H. Sauter's Formosa-Ausbeute. Geometridae (Lep.).

Von **Louis B. Prout** (London).

Until within the last 5 years scarcely any thing was recorded concerning the *Geometridae* of Formosa. Moore (Proc. Zool. Soc.Lond. 1866, p. 365) gave a list of 10 species from Takow, 2 of which have since been referred to other families. Butler (ibid. 1880, p. 686—8) also furnished a short list (11 true *Geometridae*, 2 of them wrongly assumed to be new to science, 2 or 3 erroneously or insufficiently determined) from the same locality. Hampson (Faun. Ind. Moths 1895,, p. 111) cites Formosa as a locality for 10 species, *Gymnoscelis ectochloros* and *Alcis acaciaria* being new records for the island, but the former a misidentification, the Formosan ally being distinct, probably = *albicaudata* Warr. Matsumura (Cat. Lep. Japan, 1905) quotes Hampson's 10 without emendation or addition. In 1899 Warren described as new 4 species collected by Jonas (Nov. Zool. VI). In 1902 Swinhoe added *Antilycauges pinguis* (Trans. Ent. Soc. Lond. 1902, p. 660). So far as I am aware, this completes the records prior to 1909.

Recently, however, extensive collections have been made by Dr. Moltrecht and by Mr. A. E. Wileman, chiefly in the Arizan (or Arisan) district, and various papers by Bastelberger, published in 1909[1]) and 1911[2]), and by Wileman, in 1910—1912[3]), have made known a considerable number of new species and subspecies. Particular mention should be made of Bastelberger's „Beiträge zur Kenntnis der Geometriden-Fauna der Insel Formosa" (Iris, loc. cit.), in which he furnishes a systematic catalogue of the 109 species[4]) included in the Moltrecht collections up to that date and offers a few generalisations on the fauna.

Dr. Bastelberger recognizes three elements: (1) species peculiar to Formosa, either very distinct from all others known and perhaps representing an indigenous fauna, or closely allied to others yet sufficiently differentiated by long geographical isolation; (2) forms belonging to the Japanese fauna; (3) those which are not met with again until

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[1]) Ent. Zeit. (Stuttgart) XXIII, p. 33—34, 39—40, 77; Iris XXII, p. 166—182.

[2]) Ent. Rundschau XXVIII, p. 22—23; Intern. Ent. Zeit. (Guben) IV, p. 241—242, 248—249, V, p. 54; Soc. Ent. (Frankfurt a. M.) XXV, p. 89—90.

[3]) Entom. (London) XLIII—XLV, passim.

[4]) This number is obtained by deducting 2 mere aberrations which are there separately numbered and adding no. 71 bis; one or two others, however, are given as pretty certainly only subspecies.

one reaches the Himalayan region. The third group, as he truly remarks, is the most numerous. I would even go further and assert that the connection of the Formosan with the distinctively Palaearctic fauna of Japan proper, East Siberia, etc., is so slight as to be almost negligeable. Naturally those species which are common to N. India and Japan without noticeable geographical modification, such as *Brabira artemidora* Oberth., *Asthena* (*Laciniodes*) *plurilinearia* Moore and many others, may occur in Formosa without throwing any light on the zoogeographical problems; but when we come to the case of differentiable races (such as *Erebomorpha fulgararia* Walk.) or allied species (such as *Nothomiza costalis* Moore and *formosa* Butl., *Abraxas leopardina* Koll. and its Japanese relatives of the *sylvata* group) the Formosan forms invariably appear to favour the Indian. Probably when more is known of the *Geometridae* of Central and Southern China, intermediate localities will be discovered for many of the Indian species. Already some affinities are observable with the fauna of Hong Kong (as *Heteralex aspersa* Warr.), Hainan (as *Zanclopera calidata* Warr.), Chang Yang (as *Heteromiza obliquaria* Leech), etc.

The Sauter-collection, consisting of 545 specimens, proves a very important contribution. Including 12 from Japanese localities, but nearly all essentially Indo-Australian in their character, there are represented 162 species, distributed among the subfamilies as follows: *Oenochrominae*, 6; *Hemitheinae*, 13; *Acidaliinae*, 23; *Larentiinae*, 35; *Geometrinae* (*Boarmiinae*), 85. To two worn specimens in difficult genera (*Pisoraca* and *Sauris*) I have not ventured to assign names, and two or three of the determinations at which I have arrived on inadequate or defective material (as in *Acidulia* and *Chloroclystis*) must be regarded as provisional; but for the most part the material is in very satisfactory condition and I have expended great care on its working-out. No less than 96 of the species (marked*), or considerably over one-half, appear to be hitherto unrecorded for Formosa, though it must be added that Matsumura has included some Formosan species in his „Thousand Insects of Japan" (!) and as this work is in Japanese I may have missed some records. Two of his species are mentioned in the present paper, but as I have unfortunately only had a single brief opportunity of looking at his figures I am unable to give the determination of his *Gnophos formosana* (Supp. 2, p. 96, t. 25, f. 9) and one or two others, and may have unavoidably neglected some synonymy.

The types of the 23 novelties which I am here describing are all in Coll. Deutsch. Ent. Mus.

Subfam. ***Oenochrominae.***

*1. **Heteralex aspersa** Warr. — 2 ♂, both rather light-coloured. Kosempo, April.

2. **Eumelea aureliata** Guen. — 3 ♂, 1 ♀. Polisha, August 1908; Chip-Chip, December 1909; Pilam, July 1912; Kosempo, December 1911.

*3. **Eumelea ludovicata** Guen. — 1 ♀, Lake Candidius, 25 September to 10 October 1907.

4. **Derambila saponaria** Guen. (= **fragilis** Butl.). — 6, Alikang, September—October 1909; 2, Kosempo, October 1911; 1, Suisharyo, October 1911. Mostly worn specimens. Butler's type of *fragilis* (also worn) was from Formosa; by oversight this locality was omitted in „Lepidopterorum Catalogus".

*5. **Derambila satelliata** Walk. — 3 ♀: Kosempo, January 1910; Shisha, May—June 1912; Punkiko (Japan), August 1911.

*6. **Naxa textilis** Walk. — 2, Shisha, May—June 1912.

Subfam. ***Hemitheinae.***

7. **Pingasa ruginaria** Guen. — 1 ♂, Karapin (Japan), August 1911; 2 ♀, Kosempo, July and October 1911.

*8. **Terpna subtrita** Prout, nov. sp. — ♀, 59 mm. Very closely similar to *haemataria* H.-Sch., especially on the upperside. Cell-marks thicker, especially that of the hindwing; costal spot at base of forewing smaller, the line which runs from it almost entirely obsolete; the purple red striation between the next line and the cell-mark denser and more extended, the same colour occupying also the basal area of the hindwing as far as to the cell-mark but not reaching the costal margin. Both wings beneath less orange coloured at base, the purple-red subbasal shading of the upperside reproduced in dark brown grey, the black cell-spot of the hindwing less rounded, the spots between the cell and the marginal markings almost entirely obsolete, whereas in *haemataria* they are large and conspicuous. Kosempo, July 1911, a single example.

9. **Terpna (Lophophelma) taiwana** Wileman. — Kosempo, 1 ♂, October 1911, 3 ♀, July and December 1911; Shisha, 1 ♀, May—June 1912; Alikang, 1 ♀, October 1909. This species has no close connection with *Orthorisma netunaria* Guen., with which its author compared it, but is very nearly related to *erionoma* Swinh., though sufficiently distinct — larger, ground-colour less dark with less white markings, first two lines of forewing more distinct, underside less clean white,

with the border less sharply black. Also larger than *neonoma* Hmpsn., the dark markings coarser, a long cell-mark distinct on the hindwing, the dark border on the underside rather narrower.

10. **Dindica subrosea** Warr. (= **purpurata** Bastelberger nov. syn.). — 2 ♂, Shisha, May—June 1912 and Sokutsu (Banshoryo district) 1912. I can find no essential distinction between the Formosan specimens (described by Bastelberger as *purpurata*) and the Indian form *subrosea*. The Formosan examples are perhaps rather smaller, the discal spot of forewing beneath perhaps on the whole larger, the border of both wings beneath on the whole better developed; if it should prove a constant form it will stand as subsp. *purpurata*.

*11. **Comibaena inductaria** Guen. — Alikang, October 1909, one worn ♂ of this very widely distributed species.

*12. **Comibaena argentataria** Leech. — 1 ♂, apparently not differing materially from the Chinese and Japanese examples. Kosempo, October 1911.

13. **Culpinia diffusa** Walk. — 1 ♀, Kagoshima (Japan), September 1911.

*14. **Thalassodes falsaria** Prout. — A pair from Kosempo, October 1911; a ♂ from Kankau (Koshun), April 1912; a ♀ from Kanshirei, June 1910. A smaller, yellower-green ♀ taken at Kosempo with these, is either a noteworthy aberration or a separate species, the white strigulation less developed, the postmedian line of the forewing very slightly concave.

*15. **Hemithea tritonaria** Walk. — 1 ♂, Alikang, 1909; 1 ♀, Kosempo, October 1911; both are large specimens.

16. **Chlorissa chlorissodes** Prout. — 2 ♀, Kosempo, November 1911 and Kankau (Koshun), May 1912. Unfortunately both are worn, but there can be little doubt that they belong to the species described by me from the ♂ as an aberrant *Microloxia*. But these ♀♀ have 4 spurs on the hindtibia and it appears that the species will have to form a new section of *Chlorissa*, with the ♂ antenna pectinated. I suspect this is *melinaria* Bastelberger, Iris XXII, p. 173 (nec. H.-Sch.).

*17. **Cyclothea disjuncta** Walk. — 1 ♂, Alikang, October 1909.

*18. **Diplodesma ussuriaria** Brem. (= **cluta** Wileman). — 2 ♂, Alikang, September 1909. The lines appear rather straighter than in typical examples, perhaps more resembling *mundaria* Leech, which is very likely only a large western form of *ussuriaria*.

19. **Hemistola rubrimargo** Warr. — 1 ♂, Punkiko (Japan), August 1911.

Subfam. ***Acidaliinae.***

*20. **Somatina plynusaria** Walk. — 2 ♂, Kosempo, October 1911; 1 ♀ Taihoku, 7 April 1912.

*21. **Somatina rosacea anaemica** Prout, nov. subsp. — ♂ 31 mm, ♀ 29 mm. Much paler than typical *rosacea* Swinh. from the Khasi Hills, the rosy hue almost entirely lacking, the coloration being about as in pale *anthophilata* Guen.; hind angle of forewing without black spots. Abdomen dorsally whitish, not (as in *rosacea*) rosy with white spots. Kosempo, October 1911 (♂ type); Alikang, November 1911, 1 ♀.

22. **Synegiodes histrionaria ornata** Bastelberger (= **lentiginosaria** Wileman, nov. syn.). — 1 ♂ 1 ♀, Shisha, May—June 1912; 2 ♀, Suisharyo, February 1912; 1 ♀, Kankau (Koshun) 1912; 1 ♀, Karapin (Japan), August 1911. Both Bastelberger (Ent. Zeit. Stuttg. XXIII, p. 34, 39, 1909) and Wileman (Entomologist XLIV, p. 401, 1911) regarded this as a separate species, the latter placing it in *Anisodes*. I consider it merely a deeply coloured local race of *histrionaria* Swinh., from Assam, with the dark shading in the distal area more continuous. The structure is identical, areole single, 2nd subcostal of hindwing usually very shortly stalked. In *hyriaria* Walk., to which Hampson wrongly sunk *histrionaria*, the areole is double, the 2nd subcostal rarely if ever stalked.

*23. **Timandra extremaria** Walk. — 1 ♂, Alikang, October 1909; 1 ♂, Chip-Chip, February 1909; 1 ♂ 2 ♀, Kosempo, December 1911, January 1910 and October 1911; 1 ♀, Taihorin, 22 November 1911.

*24. **Timandra convectaria** Walk. — 6 ♂, 5 ♀, Suisharyo, Kosempo, Alikang, Kanshirei, Kankau and Taihorinsho. Variable in size. Hampson sinks this to *amata* L.; it is a good species, nearer to his *correspondens*.

*25 **Problepsis deliaria albidior** Warr. — 1 ♂, Kosempo, October 1911, expanding 36 mm. This form was described from Kulu and Ichang and I have seen similar examples from the Khasi Hills and from Satsuma. Perhaps (at least in some localities) it is nothing more than an aberration of *deliaria* Guen.

26. **Antitrygodes divisaria perturbata** Prout, nov. subsp. — ♂♀, 32—34 mm. Rather smaller than *divisaria divisaria* Walk. from India, termen generally rather less strongly crenulate, cell of forewing slightly shorter; the green patch distally to the cell smaller, subapical patches on an average smaller and more separated, the dark line proximally to these not sinuous; a curved postmedian line of dots visible about midway between the dark line and the green patches; the reddish submarginal spot on R^2 of hindwing usually very small. Areole of forewing closed

at its extremity; in *divisaria divisaria* often open. Kosempo, November 1911, 1 ♀ (type); Yamo no Taiko, October 1911, 1 ♀. Also both sexes in coll. Wileman.

27. **Antilycauges pinguis** Swinh. — 1 ♂, 3 ♀, Anping, July—September. Swinhoe's type came from Formosa, without more exact locality, but the species is distributed throughout Eastern China from Tientsin to Tonkin.

*28. **Acidalia moorei orientalis** Prout, nov. subsp. — Intermediate in colour between *moorei moorei* Leech and *rufigrisea* Prout, on an average rather nearer to the latter. Differs from both in having black dorsal spots on the abdomen (as in *extimaria* Walk. and some forms of *walkeri* Butl.) and in having the discal dot of the hindwing much more mixed with rust-brown, sometimes indeed with only a few scattered black scales remaining. Suisharyo, February 1912, 41 ♂. Also a ♂ from Karapin (Japan), August 1911. It is remarkable that among so long a series there should be no ♀; she must be very sluggish, or of different habits to the ♂.

29. **Acidalia kagiata** Bastelberger. — A long and variable series, and comprising three distinct forms. It is not impossible that they may represent separate species, but as they agree in structure and in all essential markings I do not think this very probable. If Bastelberger is correct in stating that the dark median shade of the forewing runs to the *apex* (which seems to me very unlikely), I must have misidentified Sauter's species, but the rest of the description fits well to the form which I shall for the present regard as name-typical, though it is probably not quite so sharply marked as Bastelberger's type. It has about the size, coloration and general appearance (excepting the shape) of *A. nigropunctata* Hufn., the black vein-dashes which accompany the postmedian line present on the forewing only, and even here commonly small and slight. Suisharyo, 1 ♂, 1 ♀, December 1911 and February 1912; also 1 ♂ from Karapin (Japan), August 1911. — *f. emma* Prout is smaller (normally 22—24 mm), both the ground-colour and the markings more tinged with rufous or flesh-colour, the oblique median shade and the postmedian line less strongly developed, but the latter accompanied on both wings by conspicuous black dashes on the veins. Kosempo, 2 ♂, October 1911, Alikang, 3 ♀, September—October 1909; 2 ♂ from Suisharyo must also be referred here though rather larger (26—27 mm), slightly more grey-dusted and with stronger median shade, thus somewhat intermediate towards the normal Suisharyo form. I described *emma* (Seitz Macrolep. IV, p. 75) from Chungking

(Szechuan) and as a separate species, but notwithstanding the wide geographical distance I can find no difference at all in the Formosanform. — *defectiscripta* Prout, nov. form., is of the size of the form *emma*, ground-colour of the name-type but less strongly dusted with grey, lines less grey, generally weaker, the median shade more slender, on both wings entirely without black vein-dashes. Alikang, 3 ♂, October 1909 and May 1911; a ♂ from Kosempo, January 1910, is rather larger and slightly deeper-coloured, the black dots on the postmedian line of the forewing slightly indicated, thus intermediate towards the name-type.

30. **Acidalia ligataria** Walk. — 1 ♂, Anping, May 1911. Also known from Central and Southern India and Birma. It may be, as Hampson supposes, identical with *nictata* Guen., founded on a single ♂ in very bad condition from North India.

31. **Acidalia indigenata** Wileman. — 1 ♀, Suisharyo, October 1911. I am not at all sure whether this is anything more than a larger, darker (greyer-tinged) form of the preceding, but as the hindwing appears slightly less strongly angled at R^3 and slightly more crenulate throughout I hesitate to sink it.

*32. **Acidalia sybillaria** Swinh. — 3 ♀, Alikang, November 1909, Suisharyo, December 1911, Kosempo, 7 May 1912. Only the first is in perfect condition; this and a ♀ from Koamana in coll. Wileman have rather larger cell-dots and more sharply marked underside than Swinhoe's types from Ichang. The other examples are larger, that from Suisharyo greyer, weakly marked, that from Kosempo very worn, the discal dots large, identification somewhat uncertain.

*33. **Acidalia actuaria** Walk. — 2 ♂♂ (Anping, July 1910; Kosempo, October 1911) fully agree with this widely distributed Indian species, unless perhaps the teeth in the postmedian line be a little stronger than usual. Thus my *personata* (Seitz Macrolep. IV, p. 60) cannot be, as I suggested, the eastern representative of the same. The group is, however, an exceedingly difficult one, depending largely on slight distinctions in the ♂ hindtarsus, and I am now inclined to think that Fletcher may be right in sinking *actuaria* to *minorata* Bsd. A worn ♀ from Anping, May 1912, probably belongs also to *actuaria*, possibly to *personata*.

34. **Acidalia absconditaria** Walk. — 1 ♂, Kankau (Koshun), June 1912; 1 ♀, Sokutsu (Banshoryo district), 7 June 1912. Hampson is probably right in sinking this to *nesciaria* Walk. (= *remotata* Hampson, nec Guen.), described from Ceylon and widely distributed in India,

but as I am not yet certain, I prefer to use the safer name, too much mischief having already been done by hasty lumpings in this difficult genus. Walker's type of *absconditaria*, from Foo-chow, agrees perfectly with the Formosan form. Recorded from Formosa by Matsumura (Cat. Ins. Japon. Lep. p. 120) as *remotata*, no doubt quoting Hampson; specimens from the island have for many years stood in the British Museum collection.

*35. **Ptychopoda sinicata** Walk. — 6 ♀, Kankau (Koshun), April, June and July 1912; 1 ♀, Kosempo, June 1912. Besides Walker's type from Foo-chow and a ♂ from Ting-hai (Fokien) I know only the Formosan specimens. Related to *muricata* Hufn. in structure and colouring but much smaller, rather narrower-winged, the rosy purple colour disposed in more regular lines, though these vary in width and there is sometimes a suggestion of a rosy suffusion.

*36. **Ptychopoda paraula** Prout, nov. sp. — ♂, 17 mm. Size, shape, coloration and antennal structure as in *impexa* Butl., or with the ground-colour very slightly lighter, the hindwing perhaps not quite so fully rounded; hindleg with the femur and tibia longer-haired. Forewing with costal and subterminal reddish or purplish bordering about as in *impexa*, the latter, however, not quite so close to the termen; reddish discal dot stronger than in *impexa*, a fine, slightly sinuous median line touching it distally, antemedian and postmedian lines present as dots on the veins, fringe with reddish dots at vein-ends. Hindwing with antemedian line, cell-dot and postmedian series of dots; subterminal shade starting near the apex, sinuous, receding from the termen, disappearing about the middle of the wing, a terminal reddish shade from apex to 2nd or 3rd radial, a reddish spot at tornus; fringe-dots only well developed in anterior half of wing. Underside also rather more strongly marked than in *impexa*. Alikang, October 1909, one example only.

*37. **Ptychopoda invalida** Butl. (?). — A small, worn ♀ from Alikang, September 1909, may be provisionally referred to this species, which appears to be distributed in Japan, Korea and Eastern to Central China. A larger ♀ from Suisharyo, 22 December 1911, also worn, may be a weakly marked aberration of the same, though the forewing is more pointed than usual. A small, more reddish tinged ♂ from Alikang, October 1909, I am also inclined, according to the structure, to regard as an aberrant *invalida*, but more extensive and better material is required for the elucidation of these forms.

*38. **Anisodes pallida** Moore. — 1 ♂, 1 ♀, Alikang, October and November 1909. Median shade weaker than in most of the forms, the

under surface (as is also the case in a Sikkim example of ab. *perscripta* Warr. which lies before me) rather brighter pink on the forewing, rather clearer whitish on the hindwing. Without doubt widely distributed, but the exact range cannot be given, as two or three species are probably mixed. Turner (Proc. Linn. Soc. N. S. Wales XXXII, p. 691) describes as *pallida* a species with quite different palpus; in the ♂ of the present species the 3rd joint is elongate, about two-thirds as long as the 2nd. Moore's type was from Ceylon.

*39. **Anisodes effeminata** Prout, nov. sp. — ♂, 36 mm. Remarkably like *Mesotrophe intortaria* Guen. in size, shape, colour and markings, but with normal *Anisodes* hindleg and venation. Hindleg not clothed with hair; long and slender, with a single pair of well developed spurs. Palpus nearly 3 times as long as diameter of eye, 3rd joint elongate. Areole moderately large. Face pale, not mixed with crimson excepting two spots at the upper extremities. Forewing with postmedian series of dots strong, rather less curved basewards in anterior part than in *intortaria*; no conspicuous blackish subterminal dots. Hindwing with the discal ocellus larger than in *intortaria*, filled-in with the ground-colour, not with white. Under surface paler, forewing with rosy ocellus, rosy median shade and dentate postmedian line, the latter with rosy patches beyond, some less definite rosy suffusion or dusting in other parts of wing; hindwing similar but with the rosy markings rather weaker and less extended. Polisha, August 1909, a single example.

40. **Brachycola absconditaria** Walk. — 1 ♀, Kosempo, January 1910.

*41. **Pisoraca lichenaria** Swinh. — 1 ♂, Alikang, October 1909. Regarded by Hampson as „the Khasi form" of *variospila* Warr., which he formerly misidentified as *monetaria* and which is distributed in India. They are certainly separate species but in any case *lichenaria* is the older name. New for Eastern Asia.

42. **Pisoraca** sp. — 1 ♂, Kosempo, October 1911. I cannot identify this with any species known to me, but unfortunately it is too worn for description. Superficially it appears very like those forms of *Anisodes pallida* in which the discal ocellus of the hindwing is most strongly developed, or like a small *variospila* Warr., but the hindtibial armature differs from both, the middle spur being present, and widely removed from the terminal, of which only one is developed. Palpus long and thin.

Subfam. *Larentiinae.*

*43. **Acasis viretata** Hb. — 1 ♂, Suisharyo, February 1912.

*44. **Trichopterigia consobrinaria** Leech. — 1 ♂, Suisharyo, February 1912. Described from Gifu.

45. **Heterophleps variegata** Wileman. — 1 ♂, Suisharyo, February 1912, rather less variegated than Wileman's type from Arizan. Described as a *Dysethia*, but that name is a synonym *variegata* belongs to the typical section — ♂ antenna with fascicles of cilia.

*46. **Microloba bella** Butl. — 1 ♀ Shisha, May—June, 1912; 1 ♀, Pilam, July 1912. Also 1 ♂ and 1 ♀ from Punkiko and Karapin (Japan), August 1911. Widely distributed from N. India to Japan and liable to very little variation.

*47. **Sauris olivacea** Warr. — 3 ♀, Kosempo, October 1911; 1 ♀, Suisharyo, October 1911. Apparently referable here, but mostly worn. I cannot compare Warren's Sikkim type, but a specimen from the same district in the British Museum collection is rather narrower winged; on the other hand the Formosan specimens appear quite like the Hong Kong form.

48. **Sauris** sp. — 1 ♀, Suisharyo, February 1912, worn. Apparently similar to the preceding but probably of a less olivaceous green, the 3rd joint of the palpus appreciably shorter.

49. **Sauris interruptata** Moore. — 1 ♂, 1 ♀, Kosempo, 22 December and October 1911. Only known to me from India. Hampson merged this and several other forms in the very widely distributed *hirudinata* Guen. and called *interuptata* a „female form". I prefer for the present to regard it as a species.

*50. **Hypocometa clauda** Warr. — 1 ♂, Chip-Chip, February 1909.

51. **Phthonolobadecussata** Moore. — 1 ♂, Suisharyo, February 1912.

*52. **Cryptoloba cinerea** Butl. — 1 ♂, Shisha, May—June 1912.

53. **Cryptoloba etaina** Swinh. — 1 ♂, Punkiko (Japan), August 1911. This and the three preceding species are all characteristically North Indian.

54. **Lobogonia aculeata** Wileman. — 1 ♂, 1 ♀, Suisharyo, February 1912 and October 1911; 1 ♀, Alikang, October 1909. *L. sphagnata* Bastelberger is closely allied, possibly even a form of the same species, though I scarcely think so.

*55. **Naxidia punctata** Butl. — 2 ♂ Shisha, May—June 1912; 1 ♀, Suisharyo, February 1912. Also a ♂ from Punkiko (Japan), August 1911. Previously known from N. India and W. China.

*56. **Triphosa rubrodotata** Walk. — 1 ♀, Suisharyo, 22 December 1911.

57. **Photoscotosia atrostrigata insularis** Bastelberger. — 1 ♂, Suisharyo, February 1912.

58. **Photoscotosia miniosata** Walk. — 3 ♂, Suisharyo, February 1912.

*59. **Telenomenta punctimarginaria** Leech. — 1 ♀, Hoozan, September 1910; 2 ♀, Kosempo, April 1912. Range, Japan to Central China.

60. **Dysstroma citrata** L. (= **immanata** Haw.). — 4 ♂, Suisharyo, February 1912. Very constant among themselves, all having the forewing dark, with the median band only slightly blacker, the red-brown colour proximally and distally to it indistinct, the pale costal patch therefore conspicuous, as are also the white dots on the inner margin at the end of the basal and the beginning of the median band. May probably be cited as *f. fumata* Bastelberger. That this is not, however, the only Formosan form of this widely distributed and enormously variable species is shown by the Wileman collection and by Bastelberger's papers. The forms which the latter records as *Polyphasia cinereata* Moore, *P. subapicaria* Moore and *P. scalata* Bastelberger without doubt belong — at least in part — here.

*61. **Xanthorhoë (Ochyria) saturata** Guen. — 1 ♀ of this very widely distributed species, Suisharyo, February 1912.

62. **Melanthia procellata clathrata** Warr. — 1 ♀, Karapin (Japan), August 1911. Bastelberger (Iris XXII, p. 170) quotes also subsp. *inquinata* Butl. (the Eastern Palaearctic form) for Formosa, but this is probably an error. The series from Kanshirei and Koannania in coll. Wileman belong entirely to the Khasi form (? species) *clathrata*, with strong sexual dimorphism, strong dark lines in the ♂, clean white ground-colour in ♀, subcostal vein not bright rust-colour, border of forewing broad, with white spot at tornus.

63. **Euphyia curcumata** Moore (= **formosicola** Bastelberger, nov. syn.). — 1 ♀, Punkiko (Japan), August 1911. Distal area of forewing (except the oblique subapical streak) strongly infuscated, hindwing and underside almost uniformly dark smoke-colour; median band of forewing with stronger distal projection in the middle. Probably a mere aberration, as I have seen typical *curcumata* from Formosa. Bastelberger's description of *Paralophia viridilineata* (Ent. Zeit. Stuttg. XXIII, p. 77; suppressed in Iris XXII) fits perfectly to dark forms of this species, but it is certainly not a *Paralophia*; perhaps its author discovered it was only a form of his *formosicola*, but no information is given. It should be added that this species, founded on a ♀, has been misidentified by Hampson, who regards as *curcumata* an apparently unnamed species from Simla and Dalhousie with pectinate ♂ antenna. In true *curcumata*, of which I have before me both sexes from Sikkim, the ♂ antenna is

minutely ciliated; *aridaria* Leech, from W. China and Kulu, is probably only a slight modification of *curcumata*, while *formosicola* Bastelberger (Ent. Zeit. Stuttg. XXIII, p. 39) seems purely a synonym.

*64. **Euphyia rectilinea** Warr. — 1 ♂, Kosempo, January 1910; 1 ♀, Alikang, September 1909. The group to which this and the next two species belong (*Ecliptopera* Warr.) nearly agrees with *Lygris* except in the lack of the pencil of hairs on the forewing beneath. Hampson regards *rectilinea*, hitherto recorded from N. India and Celebes, as a form of the S. Indian *dissecta* Moore but the different shape of the central band, the less sharply marked underside, etc., seem to me to indicate a probable species.

*65. **Euphyia benigna** Prout, nov. spec. — ♂♀, 41—45 mm. Very close to *rectilinea*; palpus apparently somewhat more robust; ♂ antenna even more minutely ciliated (*in rectilinea* the ciliation is, *in part*, nearly half as long as the diameter of the shaft), forewing with the white lines more sharply expressed, those which bound the median area broader, median area broader, its triangular anterior part reaching to behind vein M^2, its posterior part also enlarged, the white lines which bound the two parts consequently confluent for some distance between M^2 and the fold, the white distal line of median area much more deeply indented on SM^2, subterminal line markedly indented on SC^5 and R^1, enclosing semicircular spots of the ground-colour proximally; hindwing with distal margin slightly more rounded, ground-colour much whiter to beyond the postmedian line, the latter better expressed, more deeply dentate on the median veins, another dentate line, nearer the base, present on the inner-marginal half of the wing; the dark blotches of the underside are less strongly developed, but on the other hand the lines are better indicated, chiefly by rows of spots or dots. 2 ♂♂, Alikang, October 1909 (type and cotype); 1 ♀, Karapin (Japan), August 1911.

*66. **Euphyia delecta** Butt. — 1 ♀, Kosempo, December 1911. Described from N. India.

*67. **Atopophysa indistincta opulens**, nov. subsp. — ♂, 31 mm. Differs essentially from typical *indistincta* Butl. in its much darker colour. Forewing dark bluish slate-colour, more or less irrorated with olive-brownish, the lines olive-brown, the teeth on the veins blackish; hindwing and underside also darker, more bluish grey. Suisharyo, February 1912. Cotypes (both sexes) from Arizan, September 1906 and August 1908 (A. E. Wileman) in coll. Brit. Mus. and coll. Wileman.

68. **Cambogia lunulosa duplicilinea** Wileman. — 3 ♂, Alikang, October-November 1909. *lunulosa* Moore is widely distributed; *dupli-*

cilinea (described as *Chrysocraspeda*) is only a slight modification, similar to examples from Singapore and Bali, the crimson markings as bright as in Bali specimens but less extended. The name-type was from Ceylon.

69. **Cambogia (Acolutha) pictaria** Moore. — 1 ♀, Punkiko (Japan), August 1911.

*70. **Eupithecia incurvata** Moore. — 1 ♂, 1 ♀, Suisharyo, December and October 1911. A very distinct species, the termen of the forewing less oblique and the hindwing relatively longer than in typical *Eupithecia*. Not uncommon in the Khasi Hills but I think not yet recorded elsewhere.

*71. **Eupithecia (Eucymatoge) eupitheciata** Walk. — 1 ♀, Alikang, November 1909. Widely distributed in the Indo-Australian Region.

*72. **Chloroclystis recensitaria** Walk. (?). — A rather worn ♀ from Kosempo, April 1912, seems to be referable to this species, hitherto known from Dharmsala, the Nilgiris and Ceylon.

*73. **Chloroclystis indicata** Hampson (? Walk.). — 1 ♀, Kosempo, October 1911, rather worn. Pretty evidently belongs to the same species which Hampson describes from S. India under this name: I am, however, by no means satisfied that Walker's type (from Borneo) is the same. It is not impossible that the Formosan specimen before me is a large, dark, weakly-marked form of the preceding species.

*74. **Ziridava xylinaria** Walk. — 1 ♀, Kosempo, January 1910. A widely distributed species, India, Borneo, etc.

*75. **Collix ghosha** Walk. — 4 ♀, Kosempo, June and October 1911, one in fair condition, 3 much rubbed. Widely distributed in the Indo-Australian Region.

*76. **Collix stellata** Warr. (?) — 2 ♀, Kosempo, September and October 1911. Larger than the preceding and agreeing with Warren's description of his species (from the Khasis) in having the subterminal line broken up into white dots, but with the ground-colour at least as brownish as in *ghosha*. The cell-spot of the forewing is somewhat differently shaped, forming a very irregular lunule with its posterior part larger and thicker than its anterior. Hampson, probably in error, has sunk *stellata* to *ghosha*. Extremely like *rufipalpis* Hmpsn. but not quite so large, the palpus less long and less ochreous.

*77. **Collix hypospilata** Guen. (?). — 1 ♂, Shisha, May-June 1912, rather worn. Exactly this form (so far as its condition allows of comparison) stands in the British Museum collection as a Khasi race of *hypospilata* Guen. (from S. India), but I very much doubt the correctness

of this. It has the same large, round cell-spot on the forewing above, but the tone of colour is more like that of *ghosha*, the underside almost entirely as in *ghosha*, and it may possibly be a large form thereof with strong dark costal markings at the commencement of all the lines of the forewing.

Subfam. ***Geometrinae*** (= ***Boarmiinae***).

*78. **Ourapteryx ebuleata** Guen. — 5 ♂, Shisha, May-June 1912.

79. **Ourapteryx picticaudata** Walk. — 2 ♂, 2 ♀, from the same locality as the preceding and with the costal strigulation and discal mark so weak as to suggest a possibility that they might be a white form thereof. From the shape, the lines, the fringes and the existence of intermediates I determine them, however, as a form of *picticaudata*; *formosana* Matsumura and *approximaria* Wileman are probably synonyms.

*80. **Thinopteryx crocoptera** Koll. — 1 ♂, 5 ♀, Shisha, Kosempo, Polisha, Alikang and Suisharyo, variable as usual.

*81. **Bapta platyleucata** Walk. — 1 ♂, Suisharyo, February 1912.

82. **Bapta mytylata** Guen. — 1 ♂, Shisha, May-June 1912. Belongs to the form *margarita* Moore. This species and the preceding are closely related and occur together in many localities of N. India.

*83. **Aplochlora vivilaca** Walk. — 5 ♂, Kosempo, June and October 1911; 1 ♀, Alikang, 7 October 1909.

84. **Tanaoctenia haliaria** Walk. — 1 ♀, Banshoryo (Shisha), May-July 1912.

*85. **Nothomiza costalis flavicosta** Prout, nov. subsp. — ♂ ♀, 24 to 32 mm. Very much smaller than the Bengal type ♀ of *costalis* Moore and ab. *pulchra* Butl., both of which in the only examples (♀) known to me measure about 52 mm. Smaller even than the Khasi form (which will perhaps have to be known as *intensa* Warr., though that name was founded on a dark aberration), which expands about 34—40 mm: the distal costal yellow spot relatively larger, the curved dark line of the hindwing in general more sharply expressed, the underside with the pattern often showing through. Variable in the amount of dark clouding. Sokutsu (Banshoryo district), 7 May 1912 (type, ♀); Alikang, October 1910, 1 ♀, a dark aberration nearly parallel to *intensa* Warr. Other Formosan examples (both sexes) are in coll. Brit. Mus. and coll. Wileman and the British Museum has an old specimen from „N. China" which has long borne the M. S. name of *flavicosta* Warr., here adopted.

(Fortsetzung folgt.)