Hindwings cupreous, with shining brassy cilia. Abdomen cupreous. Legs cinereous, with rather long hair-scales on the tibiæ.

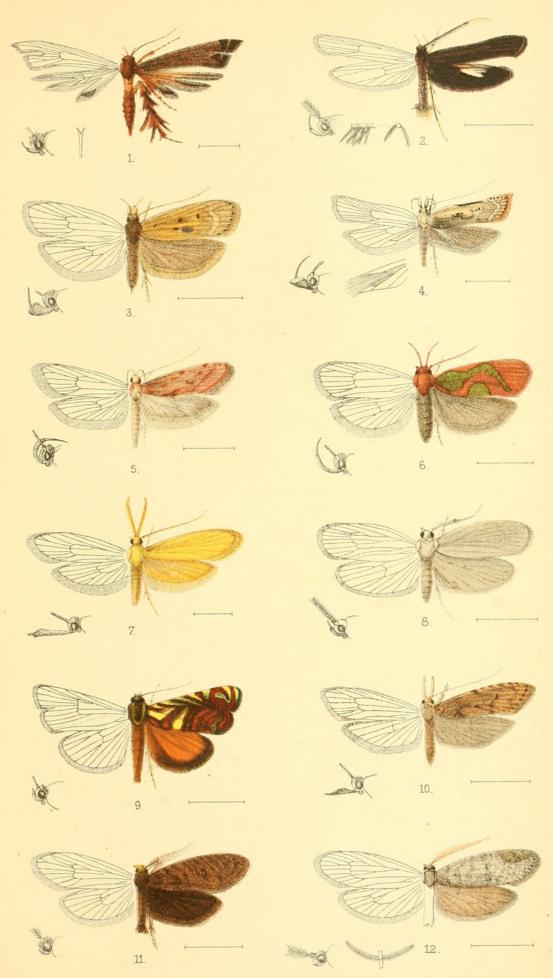
Hab. Sierra Leone<sup>1</sup>, 11.V.—VI. (Dr. Clements); French Congo—Kangwé, Ogowé River (Rev. A. C. Good).

I described this species as new before identifying it as parvella, Wkr., and it may be well to publish my description, as Walker's is hardly precise enough to distinguish it from allied forms occurring in the Malay Archipelago.

EXPLANATION OF PLATES II. AND III. [See Explanation facing the Plates.]

# EXPLANATION OF PLATE II.

				PA	GE
Fig.	1.	Crocydoscelus ferrugineum, Wlsm., & . (With head, and bifid scale.)			33
	2.	Ptilothyris purpurea, Wlsm., & (With head, and joints of antennæ enlar side-view and section.)	· ged-		36
	3.	Epicharma nothriforme, Wlsm., $Q$ . (With head.)			37
	4.	Pappophorus eurynotus, Wlsm., 3			38
		(With head, and fold in hindwing containing pencil enlarged.)	g hair	r-	
	5.	Orygocera carnicolor, Wlsm., & (With head.)			40
	6.	Theatrocopia roseoviridis, Wlsm., ♀ (With head.)			41
	7.	Pseudoprotasis canariella, Wlsm., & (With head.)			43
	8.	Eremothyris hollandi, Wlsm., 3 (With head.)			46
	9.	Idiothauma africanum, Wlsm., ♀ (With head.)	,	,	48
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	11.	Eccompsoctena secundella, Wlsm., 3 (With head.)			59
	12.	Mesopolia inconspicua, Wlsm., & (With head, and joint of antenna enlarged.)			60

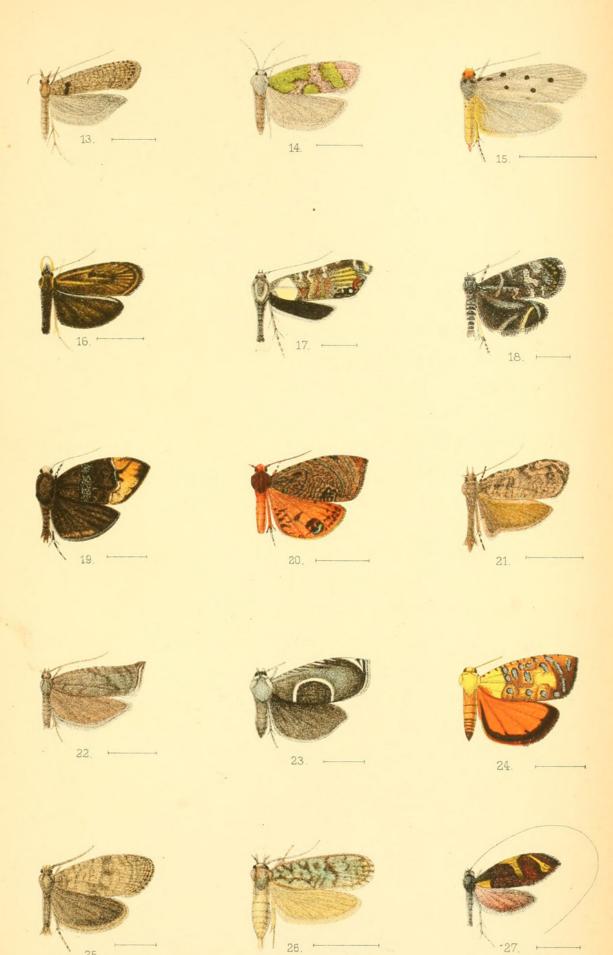


Jno Hartley Durrant del A.J. Wendel lith.

P.W.M.Trap Chromo.

# EXPLANATION OF PLATE III.

						PA	GE
Fig.	13.	Ypsolophus basistriatus, Wlsm., &					39
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25.

P.VIM.Trap Chromo.



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. 1897. "II. Western Equatorial African Micro-lepidoptera." *Transactions of the Entomological Society of London* 1897, 33–67.

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