

mixed with the typical form, two specimens of *Goniaster equestris* occurred, one having four rays, the other six, besides the variety *abbensis*.

By the kindness of Dr. Gwyn Jeffreys, we are enabled to add the following species and varieties, which he dredged last May during a short cruise in H.M.S. 'Porcupine' off Scarborough:—

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| 1. <i>Leda minuta</i> , var. <i>brevirostris</i> . | 5. <i>Thracia convexa</i> , <i>W. Wood</i> . |
| 2. <i>Tellina balthica</i> , <i>L.</i> A valve, in apparently a semifossil state. | Young. Distinguishable with difficulty from the young of <i>T. truncata</i> or <i>T. myopsis</i> . |
| 3. — <i>calcareia</i> , <i>Chemn.</i> An imperfect valve, in the same state of preservation. | 6. <i>Panopæa plicata</i> , <i>Mont.</i> An imperfect valve. |
| 4. — <i>tenuis</i> , <i>Da Costa</i> . | 7. <i>Cerithium reticulatum</i> , <i>Da Costa</i> . |
| | 8. <i>Defrancia teres</i> , <i>Forbes</i> . |

LV.—*On a Collection of Lepidoptera from Southern Africa, with Descriptions of new Genera and Species.* By ARTHUR GARDINER BUTLER, F.L.S., F.Z.S., &c.

THE collection of the British Museum has lately been enriched, through the liberality of C. R. N. Burrows, Esq., with a series of Lepidopterous insects collected or bred by himself, chiefly at Natal. The following is a list of the species.

RHOPALOCERA.

Family 1. *Nymphalidæ*.

Subfamily *DANAINÆ*.

Genus 1. *AMAUROS*, Doubleday.

1. *Amauris echeria*, Stoll, var. *albimaculata*.

Natal.

Primaries spotted with white, as usual in Natal examples.

Subfamily *SATYRINÆ*.

Genus 2. *MELANITIS*, Fabricius.

2. *Melanitis bankia*, Fabricius, var.

Natal.

Genus 3. *MYCALESIS*, Hübner.

3. *Mycalesis evenus* ♀, Hopffer.

Natal.

Subfamily NYMPHALINÆ.

Genus 4. PHILOGNOMA, Westwood.

4. *Philognoma varanes* ♂, Fabricius.

D'Urban (March 1875).

Genus 5. JUNONIA, Hübner.

5. *Junonia clelia* ♂ ♀, Cramer.

Natal.

6. *Junonia elgiva* ♂, Hewitson.

Natal.

7. *Junonia ceryne*, Boisduval.

Natal.

8. *Junonia natalica*, Felder.

Natal.

Genus 6. SALAMIS, Boisduval.

9. *Salamis Anacardii*, Linnæus.

D'Urban (Christmas time).

Genus 7. EURALIA, Doubleday.

10. *Euralia anthedon*, Doubleday, var. *marginalis*.

D'Urban (March 1875).

The South-African representative has the black area of the secondaries confined to the outer margin, instead of running over the internal areas nearly to the median nervure.

Genus 8. ATELLA, Doubleday.

11. *Atella columbina*, Fabricius.

Natal.

Subfamily ACRÆINÆ.

Genus 9. TELCHINIA, Doubleday.

12. *Telchinia cepheus* ♂ ♀, Linnæus.

Natal (bred from the larvæ, February 1875).

13. *Telchinia Buxtoni*, n. sp.

Acræa serena (part.), Trimen, Rhop. Afr. Austr. i. p. 107. n. 67 (1862).

This species differs from *T. eponina* of Cramer (*serena*, part., Fabricius), an insect confined to the west coast of Africa, in the abbreviated oblique postmedian band of primaries in the male, and in the continuation of the white band in the

female in the form of a curved decreasing series of about eight elongate diffused white spots. Expanse of wings 1 inch 10 lines; ♀ 2 inches 1 line.

Cape of Good Hope (May 1872).

Several years ago Mr. E. C. Buxton kindly presented a series of both sexes of this species to the British-Museum collection, at the same time expressing his conviction that it was distinct from the West-African insect; I quite agreed with him and kept them separate, but until now have had no good opportunity of describing the species.

14. *Telchinia cabira*, Hopffer.

Natal.

Genus 10. *ACRÆA*, Fabricius.

15. *Acræa rahira*, Boisduval.

Natal.

16. *Acræa horta* ♂ ♀, Linnæus.

Cape-Town.

Genus 11. *PLANEMA*, Doubleday.

17. *Planema protea* ♂ ♀, Trimen.

Natal.

The female is interesting, being coloured like the male, with the exception of the postmedian band of primaries, which is white as usual.

Family 2. *Lycænidae*.

Subfamily *LYCÆNINÆ*.

Genus 12. *PENTILA*, Westwood.

18. *Pentila tropicalis*, Boisduval.

Natal.

Genus 13. *LYCÆNA*, Fabricius.

19. *Lycæna gaika* ♀, Trimen.

Natal.

This female is so different from that of *L. lysimon*, that I prefer to consider the African species distinct.

20. *Lycæna knysna* ♀, Trimen.

Natal.

The single example sent has the purple at the base of the wings well marked.

Genus 14. *LYCÆNESTHES*, Moore.

21. *Lycænesthes messapus*, Godart.

Natal.

This and the next species do not quite agree with *Lycænesthes* proper, since they do not possess the hair-like scales on the outer margin of secondaries; I am, however, unwilling to grieve my entomological friends by characterizing a new genus for their reception.

22. *Lycænesthes asopus*, Hopffer.

Natal.

Genus 15. *LAMPIDES*, Hübner.

23. *Lampides osiris*, Hopffer.

Natal.

This is the African representative of *L. cnejus*.

24. *Lampides pulchra*, Murray.

Natal.

I suspect that this is the *L. telicanus* of Trimen's 'Rhop. Afr. Austr.'

25. *Lampides palemon*, Cramer.

Natal.

Genus 16. *THESTOR*, Hübner.

26. *Thestor bibulus* ♀, Fabricius.

Natal.

Subfamily *THECLINÆ*.

Genus 17. *IOLAUS*, Hübner.

27. *Iolaus hirundo*, var.?, Trimen.

Natal.

The two examples sent are smaller, and darker on the upper surface, than in Trimen's figure.

Genus 18. *HYPOLYCÆNA*, Felder.

28. *Hypolycæna philippus*, Fabricius (var. *certhis*, Doubleday).

Natal.

This insect seems to come very close to *Iolaus orejus* ♂ of Hopffer.

Family 3. *Papilionidæ*.

Subfamily *PIERINÆ*.

Genus 19. *MYLOTHRIS*, Hübner.

29. *Mylothris agathina* ♀, Cramer.

Natal.

Genus 20. COLIAS, Fabricius.

30. *Colias electra* ♂ ♀, Linnæus.

Natal.

Genus 21. TERIAS, Swainson.

31. *Terias Desjardinsii*, Boisduval.

Natal.

Genus 22. TERACOLUS, Swainson.

32. *Teracolus ione*, Godart.

Natal.

33. *Teracolus keiskamma*, Trimen.

Natal.

34. *Teracolus achine* ♀, Cramer.

Natal.

Genus 23. SYNCHLOË, Hübner.

35. *Synchloë hellica*, Linnæus.

Algoa Bay (May 1872).

Subfamily *PAPILIONINÆ*.

Genus 24. PAPILIO, Linnæus.

36. *Papilio demoleus*, Linnæus.

Natal.

37. *Papilio anthemenes*, Wallengren.

Natal.

Family 4. *Hesperiidæ*.

Genus 25. HESPERIA, Fabricius.

38. *Hesperia forestan*, Cramer.

Natal.

Genus 26. PAMPHILA, Fabricius.

39. *Pamphila hottentotta*, Latreille.

Natal.

Genus 27. PYRGUS, Hübner.

40. *Pyrgus elma*, Trimen.

Natal.

HETEROCERA.

Family 5. *Sphingidæ*.

Subfamily *MACROGLOSSINÆ*.

Genus 28. LOPHURA, Walker.

41. *Lophura plagiata*, Walker.

Natal.

Subfamily CHÆROCAMPINÆ.

Genus 29. CHÆROCAMPA, Duponchel.

42. *Chærocampa eson*, Cramer.

Natal.

43. *Chærocampa celerio*, Linnæus.

Natal.

Subfamily SPHINGINÆ.

Genus 30. PROTOPARCE, Burmeister.

44. *Protoparce convolvuli*, Linnæus.

Natal.

Genus 31. HYLOICUS, Hübner.

45. *Hyloicus juniperi*, Walker.

Natal.

Family 6. Agaristidæ.

Genus 32. PAIS, Hübner.

46. *Pais decora*, Linnæus.

Algoa Bay (May 1872).

Family 7. Zygænidæ.

Genus 33. ANACE, Walker.

47. *Anace rubra*, Walker.

Natal.

Genus 34. ZYGÆNA, Fabricius.

48. *Zygæna contraria*, Walker.

Natal.

Genus 35. EUCHROMIA, Hübner.

49. *Euchromia lethe*, Fabricius.

Natal.

Family 8. Lithosiidæ.

Genus 36. DEIOPEIA, Stephens.

50. *Deiopeia ocellina*, Walker.

Natal.

Family 9. Nyctemeridæ.

Genus 37. NYCTEMERA, Hübner.

51. *Nyctemera leuconoë*, Hopffer.

Natal.

This species is well figured by Hopffer: it differs from *N. apicalis*, Walker, in the width of the white band of primaries.

Family 10. **Liparidæ.**Genus 38. **EGYBOLIA**, Boisduval.52. *Egybolia Vaillantina*, Stoll.

Natal.

I think this genus has a much greater affinity to the Liparidæ than to the Arctiidæ.

Genus 39. **AROA**, Walker.53. *Aroa terminalis*, Walker.

Natal.

An unusually large example.

54. *Aroa crocata* ♂ ♀, Herrich-Schäffer.

Natal.

Genus 40. **LEUCOMA**, Stephens.55. *Leucoma dealbata*, Herrich-Schäffer.

Natal.

Genus 41. **LOPERA**, Walker.56. *Lopera punctulata*, n. sp.

♂. Bright ochreous : primaries with an abbreviated transverse macular dusky streak just beyond the end of the discoidal cell ; a bisinuated transverse discal series of six black dots, and a black dot at centre of interno-median interspace ; body ochreous, pectinations of antennæ blackish ; wings and body below uniformly ochreous. Expanse of wings 1 inch 3 lines.

Natal.

The genus *Lopera*, to which this species appears to belong, is nearly allied to *Orgyia*, much more so than to *Poloma*.

Genus 42. **POLOMA**, Walker.57. *Poloma angulata*, Walker.

Natal.

Genus 43. **DREATA**, Walker.58. *Dreata edulis*, Boisduval.

D'Urban (March 1875).

Family 11. **Psychidæ.**Genus 44. **CRYPTOTHELEA**, Templeton.59. *Cryptothelea Tuckeri*, n. sp.

♂. Sepia-brown : primaries with a black bilobed spot upon

the middle of the inner margin; secondaries with the apical area tinted with cupreous; costal margin greyish; anal tuft of abdomen greyish in the centre; central stem of antennæ sordid whitish; wings and body below dull sepia-brown. Expanse of wings 10 lines.

Natal.

Mr. Burrows has requested me to name this after a gentleman who lent him a box to secure the specimen, which must otherwise have been lost.

Family 12. Notodontidæ.

Genus 45. DERRIOIDES, gen. nov.

Genus gracile: antennis elongatis, late pectinatis; capite modice parvo, oculis exstantibus; palpis brevibus crassis; thorace robusto; abdomine tenui, gradatim attenuato; pedibus modice crassis, tarsis tenuibus; tibiis posterioribus spinosis; alis amplis, marginibus externis leviter undatis, margine costali anticarum paululum excavato; venis discocellularibus transversis arcuatis. Generis typus *D. hypenissa*, n. sp.

60. *Derrioides hypenissa*, n. sp.

Rosy madder-brown: primaries with a broad oblique band of darker colour beginning at basal two fifths of inner margin, its outer edge running to apex, its inner edge to median nervure, whence it turns inwards at an abrupt angle to costa, the edge is blackish, bordered externally by a whitish line; a blackish dot on upper discocellular; outer margin dusky: secondaries with a central transverse, waved, whitish-edged blackish line: head dull brown, with a whitish transverse frontal line; collar and palpi dull red; antennæ white, with testaceous pectinations: thorax red-brown; tegulæ large, hairy, dark brown: abdomen rosy madder-brown, with cupreous reflections. Wings below pale rosy brown; a dusky spot on discocellulars; a common, waved, pale-edged, dusky central line; secondaries with abdominal margin greyish: body below pale rosy brown, front of pectus deep dull red; tibiæ and tarsi sordid whitish. Expanse of wings 1 inch 2 lines.

Natal.

This is a remarkable genus, allied to *Paravetta* of Moore.

Family 13. Bombycidæ.

Genus 46. LASIOCAMPA, Schrank.

61. *Lasiocampa rudis* ♂, Walker.

Natal.

Family 14. **Cossidæ.**Genus 47. **COSSUS**, Fabricius.62. *Cossus incanescens*, n. sp.

Primaries silvery whitish, transversely speckled with black hatchings, crossed near base by a broad inarched band, and on disk by an irregular, slightly narrower oblique band, the two connected by a slender oblique streak, thus forming a pale brown H; secondaries silky pale grey: head and thorax whitish; collar transversely spotted with brown; thorax behind collar and in front of metathoracic portion transversely banded with blackish: abdomen densely clothed with long brown hairs, base and anus whitish: antennæ white, with pale brown pectinations: wings below shining whity brown; pectus clothed with sordid whitish woolly hairs. Expanse of wings 1 inch 1 line.

Natal.

Allied to *C. impeditus* of Walker.Family 15. **Hepialidæ.**Genus 48. **GORGOPIS**, Hübner.63. *Gorgopis libania*?, Cramer.

Natal (six examples).

I am very doubtful of the correct identification of this species. It is the *G. libania* of Walker; but it is totally unlike Cramer's figure in coloration and pattern, although like it in form. We previously only had one specimen in the collection, so that Walker may have looked upon it as a possible variety of Cramer's insect; so far as I can see, the only chance of its being the same rests in the possibility that the figure is taken from a rubbed and greasy example.

Family 16. **Glottulidæ.**Subfamily **XYLOPHASIINÆ.**Genus 49. **PRODENIA**, Guénée.64. *Prodenia retina*, Guénée.

Natal.

Previously in the Museum from the Congo.

Subfamily APAMEINÆ.

Genus 50. APAMEA, Ochsenheimer.

65. *Apamea natalensis*, n. sp.

Primaries above sandy whitish, sparsely speckled with black and clouded for a short distance round the discocellulars with rusty brownish; margins spotted with black; a blackish interno-median basal spot, surmounted by a black dot; a V-shaped whitish marking at end of cell, bounded externally by a semicircular black spot; two submarginal semicircular blackish spots, and between them a small black denticle; fringe whity brown, spotted with blackish: secondaries dark grey, dusky externally; fringe whity brown: body sandy whitish; collar with a black dot on each side, behind which is a transverse bisinuate black line, followed by a thicker brown line; tegulæ longitudinally speckled with black. Wings below whity brown, costal areas speckled with blackish grey; discocellular area of primaries and apical area of secondaries rosy brownish; a dusky transverse discal streak, abbreviated in secondaries; a blackish lunule on discocellulars of the latter wings: body below whity brown. Expanse of wings 1 inch $2\frac{1}{2}$ lines.

Natal.

Not unlike pale examples of *A. gemina*.

Genus 51. CARADRINA, Ochsenheimer.

66. *Caradrina partita*, Walker.

Natal.

Previously known from the Congo.

Genus 52. AMYNA, Guénée.

67. *Amyna undulifera*, n. sp.

♂. Nearly allied to *A. selenampha*, but smaller, redder in tint, with the undulated transverse lines of primaries less irregular, sharply defined, edged with grey; secondaries shorter, with no trace of a transverse line on upper surface. Expanse of wings 1 inch 2 lines.

Natal.

Family 17. Hadenidæ.

Genus 53. EUPLEXIA, Stephens.

68. *Euplexia amaranta*, Felder.

Natal.

Family 18. **Acontiidæ.**Genus 54. **ACONTIA**, Ochsenheimer.69. *Acontia formosa*, n. sp.

Primaries creamy white, sericeous; a subbasal mustard-yellow arched band, whitish within the discoidal cell, and interrupted by a large dusky spot upon the inner margin at base; a minute rounded pale grey spot, edged with dark grey towards the end of the cell, and immediately beyond the cell a larger similar spot, between them an oblong olive-green spot; a broad discal band widening from the costa to the inner margin, olive-green internally, olive-brown and mustard-yellow externally, traversed by two transverse, irregular, interrupted plumbaginous lines, and interrupted at base of second median interspace by a hastate creamy whitish spot, uniting at its apex with the ground-colour: secondaries pale greyish white with brassy reflections, especially round the margins; fringe creamy white: head and thorax white, frons and palpi sordid yellow, antennæ dull brown; abdomen silky testaceous. Primaries below pale grey, with the costa and outer margin pale testaceous; a broad dark grey discal band, widest on costa; a triangular dark grey spot, edged with whitish, placed across the discocellulars; inner margin broadly white; secondaries as above: body below white. Expanse of wings 11 lines.

Natal.

Family 19. **Erastridæ.**Genus 55. **ERASTRIA**, Ochsenheimer.70. *Erastria africana*, Felder.

Natal (three examples).

Can this be the *Microphysa decissima* of Walker?

Family 20. **Anthophilidæ.**Genus 56. **MICROPHYSA**, Boisduval.71. *Microphysa abscissa*, Walker.

Natal.

Family 21. **Plusiidæ.**Genus 57. **PLUSIA**, Ochsenheimer.72. *Plusia aurifera*, Hübner.

Natal.

Family 22. **Gonopteridæ.**Genus 58. **COSMOPHILA**, Boisduval.73. *Cosmophila indica*, Guénée.

Natal.

If it be thought necessary to reject this name as inappropriate, Walker's name of *C. edentata* may be used.

Genus 59. **GONITIS**, Guénée.74. *Gonitis pusilla*, n. sp.

Primaries greyish brown, clouded with dull yellowish, crossed at nearly equal distances by five irregular dusky lines—the first, third, and fifth bounded internally by dusky brownish nebulous diffusions, almost uniting the lines into three bands, the fifth line with a whitish and the others with a pale external edging; a submarginal series of minute dark brown lunulate dots: secondaries pale grey-brown, fringe darker; two parallel ill-defined, white-edged, angulated discal dusky lines, the inner one abbreviated, the outer one originating at anal angle; outer margin with a slender, interrupted, yellowish-bordered, black terminal line: body brown, abdominal segments margined with whity brown. Primaries below grey-brown; costal area pale testaceous, crossed beyond the cell by a dusky line; several testaceous subapical dots: secondaries testaceous; apex, a spot at end of cell, and two discal lines dusky; fringe grey: body sordid testaceous. Expanse of wings 11 lines.

Natal.

The smallest species in the genus.

Family 23. **Polydesmidæ.**Genus 60. **POLYDESMA**, Boisduval.75. *Polydesma laudula*, Guénée.

Natal.

Family 24. **Homopteridæ.**Genus 61. **HOMOPTERA**, Boisduval.76. *Homoptera delineosa*, Walker.

Natal.

Family 25. **Hypogrammidæ.**Genus 62. **CALLYNA**, Guénée.77. *Callyna decora*, Walker.

Natal.

Family 26. **Catephiidæ.**

Genus 63. AUDEA, Walker.

78. *Audea bipunctata*, Walker.

Natal.

Family 27. **Ommatophoridæ.**

Genus 64. PATULA, Guénée.

79. *Patula Walkeri*, n. sp.*Patula macrops*, Walker (nec Linnæus).

The African form differs from the Indian in its deeper colour and less pointed primaries; all the black bands much more irregular, strongly dentated; the central band much broader at costa of primaries, placed much closer to the subcentral bar of secondaries so as to give the impression of a distinct broad fascia across the wing; the discal black spots more distinctly lunate; the ocellus of primaries darker and considerably narrower; wings below darker, all the white spots smaller. Expanse of wings 5 inches 3 lines.

D'Urban (March 1875).

At first sight this would appear to be merely a dark form of *P. macrops*; but I believe it to be quite distinct.

Family 28. **Hypopyridæ.**

Genus 65. ENTOMOGRAMMA, Guénée.

80. *Entomogramma pardus*, Guénée.

Natal.

This species is identical with Walker's *Hypopyra anteponeus* and *Remigia venusta*.

Family 29. **Ophiussidæ.**

Genus 66. SPHINGOMORPHA, Guénée.

81. *Sphingomorpha Monteironis*, n. sp.

The example in this collection being in poor condition, I shall take my description from an example collected by Mr. Monteiro at Ambriz.

Very like *S. chlorea* (*S. sipyla*, Guén.), but differing as follows:—Primaries much narrower, more pointed; basal half confused, not interrupted by a white line so as to separate the external area as a darker spot; pale subapical transverse streak widened into a broad diffused spot; black spots bounded by

the dentated yellowish discal line much larger; secondaries with brown band broader, pale discal band more distinctly interrupted; wings below not so much speckled with dark brown; front legs clothed with longer masses of hair. Expanse of wings 3 inches.

Ambriz (*Monteiro*); Natal (*Burrows*).

This species is clearly distinct from *S. chlorea*; the form and pattern of the primaries is strikingly different. Mr. Monteiro took a long series at Angola; he says that it is very common. It always flew into the house when he was at dinner; so that he gave it the name of "the dinner-moth."

M. Guénée has described a species from Senegal, which he considers a variety of his *S. sipyla*, of which he says:—"Je n'ose en faire une espèce séparée, car elle diffère à peine du type." It may perhaps be my *S. Monteironis*; but the description scarcely suits it.

Genus 67. OPHISMA, Guénée.

82. *Ophisma croceipennis*, Walker.

Natal.

The West-African representative of this species, noted by Walker as "var. γ ," is totally distinct, the transverse lines on primaries being all undulated, and the black spots of secondaries united into a subcuneiform black patch. It may take the name of *Ophisma rivularis*.

Genus 68. OPHIUSA, Guénée.

83. *Ophiusa properans*, Walker.

Natal.

Genus 69. GRAMMODES, Guénée.

84. *Grammodes geometrica*, Fabricius.

Natal.

It is difficult to distinguish this species from *G. ammonia*.

Genus 70. TRIGANUSA, Walker.

85. *Triganusa euproctisoides*, Walker.

Natal.

This genus would, I think, be better placed next to *Ophisma*; but even there it does not look well; it certainly ought not to come between *Grammodes* and *Trigonodes* (which is where Mr. Walker has put it in the Collection). The example taken by Mr. Burrows has a second black spot on primaries, at basal third of interno-median interspace.

Family 30. **Euclididæ.**Genus 71. **TRIGONODES**, Guénée.86. *Trigonodes acutata*, Guénée.

Natal.

Family 31. **Remigiidæ.**Genus 72. **REMIGIA**, Guénée.87. *Remigia congregata*, Walker.

Natal.

88. *Remigia nigrifrontalis*, Walker. (See *Herminia*.)

Wings pale grey, shading into testaceous upon the disk; a deeper-coloured central oblique band, margined by black lines, beginning at middle of abdominal margin of secondaries, running obliquely to third branch of median nervure in primaries, whence it recurves with a double angle to just beyond the middle of costal margin; several minute black lituræ on basal area; outer margin tinted with tawny, edge stramineous; fringe dark greyish brown; a discal series of pale-bordered black dots, becoming larger towards apex of primaries; apex with a white spot, becoming grey, and bounded by an oblique brown litura internally: head and collar black, front margin of collar white; thorax and abdomen grey; antennæ brown, ferruginous below; palpi black, grey internally. Wings below greyish brown, with three parallel, continuous, nearly equidistant, arched dusky bands; secondaries with a dusky dot on discocellulars: body whitish. Expanse of wings 1 inch 7 lines.

Natal.

Family 32. **Thermesiidæ.**Genus 73. **TATORINIA**, n. gen.

Nearly allied to *Thermesia*; but at once distinguished by its smaller eyes and considerably longer palpi with shorter terminal joint. Type *T. Burrowsii*, n. sp.

89. *Tatorinia Burrowsii*, n. sp.

General coloration of the darker examples of *Azazia rubricans*; pattern almost as in *Thermesia creberrima*.

Wings dark greyish brown, basal and external areas tinted with olivaceous; basal area crossed by two irregular and much interrupted dusky lines; primaries with two central badly defined parallel dusky lines; a whitish-centred spot in the middle of the discoidal cell, and a second (larger and sinuate)

on discocellulars ; a discal distinct yellowish white line crossing the two wings from near apex to near anal angle, interrupted at costal areas, and margined with piceous, on secondaries terminating in a diffused spot on discoidal interspace ; internervular folds terminating in black dots, united by a fine, black, waved marginal line ; fringe reddish : body olivaceous brown, abdomen paler. Wings below testaceous, speckled with grey, veins ochraceous ; three nearly equidistant lunulated black lines, and between them series of ill-defined dusky lunules ; a white-centred black spot within the cells, and another on the discocellulars ; outer margin as above : body below sandy whitish. Expanse of wings 1 inch 9 lines.

Natal.

Genus 74. *RENODES*, Guénée.

90. *Renodes nigriceps*, Walker.

Natal.

The type is a faded and rubbed specimen from Sierra Leone.

91. *Renodes pallidula*, n. sp.

Sandy whitish, speckled with black atoms : primaries with an oblique, abbreviated, pale brown streak from inner margin, beyond it a zigzag discal line and a broad external border (tapering to apex) of the same colour ; three or four black discal dots towards apex ; a black marginal line : secondaries with three nearly equidistant parallel, pale brown, discal bands, and between them two series of black dots ; outer margin with a black edge : head, collar, palpi, and anterior femora and tibiæ black ; thorax and abdomen sandy whitish, the latter black-speckled, with whitish margins to the segments. Wings below pale testaceous, densely sprinkled with brown scales ; disk crossed by three brown lines, the two inner ones dentate-hastate, irregular, and approximating on primaries, between the two outer ones a series of black spots ; external area of primaries dusky in the centre ; a black dot on discocellulars ; body below whitish ; legs (excepting anterior femora and tibiæ) testaceous. Expanse of wings 1 inch 3 lines.

Natal.

Genus 75. *SELENIS*, Guénée.

92. *Selenis costalis*, n. sp.

Basicostal area creamy white ; two oblique lituræ and a brown subapical line, crossed by three white dots, on costa of primaries ; a broad central mahogany-brown band tapering from abdominal margin to discoidal interspace towards apex of primaries, and bordered externally by a silvery line ; a

discal tapering pale testaceous streak bounding the central band, and bordered externally by a red-brown line margined with silvery grey; outer margin pale brown, with a submarginal series of black dots; fringe dark grey; primaries with an oblique apical brown litura; head, collar, and abdomen brown, the latter with white margins to the segments; thorax creamy white. Wings below grey, crossed by two darker grey discal lines; discocellular and submarginal black dots; apical half of costa of primaries spotted with white: body below pale testaceous. Expanse of wings 10 lines.

Natal.

Genus 76. GRACILODES, Guénée.

93. *Gracilodes caffra*, Guénée.

Natal.

Genus 77. SCAMBINA, Walker.

94. *Scambina larvata*, Walker.

Natal.

Family 33. Platydidæ.

Genus 78. HYPENA, Schrank.

95. *Hypena obacerralis*, Walker.

Natal.

A very variable species.

96. *Hypena senialis*, Guénée.

Natal.

M. Guénée says that his description is taken from a specimen in poor condition; when fresh it more nearly resembles *H. obesalis* in colouring than *H. obsitalis*; it is, however, the size of the latter.

97. *Hypena variabilis*, Walker.

Natal.

Allied to the preceding species.

98. *Hypena velatipennis*, n. sp.

Allied to *H. indicatalis*. Very variable in tint; darker or lighter grey: primaries with the basal half blackish, sharply defined externally by a transverse, slightly trisinate, white-edged black line; irrorated with green-shot scales, and crossed by two irregular black lines, between which (within the cell) is a black dot; apical half irrorated with black atoms, which (in dark examples) form two transverse sinuated lines, the sinuations together forming incomplete circles; a heart-shaped subapical black spot, edged externally with white, and bounded below by a white longitudinal litura, the whole enclosed by an

angulated black line from apex; apical costa dotted with white; a submarginal series of black dots: segments of abdomen with pale hind margins. Wings below grey, secondaries and costal area of primaries irrorated with brown; a submarginal black line and a marginal whitish line; fringe pale grey, intersected by two black parallel lines; primaries with apical costa white-spotted; secondaries with a black dot on discocellulars. Expanse of wings 1 inch 2 lines.

Natal.

Family 34. *Herminiidæ*.

Genus 79. *HETEROGRAMMA*, Guénée.

99. *Heterogramma*, sp.?

Natal.

I feel very uncertain of the determination of this species, and therefore do not describe it. It somewhat resembles a figure in the fourth part of the Lepidoptera of the 'Novara' Expedition; unfortunately we have no species of *Heterogramma* with which to compare it.

Genus 80. *BOCANA*, Walker.

100. *Bocana æsopusalis*, Walker.

Natal.

Family 35. *Pyralidæ*.

Genus 81. *PYRALIS*, Linnæus.

101. *Pyralis smaragdina*, n. sp.

General appearance of *P. costalis*. Wings above red-brown, clouded with slaty grey; a lunate golden-yellow spot near base of cell, from which an arched dusky line runs to inner margin; a second similarly coloured spot at basal two fifths of costal margin, below which is a quadrate pearly spot within the cell; a golden irregular costal streak from end of cell to apex, cut by a black line, which also bounds a quadrate pearly spot at end of cell; a third, black-edged, pearly spot at base of first median interspace; outer margin and fringe irregularly golden yellow, interrupted in the middle by a brown spot; secondaries crossed by two irregular dusky lines; anal half of outer margin and entire fringe golden yellow; head testaceous; anal segments golden yellow. Wings below pale grey; all the markings as above, but paler; secondaries with an additional grey spot at centre of cell; body below white. Expanse of wings 9 lines.

Natal.

Differs from *P. costalis* in its narrower wings, more pointed

primaries, the three pearly spots in primaries, less regular and interrupted golden-yellow borders, and yellow anal segments of abdomen.

Genus 82. AGLOSSA, Latreille.

102. *Aglossa noctuina*, n. sp.

Primaries dark rosy brown, base blackish; two transverse irregular black lines and a black discocellular dot, exactly as in *A. laminalis*; a marginal row of black dots; fringe red-brown, shining: secondaries whity brown, with the veins slightly reddish; a dusky spot at base of discocellular cleft, and an irregular dusky discal line parallel to the outer margin: palpi, antennæ, head, and thorax deep rosy brown; abdomen dull black, with pale margins to the segments; anus testaceous. Wings below pale grey; costal areas rosy tinted, costal margins black, dotted with whitish; a continuous dusky discal line; dusky lunate spots on discocellulars; cell of primaries spotted with dusky: body below shining rosy brownish; front of pectus deep chocolate-brown; legs testaceous, tibiæ and tarsi of two front pairs black above, dotted with whitish. Expanse of wings 1 inch.

Natal.

Allied to *A. laminalis*, but easily distinguished by its much deeper coloration and the markings on secondaries.

103. *Aglossa ocularis*, n. sp.

Primaries above grey; a cuneiform patch of stramineous crossed by the discocellulars, the position of which is marked by an oblique reniform stigma; a very oblique black line beginning, distinct, at base of inner margin, but fading away as it reaches the back of the stramineous patch; a second, dentate-sinuate oblique line from near the centre of inner margin, bounding the stramineous patch externally, and running almost to costa; an irregular zigzag discal stramineous band; a submarginal series of eight black lunular lituræ: secondaries sordid pale testaceous, with a broad external grey border, interrupted by a submarginal pale stramineous streak; two dotted grey discal lines, and a dusky spot at end of cell: body grey, head and collar slightly reddish, fringe at back of thorax whitish. Primaries below grey, internal area pale; a patch over the end of cell whitish, crossed by an oblique dusky spot; costa white-dotted: secondaries creamy white; a black spot at end of cell and another at anal angle, two discal dotted grey lines; a broad grey border as above; a submarginal dull red streak, leaving one spot of whitish near apex, its anal termination being also whitish: body below sordid greyish

testaceous; tarsi of anterior legs blackish above and spotted with testaceous. Expanse of wings 1 inch 3 lines.

Natal.

104. *Aglossa fragilis*, n. sp.

Primaries stramineous, discocellular area and apex clouded with burnt sienna; outer margin with a red-brown border, tapering to apex, partially varied with dark grey; a marking, like the figure 8, enclosing two black dots at the end of the cell; two irregular oblique red-brown lines, the one towards the base ill-defined and broken up into dots, the other beyond the cell crossing the wing, and well-marked; a marginal row of black dots: secondaries greyish brown: head and collar dark grey, thorax stramineous, abdomen testaceous. Primaries below grey, reddish along the costa; a whitish subcostal discoidal litura, and a whitish spot at end of cell: secondaries testaceous, tinted with rosy: body greyish testaceous. Expanse of wings 1 inch.

Natal.

105. *Aglossa inconspicua*, n. sp.

Primaries above dove-colour, crossed by two slightly waved and divergent, oblique red-brown lines, the inner one bordered within and the outer without with ochreous, the outer one also bounding a transverse diffused brown streak; a black dot at end of cell; a waved discal series of dusky dots; outer margin slightly dusky: secondaries whity brown, the basal area and a diffused streak at anal angle irrorated with slightly darker brown: head and thorax grey, abdomen pale testaceous. Primaries below grey, sprinkled with whitish; an ill-defined, scarcely visible, waved dusky discal line: secondaries creamy whitish, sparsely speckled with brown; a brown dot at end of cell: body below whitish; legs and palpi stramineous. Expanse of wings 1 inch 1 line.

Natal.

106. *Aglossa formosa*, n. sp.

Allied to the *Pyralis ratoalis* of Walker. Wings above cream-colour; primaries with an orange streak from base along median nervure, and joining a red subquadrate spot at middle of inner margin; a white spot with a black dot on each side of it within the cell, and another below it and touching the red internal spot; an angular black-edged white spot at end of cell; outer margin broadly plumbaginous, the inner margin of the border being distinctly conical, the apex of the cone touching the white spot at end of cell; a subapical red-edged sagittate yellow spot: secondaries with a slender marginal black

line; fringe white: head black, collar reddish; thorax creamy white; abdomen red-brown, with white segmental bands and anus. Primaries below shining grey; secondaries white, with grey costal area: body sordid testaceous, with sides of pectus white. Expanse of wings 10 lines.

Natal.

107. *Aglossa magnifica*, n. sp.

Primaries above deep reddish castaneous, clouded with shining grey or plumbaginous, crossed by two diverging undulated black lines, partially bordered with white, outer margin plumbaginous; fringe pale grey, varied with castaneous: secondaries grey, with faint lilacine reflections; outer border dusky, with a white marginal line; fringe grey: body reddish castaneous, centre of abdomen greyish, margins of the segments paler. Wings below shining grey, with cupreous reflections; body creamy white. Expanse of wings 10 lines.

Natal.

Family 36. *Ennychiidæ*.

Genus 83. *PYRAUSTA*, Schrank.

108. *Pyrausta aurea*, n. sp.

Ochreous: primaries above with a dusky transverse angulated line crossing the end of cell, and running to inner margin; an abbreviated arched line from subcostal nervure to second median branch: secondaries with an irregular dusky discal line parallel to the outer margin, and a dot at end of cell: primaries below tinted with grey. Expanse of wings $7\frac{1}{2}$ lines.

Natal.

Unlike any other species of *Pyrausta* known to me in coloration.

Family 37. *Asopiidæ*.

Genus 84. *SYNGAMIA*, Guénée.

109. *Syngamia merionealis*, Walker.

Natal.

Genus 85. *AGATHODES*, Guénée.

110. *Agathodes modicalis*, Guénée.

Natal.

111. *Agathodes ostentalis*, Hübner.

Natal.

One small example. I believe this species has not hitherto been recorded as African.

Genus 86. HYMENIA, Hübner.

112. *Hymenia recurvalis*, Fabricius.

Natal.

113. *Hymenia perspectalis*, Hübner.

Natal.

114. *Hymenia griseata*, n. sp.

Primaries dull greyish brown; a minute basicostal testaceous spot, and another, edged with black, near base of cell; a small whitish spot at base of interno-median interspace, and a black-edged, straight, transverse whitish litura just beyond it; two small angular black markings just beyond the middle of the cell; a testaceous costal streak, crossed by a black spot, from the end of cell, a very irregular black-edged whitish line from end of cell to inner margin; apical half of cell sordid whitish; a marginal macular black line; fringe white, spotted with grey: secondaries grey, costal area whitish; a broad external brown border, bounded within by an irregular brown-edged white line: body dark brown, head and base of abdomen greyish. Wings below very pale brown; a black-edged brown spot on discocellulars; a broad discal grey band, obsolete towards the inner margins, bounded within by a very irregular dusky-edged whitish line: body very pale brown. Expanse of wings 10 lines.

Natal.

Most like *H. meridionalis* in general appearance.

Family 38. Hydrocampidæ.

Genus 87. CATACLYSTA, Hübner.

115. *Cataclysta fraterna*, n. sp.

Closely allied to *C. elutalis* from Ceylon; but with the wings comparatively longer, the body more slender; the basal area of the wings paler, with dark brown markings and better-defined silvery spots; the central series of silvery spots bounded within by a distinct irregular black line; external area dark brown, outer margin grey; marginal spots of secondaries well defined. Expanse of wings $8\frac{1}{2}$ lines.

Natal.

Family 39. Spilomelidæ.

Genus 88. ZEBRONIA, Hübner.

116. *Zebronia cassusalis*, Walker.

Natal.

This species is scarcely distinguishable from the Ceylonese *Zebronia aurolinealis* of Walker.

Family 40. **Margarodidæ.**Genus 89. **PHAKELLURA**, Guilding.117. *Phakellura indica*, Saunders.

Natal.

I think Guénée's name of *P. gazorialis* would be better than *P. indica*.

Genus 90. **MARGARONIA**, Hübner.118. *Margaronia transvisalis*, Guénée.

Natal.

Family 41. **Botydæ.**Genus 91. **BOTYS**, Latreille.119. *Botys straminea*, n. sp.

Allied to *B. pholausalis*, but much more like the Australian *B. piasusalis* in marking.

Stramineous, with pink reflections; an irregular brown line crossing the wings at basal third; a second, very irregular discal line, widely interrupted on primaries, where it runs from the subcostal nervure to the middle of the second median branch, and recommences near the base of the same branch; a black dot just beyond the middle, and a black litura at the end of discoidal cell of primaries; a continuous marginal series of brown dots; fringe silvery white: wings below paler, otherwise as above; body white. Expanse of wings 1 inch.

Natal.

Genus 92. **PIONEA**, Guénée.120. *Pionea africalis*, Guénée.

Natal.

P. africalis is identical with Walker's *Scopula? concisalis*.

Genus 93. **SCOPULA**, Schrank.121. *Scopula martialis*, Guénée.

Natal.

122. *Scopula ferriscriptalis*, Walker.

Natal.

Family 42. **Scopariidæ.**Genus 94. **STENOPTERYX**, Guénée.123. *Stenopteryx hybridalis*, Hübner.

Natal.

Family 43. **Ennomidæ.**Genus 95. **HYPERYTHRA**, Guénée.124. *Hyperythra leucicolor*, n. sp.*Hyperythra limbolaria* (part.), Walker.

♂. Bright saffron-yellow, more or less speckled with brown, crossed by two diffused pale reddish grey bands or lines, the external one internally bisinuate on both wings, bounded externally near outer angle of primaries by one dusky spot, and near apex of secondaries by two. Wings below paler, the inner band only represented by a reddish spot on interno-median interspace, the outer one by a continuous chain-like discal series of rosy spots with carmine margins; a black dot on discocellulars. Expanse of wings 1 inch 1 to 3 lines.

♀. Not unlike Guénée's figure of *H. limbolaria*, but with only three (almost equidistant) lines across the primaries and two across the secondaries, the inner band below much interrupted. Expanse of wings 1 inch 7 to 9 lines.

Natal (one male).

We received both sexes of this species in a collection sent to England last year by Mr. J. V. Gooch. It was at the time supposed to be the Javan *H. lutea* of Cramer (*H. limbolaria*, Guénée); but it is clearly quite distinct.

Genus 96. **CABERODES**, Guénée.125. *Caberodes interpellans*, n. sp.

♂. Wings greyish brown, slightly shot with a rosy tint; markings precisely like *Ellopiia flagitiaria*—that is, a curved subbasal and a waved discal dark brown line, with a black spot on discocellulars in primaries, and a subangulated discal line and black dot in secondaries; antennæ rather unusually wide towards the base, and thorax very robust. Expanse of wings 1 inch 7 lines.

Natal.

Family 44. **Boarmiidæ.**Genus 97. **GNOPHOS**, Treitschke.126. *Gnophos umbratilis*, n. sp.

♂. Wings greyish brown in appearance, but really yellowish testaceous, densely mottled with blackish brown, crossed in the middle by two ill-defined dusky lines; black discocellular dots; a small elongate black dot at centre of second median interspace of secondaries: wings below much less mottled

with paler brown, the transverse lines widened into diffused bands, very distinct on secondaries; costa of primaries, area between the bands of secondaries, and the body very slightly mottled, and consequently much yellower in appearance than the rest of the underside. Expanse of wings 1 inch 5 lines.

Natal.

Family 45. *Acidaliidæ*.

Genus 98. *ACIDALIA*, Treitschke.

127. *Acidalia natalica*, n. sp.

Whity brown; wings crossed by two brown lines, the inner line diffused, oblique in primaries, and crossing discocellulars to near the middle of inner margin, arched in secondaries and crossing the apical fourth of discoidal cell; the outer line dark brown, irregularly sinuated, crossing the disk of both wings, and succeeded by a narrow diffused brown streak, which gives it the appearance of being double; a black dot at the end of the cells, and a marginal series of black dots; fringe whity brown: wings below slightly paler than above, mottled with darker brown; the two lines better defined. Expanse of wings 1 inch 2 lines.

Natal.

The frons is not black, as in several of M. Guénée's African species. *A. natalica* is most nearly allied to *A. strigulifera*.

128. *Acidalia lactaria*, Walker.

Natal.

This species is identical with *A. derasata* of Walker (part xxvi. p. 1604).

129. *Acidalia instructata*, Walker.

Natal.

This species varies much in tint.

130. *Acidalia cinerascens*, n. sp.

Pale grey, mottled with brown; black discocellular dots; a marginal series of black dots; primaries with a transverse zigzag discal brown line; secondaries with two central, slightly irregular, subangulated brown lines: wings below testaceous, mottled with brown, less densely on costa of primaries; a transverse subapical costal brown litura. Expanse of wings 1 inch 2 lines.

Natal.

Genus 99. ARGYRIS, Guénée.

131. *Argyris latonaria*, Guénée.

Natal.

132. *Argyris vestalis*, n. sp.

Somewhat like *A. ocellata*, but much smaller. White; both wings with a central brown band from end of cell to inner margin, varied with black, indistinctly streaked with plumbaginous, enclosing a black-edged discocellular white spot, the upper end broad, the lower end pointed; a bisinuate brown litura connecting central band with costal margin; a waved undulated discal transverse line; two submarginal series of grey spots, an interrupted marginal series of black dots; fringe varied with grey. Wings below white, primaries sordid: secondaries with a blackish discocellular litura, an ill-defined postmedian dusky line, a continuous dentate-sinuate discal black line, and a sinuated marginal black line: primaries with two submarginal series of grey spots; fringe white, varied with grey and dotted with black: body white; antennæ, tibiæ, and tarsi testaceous. Expanse of wings 11 lines.

Natal.

Family 46. Fidoniidæ.

Genus 100. TEPHRINA, Guénée.

133. *Tephрина deerraria*, Walker.

Natal.

Genus 101. STERRHA, Hübner.

134. *Sterrha sacraria*, Linnæus.

Natal (six examples).

Genus 102. ASPILATES, Treitschke.

135. *Aspilates mæviaria*, Guénée.

Natal (four examples).

136. *Aspilates arenosa*, n. sp.

♂. General aspect and coloration of the preceding; it differs as follows:—Discal band of primaries less oblique and consequently nearer to outer margin; of secondaries paler, widening from near anal angle to second subcostal branch, where it becomes obsolete, broadly bordered on both sides with whitish. Primaries below greyish, band as above: secondaries much paler; interno-median area dusky; discal band much more abbreviated, but darker than above; a black discocellular spot. Expanse of wings 1 inch 4 lines.

Natal.

Family 47. Gelechiidæ.

Genus 103. EXODOMORPHA, Walker.

137. *Exodomorpha divisella*, Walker.

Natal (eight examples).

Family 48. Pterophoridæ.

Genus 104. AGDISTES, Hübner.

138. *Agdistes pustulalis*, Walker.

Natal.

There are also in the Collection two species of Tortricites and two Tineites which I have been unable to determine ; and as at present I do not possess sufficient knowledge of the groups to refer them to their proper positions, I cannot attempt to name them. I have to thank Mr. F. Moore, of the Indian Museum, for very kindly assisting me in determining some of the more obscure genera of Pyralites and Geometrites.

LVI.—*Relation of the Canal-System to the Tubulation in the Foraminifera, with reference to Dr. Dawson's 'Dawn of Life.'* By H. J. CARTER, F.R.S. &c.

As an illustration of the relation of the canal-system to the tubulation in Foraminifera in the so-called "*Eozoon canadense*," Dr. Dawson repeats, in his book just published (the 'Dawn of Life'), p. 43, a fac-simile of the woodcut which illustrates his letter in 'Nature' (vol. x. p. 103, June 1874), which illustration had been previously published in the 'Annals & Mag. Nat. Hist.' (vol. xiii. pl. xix. fig. 1, June 1874), and also appeared about the same time in the 'Monthly Microscopical Journal.'

By this I infer that the woodcut (which, in the 'Dawn of Life,' is stated to be "after Carpenter") is the most convincing representation that Dr. Dawson can adduce of the identity of Foraminiferal structure with that of the so-called "*Eozoon canadense*" in the Laurentian limestone ; for we find in the 'Dawn of Life,' p. 204, the following paragraph :—

"In the 'Annals of Natural History' for June 1874, Dr. Carpenter has given a crushing reply to some objections raised in that Journal by Mr. Carter. He first shows, contrary to the statement of Mr. Carter, that the fine nummuline tubulation corresponds precisely in its direction with reference to



Butler, Arthur G. 1875. "LV.—On a collection of lepidoptera from Southern Africa, with descriptions of new genera and species." *The Annals and magazine of natural history; zoology, botany, and geology* 16, 394–420.

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