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XXXVIII.—Descriptions of new species of Pyralidæ of the subfamily Pyraustinæ

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broader than long. Abdomen elongate, almost parallel to segment 7. Tube about 0·7 the length of the head. Abdominal spines pointed.

Nearest *T. femoralis*, Moulton, from which it may be distinguished by the shorter and more transverse prothorax, the relative lengths of the distal antennal joints, the shorter tube, and the colour of the fore-tibia and tube.

Hab. WEST AFRICA: Sierra Leone.

Numerous dried specimens in the British Museum.

XXXVIII.—*Descriptions of new Species of Pyralidæ of the Subfamily Pyraustinæ.* By Sir GEORGE F. HAMPSON, Bart., F.Z.S., &c.

[Continued from p. 38.]

(7 b) *Tegostoma confluentalis*, sp. n.

♀. Head, thorax, and abdomen white tinged with pale brown. Fore wing reddish brown; the base suffused with white; the costal edge white; an oblique white medial band, straight from costa to vein 1, then curved outwards and joining at inner margin the rather strong, obliquely curved, yellowish-white postmedial line; termen narrowly white; cilia white. Hind wing white slightly tinged with brown.

Hab. EGYPT (*Fortescue*), 1 ♀ type. *Exp.* 26 mm.

(8 a) *Tegostoma anæmica*, sp. n.

♂. Head, thorax, and abdomen whitish tinged with pale red-brown. Fore wing pale red-brown; an oblique yellowish-white postmedial band defined on outer side by red-brown. Hind wing pale red-brown.

Hab. BALUCHISTAN, Mekran Coast, Ormara (*Cumming*), 1 ♂ type. *Exp.* 12 mm.

(8 a) *Nœctuelia tristrigalis*, sp. n.

Black; fore coxæ and mid femora with white streaks; abdomen with the ventral surface white except at extremity; anal tuft white. Fore wing with orange-yellow patch from base extending below costa to beyond middle and to tornus, leaving the costa and inner margin narrowly black, its outer

edge straight, oblique, the subcostal and median nervures and vein 1 streaked with black. Hind wing uniform black, the underside somewhat brown.

Hab. BRAZIL, Castro Paraña, 1 ♂ type, type ♀ in Coll. Schaus. *Exp.* 28 mm.

(9 a) *Noctuelia auranticeps*, sp. n.

♂. Head and tegulæ orange, the palpi at tips, frons, and antennæ black; thorax and abdomen glossy blackish brown, the latter with the genital tufts whitish. Fore wing brown with a faint olive tinge, the veins blackish. Hind wing black-brown slightly glossed with silvery blue; the underside more strongly suffused with silvery blue.

Hab. PERU, Pucuzo, 2 ♂ type. *Exp.* 28 mm.

(10 a) *Noctuelia mesozonalis*, sp. n.

♀. Palpi orange, brown at tips; frons and antennæ brown; vertex of head and base of tegulæ orange; thorax brown; pectus and legs pale yellow, the fore tibiæ with fuscous bands at extremity; abdomen dorsally brown, with orange sides and pale yellow ventral surface, the extremity brown. Fore wing red-brown with oblique pale yellow medial band expanding somewhat towards costa. Hind wing orange with broad brown terminal band expanding somewhat at discal fold and narrowing towards tornus.

Hab. ARGENTINA, Florenzia, Gran Chaco (*Wagner*), 1 ♀ type. *Exp.* 22 mm.

(17 a) *Noctuelia annuliferalis*, sp. n.

♂. White; head tinged with red-brown; palpi dark brown, white below; tegulæ with brown line at base; patagia with brown bars; legs tinged with brown; abdomen with diffused dark brown segmental lines. Fore wing yellowish white, with red-brown markings filled in with pure white; a brown point below base of cell and oblique striga from base of costa conjoined by brown suffusion on costa to the brown outline of two conjoined antemedial white spots in and below the cell, the inner rather triangular, the outer round, and each connected with inner margin by a brown line; a rounded white spot defined by brown in end of cell and a quadrate spot below end of cell connected with the inner margin by an oblique brown line; the veins beyond the cell streaked with brown; a conical postmedial white patch defined by brown from costa to vein 4, its inner defining line

not reaching costa, but bent round to the spots in end of cell, a rounded spot below and beyond it between veins 5 and 2, and a lunulate spot nearer base in submedian interspace; beyond the conical and rounded marks are six small white spots in the interspaces defined by brown; a fine brown terminal line; cilia pure white with three small brown spots at middle. Hind wing white, the termen tinged with yellow; a brown medial line from below costa to vein 1, forming a fork in and just below end of cell; postmedial line strongly excurved between veins 5 and 2 and ending on termen at vein 1, where it is rather irregular, and with a brown bar across its sinus; a minutely waved subterminal line, slightly excurved between veins 5 and 2, where it terminates; a fine brown terminal line; cilia pure white, with series of small brown spots from apex to vein 2.

Hab. TRANSVAAL, Pretoria (*Janse*), 1 ♀; BASUTOLAND, Masite (*Weigall*), 1 ♂ type; C. COLONY, Kokstad (*Mrs. Pringle*), 1 ♂. *Exp.* 26 mm.

(17 b) *Noctuella albidalis*, sp. n.

♀. White. Fore wing with the costal area faintly tinged with brown to the postmedial line; a slight medial rufous striga above vein 1; postmedial line represented by an oblique rufous line from costa to vein 7, then a faint line with a few dark scales on it from vein 6 nearer termen to vein 1, oblique and slightly sinuous below vein 4, with a faint rather diffused rufous line beyond it from vein 3 to inner margin; a rather diffused, minutely waved, rufous subterminal line, indistinct below vein 4; a fine black terminal line; cilia with a slight rufous line through them. Hind wing with the terminal area tinged with brown; a fine black terminal line except towards tornus; cilia with a faint brown line near base, the tips tinged with brown at apex and submedian interspace.

Hab. PERSIAN GULF, Fao (*Cumming*), 1 ♀ type. *Exp.* 20 mm.

GENUS STENOPTYCHA.

	Type.
<i>Stenoptycha</i> , Zell. Stett. ent. Zeit. 1863, p. 154	<i>cælodactyla</i> .
<i>Atomopteryx</i> , Wlsm. Ent. Mo. Mag. xxvii. p. 216 (1891)	<i>doeri</i> .

Hind wing with veins 4, 5 coincident, arising from the cell or stalked with vein 3.

- A. Fore wing with semicircular postmedial dark mark below costa.
 - a. Fore wing with the semicircular mark oblique and produced at outer extremity *erschhoffiana*.

- b.* Fore wing with the semicircular mark not oblique or produced at outer extremity.
a'. Fore wing with the subterminal line obtusely angled outwards below apex.
*a*². Fore wing with the ground-colour bright rufous *cælodactyla*.
*b*². Fore wing with the ground-colour purplish red-brown..... *peruviana*.
b'. Fore wing with the subterminal line acutely angled outwards below apex *incalis*.
B. Fore wing without semicircular postmedial dark mark below costa.
a. Fore wing with the subterminal line very acutely angled outwards below apex, then sharply bent inwards..... *serpentifera*.
b. Fore wing with the subterminal line less acutely angled outwards below apex, then incurved *pterophoralis*.
c. Fore wing with the subterminal line evenly and obliquely curved below the angle below apex .. *doeri*.

(1) *Stenoptycha erschoffiana*, Zell. Hor. Ent. Soc. Ross. xiii. p. 457, pl. vi. fig. 159 (1877).

Hab. COLOMBIA.

(2) *Stenoptycha cælodactyla*, Zell. Stett. ent. Zeit. 1863, p. 154, pl. ii. fig. 12.

Stenoptycha lindigi, Feld. Reis. Nov. pl. cxl. fig. 61 (1874).

Stenoptycha zelleri, Butl. Trans. Ent. Soc. 1883, p. 57.

Agathodes dubitalis, Maasen, Stübel's Reise, p. 170, pl. ix. fig. 21 (1890).

Hab. MEXICO ; COSTA RICA ; COLOMBIA ; ECUADOR ; CHILI.

(3) *Stenoptycha peruviana*, Zell. Hor. Ent. Soc. Ross. xiii. p. 457 (1877).

Hab. PERU ; ARGENTINA.

(4) *Stenoptycha incalis*, sp. n.

♂. Head, thorax, and abdomen purplish rufous mixed with some dark brown ; antennæ brownish ringed with white, whitish towards tips ; fore tibiæ with blackish band at extremity, the tarsi white with black band at extremity of first joint ; hind tibiæ and tarsi white ; abdomen with minute oblique subdorsal white streaks on first segment and small subdorsal blackish spots on medial segments. Fore wing purplish rufous slightly irrorated and in parts suffused with brown ; a slight dark antemedial shade on costal area and minute tuft of raised blackish scales defined by a white

annulus on inner area; the discal fold thinly scaled from before end of cell to termen, some whitish scales above it in end of cell; a rather semicircular whitish mark from below end of cell to inner margin; a hoop-shaped black mark below the costa beyond end of cell; some oblique brown striæ from apical part of costa; subterminal line indistinct, dark, slightly defined on outer side by whitish, angled outwards below costa, then incurved to vein 4, where it is angled outwards, then oblique and very minutely waved to above inner margin; a narrow terminal dark band slightly defined on inner side by a whitish line; cilia brown, white at tips towards tornus. Hind wing semihyaline white; the veins towards end of cell brownish; a fine dark terminal line expanding into a slight patch at vein 2 and emitting a short streak on extremity of vein 1; cilia with a slight dark line at middle towards apex and some brown at vein 2; the underside with the costa brown.

Hab. PERU, Cuzco Mts. (*Garlepp*), 1 ♂ type. *Exp.* 24 mm.

(5) *Stenoptycha serpentifera*, sp. n.

Head, thorax, and abdomen purplish rufous mixed with some dark brown; antennæ slightly ringed with blackish towards base, whitish towards tips; fore tibiæ with dark band at extremity, the hind tibiæ and the tarsi whitish; abdomen with whitish dorsal patch at base, the medial segments with subdorsal blackish spots. Fore wing purplish rufous irrorated with blackish; an antemedial black striga from costa and rather triangular dark shade on inner area; a brown spot defined by blackish in middle of cell, its upper extremity produced; a medial black line defined on outer side by whitish from cell to inner margin, acutely angled outwards in submedian fold; the discal fold thinly scaled from middle of cell to near termen; an oblique brown band defined by blackish from below costa at end of cell to submedian fold, its upper extremity somewhat produced on inner and outer sides; subterminal line blackish slightly defined on outer side by whitish except towards costa, acutely angled outwards below costa, then strongly bent inwards and slightly angled outwards at vein 4, at submedian fold curving inwards and joining the oblique band; some slight dark spots on apical part of costa; a series of black striæ slightly defined on inner side by white before termen; cilia brown, white at tips towards tornus. Hind wing pale brown, the inner area whitish, with three oblique dark bars; a small dark postmedial spot on vein 2 with

some dark irrorations before and beyond it; cilia white with a brown line near base from apex to vein 2 and intersected with brown at tips at veins 3 and 5.

Hab. BAHAMAS, Nassau (*Sir G. Carter, Bonhote*), 4 ♀ type; CUBA, Santiago (*Schaus*), 1 ♀, Matanzas (*Schaus*), 1 ♂. *Exp.* 16-20 mm.

(6) *Stenoptycha pterophoralis*, Wlk. xxxiv. 1340 (1865).

Hab. BAHAMAS; JAMAICA; CUBA; ST. DOMINGO; ANTIGUA; COLOMBIA; BR. GUIANA.

(7) *Stenoptycha doeri*, Wlsm. Ent. Mo. Mag. xxvii. p. 216 (1891), and Nov. Lep. pl. xii. fig. 1.

Hab. MEXICO; COLOMBIA; BOLIVIA; S. BRAZIL.

Auctorum.

Stenoptycha unicolor, Hering, Stett. ent. Zeit. lxvii. p. 147 (1906).

PERU.

GENUS LINEODES.

	Type.
<i>Lineodes</i> , Guen. Delt. & Pyr. p. 234 (1854)	<i>hieroglyphalis</i> .
<i>Scoptonoma</i> , Zell. Verh. zool.-bot. Ges. Wien, xxiii. p. 328 (1873)	<i>integra</i> .

- A. Hind wing with comet-shaped brown discoidal mark defined by black.
 - a. Hind wing hyaline except the terminal area.
 - a'. Ground-colour of fore wing and terminal area of hind wing bright red-brown *hieroglyphalis*.
 - b'. Ground-colour of fore wing and terminal area of hind wing dull reddish brown *convolutalis*.
 - b. Hind wing brown, with a hyaline bar beyond the discoidal mark *peterseni*.
- B. Hind wing with small brown spots defined by black at upper and lower angles of cell.
 - a. Hind wing hyaline, the postmedial line well separated from the lower discoidal spot *tridentalis*.
 - b. Hind wing tinged with brown, the postmedial line connected with the lower discoidal spot *encystalis*.
- C. Hind wing with brown annulus defined by black and some black irroration in centre at lower angle of cell *latipennis*.
- D. Hind wing without brown discoidal marks defined by black.
 - Hind wing with short curved black streak below vein 2 near its base.
 - Fore wing with triangular white mark in end of cell.

- a*². Fore wing with the triangular mark in end of cell defined by black.
*a*³. Fore wing with the triangular mark in end of cell produced at lower extremity *diunalis*.
*b*³. Fore wing with the triangular mark in end of cell not produced at lower extremity *tipuloides*.
*b*². Fore wing with the triangular mark in end of cell not defined by black *hamulalis*.
b'. Fore wing with curved white fascia defined by black in lower extremity of cell *leucostrigalis*.
b. Hind wing without black streak below vein 2.
a'. Fore wing with the subterminal line bent inwards at vein 3 and not forming a sinus below that point.
*a*². Fore wing with curved white streak defined by black in lower extremity of cell *integra*.
*b*². Fore wing with triangular white mark defined by black in end of cell.
*a*³. Fore wing with the triangular mark in end of cell produced at lower extremity *interrupta*.
*b*³. Fore wing with the triangular mark in end of cell not produced at lower extremity *contortalis*.
b'. Fore wing with the subterminal line forming a sinus below vein 3.
*a*². Fore wing with the sinus of the postmedial line short and broad.
*a*³. Fore wing with curved white fascia defined by black in lower extremity of cell *mesodonta*.
*b*³. Fore wing with conical white mark slightly defined by blackish in end of cell *aztecalis*.
*c*³. Fore wing with diffused whitish mark not defined by black in end of cell.
*a*⁴. Fore wing grey-brown strongly irrorated with black *subextincta*.
*b*⁴. Fore wing ochreous tinged with rufous and slightly irrorated with black *ochrea*.
*b*². Fore wing with the sinus of the subterminal line long and narrow.
*a*³. Fore wing with triangular white mark defined by black in end of cell *fontella*.
*b*³. Fore wing with conical white mark irrorated with brown in end of cell.
*a*⁴. Fore wing pale red-brown *undulata*.
*b*⁴. Fore wing dark brown irrorated with blackish.
*a*⁵. Fore wing with round dark spot in middle of cell defined by a Y-shaped whitish band *cyclophora*.
*b*⁵. Fore wing with the dark spot in middle of cell defined by a small white spot on inner side and irregular band on outer *serpularis*.
c'. Fore wing without subterminal line *polychroalis*.

(1) *Lineodes hieroglyphalis*, Guen. Delt. & Pyr. p. 235, pl. iii. fig. 6 (1854).

Hab. BOLIVIA; S. BRAZIL.

(2) *Lineodes convolutalis*, sp. n.

Lineodes hieroglyphalis, Druce, Biol. Centr.-Am., Het. ii. p. 264 (nec Guen.).

♀. Head, thorax, and abdomen red-brown mixed with some dark brown; palpi with some whitish in front; frons with lateral white lines. Fore wing pale red-brown irrorated with dark brown; an antemedial whitish patch from cell to inner margin, its outer edge angled outwards in submedian fold; an oblique wedge-shaped white patch defined by black from middle of costa to median nervure; a triangular white patch defined by black in end of cell, its lower edge concave, its inner extremity conjoined to an oblique white mark below the cell, with its outer edge angled on vein 2, and with an oblique black line before its outer edge extending to inner margin; a small white spot on costa above end of cell; subterminal line black defined on each side by white to discal fold, then on outer side only, acutely angled outwards below apex, then incurved, and at submedian fold curving inwards and upwards to the outer extremity of the triangular patch in end of cell; two minute white spots on costa towards apex; a white line before termen from below apex to above vein 4 which is defined above and below by white streaks extending to the subterminal line; a curved white striga above tornus confluent with the sinus of the subterminal line. Hind wing semihyaline whitish, the inner area tinged with brown; a comet-shaped brown discoidal mark defined by blackish, its head turned downwards and extending to submedian fold; postmedial line black slightly defined on outer side by whitish, oblique, ending at vein 2, the area beyond it fuscous to the slightly sinuous white subterminal line, defined on outer side by blackish and also ending at vein 2; a terminal ochreous-brown band to vein 2; cilia whitish, with a black line through them.

Hab. COSTA RICA, Irazu (*Rogers*), 2 ♀ type, Candelaria Mts. (*Underwood*), 1 ♀, Godman-Salvin Coll. *Exp.* 22 mm.

(3) *Lineodes peterseni*, sp. n., Wlsm.

Scoptonoma peterseni, Z. MS., Meyr. Tr. Ent. Soc. Lond. 1886, 2 (1886) LN.

Antennæ cinereous, spotted with fuscous. Palpi cinereous, with a dark brown stripe externally. Head chestnut-brown, interspersed with a few whitish scales; a dark brown shade, margined with whitish, projects forward from the antennæ. Thorax brownish fuscous, the patagia and tegulæ mottled

with cinereous. Fore wings brown, tinged with ferruginous toward the base of the dorsum, much mottled with darker shades, and with several curved and angulated dark brownish-fuscous streaks margined with white; the first, within the basal fourth, narrowly margined with white on both sides; the second, about the middle of the wing, angulate outward, margined widely on the inner and narrowly on the outer side with white; above these are two lunate semitransparent white patches, the first small, communicating narrowly with the second, which is larger and dark-margined; beyond this conspicuous white patch is an inwardly curved dark fuscous streak, narrowly pale-margined; this is followed by a more important curved and angulate line of the same colour, its acute outer angle pointing toward the apex and reverting to the costa; this line is also margined with white; beneath this, and extending nearly to the apex, is a dark quadrate patch containing two pale brownish lines, margined on its lower and outer edge by a narrow white line, sharply angulate inward above the middle of the termen, parallel to which it runs thence nearly to the tornus; three or four costal streaks, toward the apex, appear to continue the ornamentation produced by some conspicuous dark interruptions in the pale cilia of the termen. *Exp. al.* 21-22 mm. Hind wings brownish fuscous, with white and dark fuscous spots and lines; about the middle of the wing is a dark fuscous spot, preceded by a small pale space, and followed by a larger one, around the edge of which, except at its costal extremity, runs a dark fuscous line margined with white; a dark fuscous line along the termen is preceded by a narrow white line and followed by a darker fuscous line in the dirty whitish cilia. Abdomen pale brownish, with darker lateral lines. Legs brownish; the anterior tibiæ fringed at the end with fuscous scales.

Type ♂ (101631) Mus. Wlsm. (*Zell. Coll.*) B.M. [*PT.* (101643) Mus. Meyr.].

Hab. COLOMBIA (*Petersen*); Jiminez, 1600 ft., III. 1907 (*W. F. H. Rosenberg*). Eight specimens.

Seven specimens of this species were in the Zeller Collection labelled "*Scoptonoma peterseni*, Z. lit. Columbia"; one of these specimens (101643) is referred to by Meyrick (*Tr. Ent. Soc. Lond.* 1886, 2).

(4) *Lineodes tridentalis*, sp. n.

♂. Head, thorax, and abdomen reddish brown mixed with some white and blackish; palpi with black mark on first joint, the second joint black above, the third joint black;

frons with black streaks at sides; antennæ with the shaft ringed with blackish towards base; fore tibiæ blackish on inner side, the hind tibiæ blackish at extremity, the tarsi ochreous white; abdomen with blackish segmental lines except at base. Fore wing rufous slightly suffused in parts with fuscous; an antemedial white spot in submedian interspace, with black striæ at middle and on outer edge, an oblique wedge-shaped white spot defined at sides by black beyond it in cell; a triangular white patch defined by black in end of cell, its lower edge somewhat concave, its inner extremity conjoined to an oblique bidentate white spot defined by black in submedian interspace, defined by white on outer side with a black point beyond its upper tooth and a black striga from it to inner margin; two whitish points on postmedial part of costa; subterminal line black, defined on each side by white towards costa, acutely angled outwards below apex, then incurved, excurved at middle, and at submedian fold retracted upwards to the outer extremity of the triangular patch in end of cell; a black line before termen defined on inner side by a narrow white band edged with black from just below costa to discal fold, where it expands on inner side into a spot, then slightly defined on inner side by white; a fine minutely waved black terminal line not extending to apex; cilia white, with black marks at apex, middle, and tornus. Hind wing semihyaline whitish, the inner area tinged with brown; slight brownish spots at upper angle of cell and below lower angle, the latter with black striga on its outer edge; a sinuous blackish subterminal line from costa to vein 2; the terminal area brown except towards tornus, with a sinuous blackish line defined on inner side by whitish from costa to vein 2; cilia white, with a black line near base; the underside with the costa suffused with red-brown, black spots on subcostal nervure at middle and end of cell, the subterminal line strong and black from costa to discal fold.

Hab. BR. GUIANA (*Rodway*), 1 ♂ type; BOLIVIA, 1 ♂.
Exp. 18-20 mm.

(5) *Lineodes encystalis*, sp. n.

♀. Head, thorax, and abdomen ochreous mixed with red-brown; palpi yellowish, with some black scales on first joint, the second joint black behind, the third joint black; frons with black and white streaks at sides; abdomen with lateral tuft of blackish scales except towards base. Fore wing yellowish suffused with red-brown and slightly irrorated with blackish; an antemedial white bar on inner area defined

at sides by black, an oblique white bar defined at sides by black beyond it from costa; a triangular white patch defined by black in end of cell, its lower edge rather concave, its inner extremity conjoined to a bidentate white mark in submedian interspace, with a bidentate black line near its outer edge and an oblique black striga from it to inner margin; two white points on postmedial part of costa; subterminal line black, defined on each side by white to discal fold, acutely angled outwards below apex, then incurved, slightly angled outwards at vein 4, and at vein 3 bent inwards and upwards to the outer extremity of the triangular white patch in end of cell; a minutely waved black line defined on inner side by white before termen from below apex to discal fold, where it expands into a small wedge-shaped spot, and a fine sinuous white line from vein 3 to tornus; cilia white chequered with black towards apex, at middle, and at tornus. Hind wing whitish suffused with brown; a small blackish annulus with blackish point in centre below end of cell; a slight sinuous, oblique, blackish, postmedial line from costa to submedian fold; traces of a sinuous whitish line before termen from costa to submedian fold; cilia white, with a black line through them; the underside with patches of blackish scales on subcostal nervure at middle and end of cell, and an oblique, rather diffused, black postmedial line from costa to discal fold.

Hab. GRENADA, Mount Gay (*H. H. Smith*), 3 ♀ type; ST. VINCENT (*H. H. Smith*), 1 ♀. *Exp.* 18 mm.

(6 a) *Lineodes latipennis*, sp. n., Wlsm.

Antennæ cinereous. Palpi cinereous, mottled externally with dark brown scales. Head ferruginous brown; face dirty whitish, shaded with ferruginous brown, a dark brown spot between the eyes. Thorax ferruginous, mottled anteriorly and laterally with dark brown, and posteriorly with dark brown and dirty whitish scales. Fore wings ferruginous brown, streaked and mottled with dark fuscous scales, with a pale basal patch and two semitransparent quadrate costal spots, and some white costal streaks before the apex; at the base, occupying almost one-third of the dorsum, but narrowed towards the costa, is a creamy white basal patch with some admixture of pale ferruginous scales, containing two dark spots—one dorsal, at the extreme base, the other subcostal, slightly removed from the base; on the costa, at about one-third, is a slightly oblique, dark-margined, semitransparent, iridescent, pearly white patch,

followed by a larger quadrate patch of the same colour on the middle of the costa, also bordered by a narrow dark fuscous line which is continued beneath along the cubitus; on the costa toward the apex are three oblique white streaks, the first and largest containing a dark fuscous line, sharply angulate outwardly toward the apex, and continued in an undulating course, nearly parallel with the termen, until it approaches the tornus, where it is bent backward and upward toward the costa, slightly below which it is connected with the outer border of the quadrate white spot; before this line the dorsal half of the wing is much clouded with dark fuscous, and beyond it an elongate dark cloud precedes the upper half of the termen, on which are three white streaks running through the ferruginous darkly mottled cilia. *Exp. al.* 17 mm. Hind wings similar to the fore wings in ornamentation and colouring; with a quadrate, semi-transparent, iridescent, pearly white patch about the middle of the wing in the basal half, produced narrowly upward toward the costa, margined on either side by dark fuscous lines, and followed by dark fuscous shading, interrupted in the middle by the paler ground-colour, through which run two transverse fuscous lines; the middle of the dorsum is shaded with dark fuscous, a whitish streak running through the ferruginous cilia below the apex. Abdomen dirty whitish, mottled at the base and sides with dark fuscous scales. Legs: posterior tibiæ nearly three times the length of the femora, cinereous, the tarsi dirty whitish; anterior tibiæ and tarsi white, stained with pale ferruginous, a conspicuous fringe of mottled fuscous scales at the end of the tibiæ.

Type ♀ (101642) Mus. Wlsm. (*Zell. Coll.*). B.M.

Hab. COLOMBIA (*Petersen*). Unique.

(7) *Lineodes dianalis*, sp. n.

Red-brown; palpi pale at base, blackish at tips; frons with lateral white streaks; patagia and metathorax with slight black spots; abdomen with dorsal and lateral series of blackish points and sublateral fuscous streaks. Fore wing slightly suffused with blackish; subbasal black points on costa and in cell; antemedial line black, defined by white on inner side, acutely angled outwards on median nervure, and very oblique towards costa and inner margin; an oblique white striga on costa above end of cell; postmedial line black, defined by yellowish white on outer side and also on inner side below the cell, obliquely incurved from costa to

vein 5, where it is very acutely angled, then retracted to upper angle of cell, oblique to origin of vein 2, on which it is angled outwards, then oblique to inner margin; subterminal line black defined by white on outer side, very acutely angled outwards below apex, then strongly incurved to vein 5, and prominently defined by white on each side, forming a lunulate mark, oblique between veins 5 and 2, then retracted with an outward curve to the angle of post-medial line and running as a fine streak to lower angle of cell, a black patch beyond it below apex; a white line just before termen, incurved below apex, excurved at middle, then incurved; cilia black at base, white at tips. Hind wing yellowish suffused with brown, the costal area and terminal area to vein 2 red-brown; the inner margin suffused with black towards tornus; a brown discoidal spot conjoined to the costal area; an oblique slightly sinuous black postmedial line from vein 4 to submedian fold, with black striga before it below vein 2; a slightly sinuous white subterminal line; cilia black at base, white at tips.

Hab. BRAZIL, São Paulo (*Jones*), 1 ♂ type, Rio Janeiro, Tijuca (*Wagner*), 1 ♂, 1 ♀. *Exp.* 24 mm.

(8) *Lineodes tipuloides*, Wlsm. P. Z. S. 1891, p. 493.

Hab. TRINIDAD.

(9) *Lineodes hamulalis*, sp. n.

♀. Head and thorax pale grey-brown; palpi blackish; frons with black lateral streaks; abdomen pale grey-brown tinged with rufous except at base, some black irroration at sides. Fore wing pale grey-brown suffused in parts with rufous; an oblique whitish antemedial line from cell to inner margin, slightly defined at sides by blackish scales; an ill-defined whitish triangular patch in end of cell, an oblique whitish band from its inner extremity to inner margin, with a slight blackish line near its outer edge; an oblique wedge-shaped discoidal mark, defined by black except above; some small black spots on apical part of costa; subterminal line black, defined on each side by whitish to discal fold, then on outer side only, acutely angled outwards below apex, then incurved, excurved at middle, then oblique, at submedian fold forming a hook and retracted upwards to the discoidal mark, some black suffusion beyond it at discal fold before the whitish line before termen which is excurved at middle, incurved above and below middle, and with black points beyond it at discal fold and tornus. Hind wing whitish

suffused with brown; a minute blackish annulus at upper angle of cell; a minute streak below lower angle and some black striæ on inner area; traces of a sinuous blackish subterminal line; a rather punctiform black terminal line slightly defined on inner side by whitish; cilia white, with a black line through them; the underside with the costal area irrorated with black, a black spot at upper angle of cell, the subterminal line more distinct and angled inwards at discal fold.

Hab. ARGENTINA, Tucuman (*Dinelly*), 1 ♀ type. *Exp.* 24 mm.

(10) *Lineodes leucostrigalis*, sp. n.

♂. Red-brown; palpi pale, with black bars at extremity of first joint and tips; frons black at base of sides, then with lateral white streaks; pectus and legs pale; abdomen pale ochreous, with lateral red-brown fasciæ. Fore wing with the costal area pale, with two linear red-brown marks defined by black towards apex; antemedial line slight, black, defined by white on inner side below the cell, acutely angled outwards on median nervure and very oblique toward costa and inner margin; postmedial line black, arising from below costa, oblique to vein 4, where it is acutely angled, then retracted to upper angle of cell, and with curved yellowish streak below it, then oblique to origin of vein 2, on which it is acutely angled outwards, then oblique to inner margin and defined on each side by pale yellow; subterminal line black, defined on outer side by white from costa to vein 5, forming a very elongate and acute tooth outwards below apex, then very strongly incurved to vein 5 and defined by white also on inner side, again bent outwards, oblique and slightly sinuous to vein 2, then retracted to angle of postmedial line and forming a slight streak to lower angle of cell, a black patch beyond its sinus, defined by white on outer and lower sides and with fine white streaks on the two veins traversing it; a strigiform white subterminal line between veins 5 and 1, angled inwards in submedian fold; a fine black terminal line; cilia chequered black and white. Hind wing pale yellowish, the terminal area red-brown from apex to vein 1, very broad at costa and angled inwards at discal and submedian folds; a blackish patch at tornus; a brown spot at upper angle of cell; a fine oblique black postmedial line between vein 5 and submedian fold, with black striga before it below vein 2; a slightly sinuous white line just before termen from apex to submedian fold; cilia orange at base, with black medial line and white tips.

Hab. BOLIVIA, Yungas la Paz, 2 ♂ type. *Exp.* 26 mm.

- (11) *Lineodes integra*, Zell. Verh. zool.-bot. Ges. Wien, xxiii. p. 328, pl. iv. fig. 44 (1873).

Hab. U.S.A., Texas, Florida; CUBA; GRENADA.

- (12) *Lineodes interrupta*, Zell. Verh. zool.-bot. Ges. Wien, xxiii. p. 329 (1873).

Hab. U.S.A., Texas.

- (13) *Lineodes contortalis*, Guen. Delt. & Pyr. p. 236 (1854).

Hab. MEXICO; S. BRAZIL; ARGENTINA.

- (14) *Lineodes mesodonta*, sp. n.

Scoptonoma tipuloides, Wlsm. P. Z. S. 1891, p. 393 (part.).

Head and thorax purplish rufous mixed with some whitish and black; palpi with minute black streak at base of second joint and the extremity of second joint and the third joint blackish; frons whitish, with fuscous patch at middle; tarsi whitish; abdomen ochreous brown, with slight lateral black points on medial segments. Fore wing whitish suffused with red-brown; whitish streaks below base of costa and cell; a very oblique whitish antemedial bar defined at sides by black from submedian fold to inner margin; a triangular whitish mark in end of cell defined above by black, which forms an oblique black-defined tooth on discocellulars; a very oblique white mark from below end of cell to above inner margin, its upper extremity acutely angled outwards, defined by black on inner side and with a fine black line near its outer edge; subterminal line black, defined on each side by white to vein 4, then slightly by white on outer side, acutely angled outwards below apex, then incurved, excurved at middle and at submedian fold retracted upwards to the discoidal tooth, a patch of black suffusion beyond it, with white streaks on veins 7, 6 before the white line before termen, defined on outer side by blackish, at discal fold expanding on inner side into a spot, and excurved at middle; cilia white, chequered with black at apex, middle, and tornus. Hind wing semihyaline white, a black terminal line defined on inner side by white, with some brownish suffusion before it from apex to vein 2; cilia white, ochreous at base, and with black medial line to vein 2; the underside with the costa suffused with brown, a black streak in upper part of cell.

Hab. COLOMBIA (*Petersen*), 4 ♂, 1 ♀ type. *Exp.* 20-22 mm.

(15) *Lineodes aztecalis*, sp. n.

Lineodes contortalis, Druce, Biol. Centr.-Am., Het. ii. p. 264 (nec Guen.).

♀. Head, thorax, and abdomen pale brown; palpi blackish towards tips; sides of frons blackish; abdomen with small dorsal blackish spot at base. Fore wing pale greyish brown; an oblique medial black shade defined at sides by fine black lines from cell to inner margin; a discoidal spot slightly defined at sides by blackish, angled inwards above on subcostal nervure, a black point above it on costa; subterminal line black defined on outer side by whitish to vein 4, very acutely angled outwards below apex, then incurved, below vein 4 indistinct, oblique and sinuous to just above inner margin, then retracted upwards to the discoidal spot; a white line defined on each side by blackish suffusion before termen, between veins 6 and 4 strongly bidentate inwards, forming a rather diffused **W**-mark, incurved below vein 3 and ending on termen above tornus; cilia ochreous at base, with black medial line, the tips white chequered with black. Hind wing semihyaline whitish; a black terminal line defined on inner side by white, with brown suffusion before it towards costa; cilia ochreous at base, with black medial line and white tips slightly mixed with blackish; the underside with the costa brownish irrorated with black, a blackish spot at upper angle of cell.

Hab. MEXICO, Jalapa (*Trujillo*), 1 ♀ type, Godman-Salvin Coll. *Exp.* 26 mm.

(16) *Lineodes subextincta*, Wlsm. Faun. Hawaii, i. p. 470, pl. x. fig. 2 (1907).

Hab. HAWAII.

(17) *Lineodes ochrea*, Wlsm. Faun. Hawaii, i. pp. 469, 731, pl. x. fig. 1 (1907).

Hab. HAWAII.

(18) *Lineodes fontella*, sp. n., Wlsm.

Lineodes contortalis, Hmps. P. Z. S. 1899, p. 284; Dyar, N. Am. Lep. p. 394 (nec Guen.).

Antennæ whitish ochreous. Palpi whitish ochraceous, with a brownish fuscous streak along their upper sides. Head whitish ochreous, with a fuscous spot above. Thorax whitish ochreous, tinged anteriorly with fawn-brown. Fore

wings whitish ochreous, partially suffused with fawn-brown, blending to dark brownish fuscous in the more conspicuous markings, and becoming almost black in narrow lines along their edges; there are five small dark fuscous spots on the costa—one near the base, one at one-third, and a group of three on the outer third; the more conspicuous markings consist of an outwardly oblique band arising from the dorsum before the middle, nearly fading out below the costa, but thence angulate outward and tapering obliquely downward to an acute apex, pointing toward the middle of the termen—this mark is narrowly and distinctly outlined with blackish, except on the side facing the costa; between this and the termen is a curiously straggling narrow dark line, set in a pale intermission among the general brownish suffusion; commencing on the costa, at about one-seventh from the apex, this line runs very obliquely outward nearly to the apex, where it is acutely angulate—it then forms a more obtuse angle below its point of origin, whence it is continued nearly to the middle of the termen, angulate again and continued to above and before the tornus, abruptly twisted backward nearly to the projecting point of the great median shade, and again abruptly twisted and sinuate, reaching nearly to the dorsum beyond the middle, a dark brown patch lying a little beyond its inner extremity; the termen is marked throughout by a line of the whitish ground-colour, succeeded by a dark brownish fuscous line, again by a pale fawn-brown line in the basal half of the whitish ochreous cilia—all these angulate outward at the middle of the termen and ending in a dark spot at the extreme apex, from which a dark streak is continued inward and downward, terminating abruptly before reaching the zigzag line. *Exp. al.* 16–17 mm. Hind wings and cilia pale greyish ochreous, a slight fuscous submarginal suffusion toward the apex, with one or two transverse dark lines below the end of the cell, a dark line also along the base of the cilia. Abdomen whitish ochreous, a dark fawn band across its basal half. Legs whitish ochreous, with minute darker spots above at the ends of the tarsal joints.

Type ♀ (97212, *Jamaica*) Mus. Wlsm., B.M.

Hab. AMERICA, N-I-S. UNITED STATES—Florida: 1846 (*E. Doubleday*); Miami, 1897 (*W. Schaus*). WEST INDIES—Jamaica; St. Andrew: Constant Springs, 29. XII. 1904 (*Wlsm.*); Newcastle, 1898. SOUTH AMERICA—British Guiana, Rockstone, 25. IV.–9. V. (*W. J. Kaye*); Brazil, São Paulo, 1889 (*E. D. Jones*). Eight specimens.

(19) *Lineodes undulata*, sp. n., Wlsm.

Antennæ pale cinereous, faintly barred with fuscous. Palpi cinereous. Head and thorax pale cinereous. Fore wings pale cinereous, with whitish markings—slightly visible on the underside; at about one-third from the base is a very faintly indicated oblique whitish streak, nearer to the base on the dorsum than on the costa; about the middle of the wing is a rather wide whitish fascia, reaching nearly to the costa, but tending slightly outward above the middle of the wing; the central portion of this fascia is shaded with pale cinereous, and its inner margin is more clearly defined than its outer—both are sinuate; toward the apex of the wing is a curved white streak, with a dark cinereous line along its middle; this streak is clearly defined above, but is only faintly traceable below the middle of the wing—leaving the costa immediately below the apex, its direction tends downward toward the tornus; beyond this, but connected with it on the costa, is a slender undulating white line passing along the termen to the tornus; this is also more clearly defined above than below the middle of the wing—about the middle of the termen one of the undulations of this line forms a slight inverted angle; two or three dark spots occur on the outer half of the costa, and one or two near the base; cilia pale cinereous, with a fuscous line near the base. *Exp. al.* 16–21 mm. Hind wings pale fuscous, without markings; cilia pale cinereous, with a fuscous line near their base. Abdomen whitish at the base, thence cinereous, the fringes at the edges of the segments somewhat darker; anal claspers of ♂ very long, pale cinereous. Legs pale cinereous.

Type, ♂ (3264); ♀ (3093) Mus. Wlsm., B.M.

Hab. PERU, Callao, 28. I. 1882 (21. III.–31. VIII.) 1881, 5. XI. 1883 (*J. J. Walker*). Three specimens.

The median fascia is much straighter in *undulata* than in *integra* Z., *interrupta* Z., or *tipuloides* Wlsm. Commander Walker, to whom I am indebted for this species, notes that it was "taken flying at sunset in a weedy field."

(20) *Lineodes cyclophora*, sp. n.

Lineodes serpulalis, Druce, Biol. Centr.-Am., Het. ii. p. 265 (nec Led.).

Head, thorax, and abdomen red-brown; palpi with blackish streaks at sides; frons whitish, with blackish spot at middle; antennæ with whitish and brown rings towards base; hind tibiæ towards extremity and the tarsi whitish; abdomen with lateral black spots on medial segments. Fore wing red-brown slightly irrorated with blackish; a fine, oblique, waved, antemedial brown line defined on inner side

by whitish from cell to inner margin ; a whitish patch from middle of costa to median nervure, enclosing an elliptical brown spot, and with a whitish band from it to inner margin, with its sides excised at middle ; a small postmedial whitish spot on costa and slight marks towards apex ; subterminal line black, defined on each side by white to discal fold, then slightly by white on outer side only, acutely angled outwards below apex, then incurved, slightly excurved below vein 4, and ending above tornus, a blackish streak before it in discal fold and some reddish beyond it at tornus ; a fine minutely waved white line slightly defined on each side by black before termen. Hind wing whitish suffused with brown, especially in end of cell and on terminal area to submedian fold ; a fine slightly sinuous whitish line before termen from apex to submedian fold ; cilia white with a blackish line through them ; the underside whiter, the costal area irrorated with blackish, the brown spot in end of cell more distinct, a whitish subterminal line slightly defined on each side by brown lines from costa to vein 2.

Hab. MEXICO, Presidio (*Forrer*), 1 ♂ type ; BAHAMAS, Nassau (*Sir G. Carter, Bonhote*), 2 ♀. *Exp.* 20 mm.

(21) *Lineodes serpulalis*, Led. Wien. ent. Mon. 1863, p. 417, pl. xv. fig. 8.

Lineodes peridialis, Wlk. xix. 948 (1859).

Hab. PERU ; S. BRAZIL ; PARAGUAY.

(22) *Lineodes polychroalis*, sp. n.

♂. Head and thorax purplish red-brown, the metathorax with slight whitish streak ; fore coxæ and fore and mid tibiæ suffused with blackish, the tarsi whitish ; abdomen purplish red, a dorsal whitish streak on three basal segments, the medial segments blackish at sides, the anal tuft reddish ochreous. Fore wing purplish red, extending below the costa to well beyond middle and on inner area to tornus, the rest of terminal area yellow with diffused red streaks on the veins ; some diffused black on antemedial area from costa to median nervure and an oblique black line from the cell to inner margin, with a black streak beyond it in submedian fold ; a white point in middle of cell and a semihyaline white bar defined by blackish across the cell towards its extremity, an obliquely incurved white mark from the bar to vein 1, with a triangular black patch irrorated with white before it and some black beyond it ; a whitish fascia in discal fold beyond the cell and some whitish on postmedial part of costa ; an orange-yellow streak below terminal part of

vein 2; a terminal series of white striæ; cilia purplish red at base, then white, and with black tips. Hind wing semi-hyaline white; the apex with some brownish streaks below it; a small wedge-shaped yellow and purplish-red patch below extremity of vein 2; the termen with fine reddish-brown line in places; the underside with the costal area blackish towards base, purplish red towards apex.

Hab. S. PERU, Uruhuasi (*Watkins*), 1 ♂ type. *Exp.* 34 mm.

AUCTORUM.

<i>Lineodes pulchralis</i> , Guen. Delt. & Pyr. p. 235 (1854) ..	S. Brazil.
" <i>gracillalis</i> , Herr.-Schäff. Verh. Corresp.-Blatt. Regensb. xxv. p. 22 (1868)	Cuba.
" <i>multisignalis</i> , Herr.-Schäff. Verh. Corresp.-Blatt. Regensb. xxv. p. 22 (1868)	Cuba.
" <i>triangulalis</i> , Möschl. Abh. Senck. Ges. xvi. p. 305 (1890)	Porto Rico.
" <i>metagrammalis</i> , Möschl. Abh. Senck. Ges. xvi. p. 305 (1890)	Porto Rico.
" <i>albicinata</i> , Hering, Stett. ent. Zeit. lxvii. p. 151 (1906)	Brazil.
" <i>furcellata</i> , Hering, Stett. ent. Zeit. lxvii. p. 150 (1906)	Bolivia.
" <i>pulcherrima</i> , Hering, Stett. ent. Zeit. lxvii. p. 155 (1906)	Peru.

Genus PALÆODES, nov.

Proboscis well developed; palpi porrect, the second joint extending twice the length of head and fringed with hair above and below, the third well developed, naked, acuminate; maxillary palpi strongly dilated with scales; frons rounded; antennæ of male shorter than fore wing, serrate and strongly ciliated; legs long and slender, the spurs long and even. Fore wing long and narrow, the apex produced and acute, the termen excised below apex; veins 3 and 5 from close to angle of cell; 6 from below upper angle; 7, 8, 9 from angle; 10 from near angle; 11 free. Hind wing with veins 3, 4 from angle of cell; 5 from middle of disco-cellulars; 6, 7 from upper angle, 7 anastomosing shortly with 8; the apex produced; the termen sinuous, excurved at middle.

**Palæodes samealis*, sp. n.

♂. White; head, thorax, and abdomen strongly irrorated with brown; palpi brown except at base; fore legs fuscous, the tarsi ringed with brown. Fore wing strongly irrorated with brown; the basal area suffused with brown; some blackish marks on costa; an elliptical brown spot in middle

of cell, with an obscure band from it to inner margin; a dark-edged brown discoidal spot on a diffused brown band; a diffused terminal band from costa to above tornus. Hind wing irrorated with brown; an antemedial series of three points; a dark-edged discoidal brown spot with dark band from it to tornus; a diffused dark apical patch and some points on termen.

Hab. QUEENSLAND (*Barnard*). *Exp.* 16 mm. Type in Coll. Rothschild.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

April 23rd, 1913.—Dr. Aubrey Strahan, F.R.S., President, in the Chair.

The following communications were read:—

1. 'On the Fossil Flora of the Pembrokeshire Portion of the South Wales Coalfield.' By Reginald H. Goode, B.A.

Of the fifty-three determinable species of fossil plants obtained from the Pembrokeshire portion of the South Wales Coalfield, three are new species. One may be referred to *Linopteris bron-guarti* Gutb., a plant which has not with certainty been found before in Britain.

From the palæobotanical evidence it is clear that the so-called Pennant Grit' of Pembrokeshire cannot be regarded as the equivalent of the Pennant Grit of the main portion of the South Wales Coalfield: for the plants indicate that these beds are Middle Coal Measures, and do not belong to the Transition Series. The Lower Coal Series also clearly belongs to the Middle Coal Measures; and the Settling Beds, and perhaps the Falling Cliff Beds as well, lie probably at a higher horizon than the Lower Coal Series as developed farther east along the Saundersfoot coast, and even possibly higher than the Timber Vein group.

Until more plants have been obtained from the so-called 'Millstone Grit' of Pembrokeshire, it is impossible to fix definitely the horizon of these beds from the palæobotanical evidence. However, from the fossil plants obtained in the so-called 'Millstone Grit' of Monkstone Point, and in neighbouring beds belonging to the Lower Coal Series, between which there is no apparent unconformity, it is evident that these particular beds, assigned to the Millstone Grit, probably belong to the Middle Coal Measures.

When the fossil plants which have been obtained from the Pembrokeshire Coalfield are compared with those which have been recorded from the main South Wales Coalfield, it is evident that there are considerable differences in the occurrence of the species.

Thirty-two fossil plants have been obtained from the Middle Coal Measures of Pembrokeshire which have not as yet been