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FASCICULI MALAYENSES

FASCICULI MALAYENSES

ANTHROPOLOGICAL AND ZOOLOGICAL RESULTS OF AN EXPEDITION
TO PERAK AND THE SIAMESE MALAY STATES, 1901-1902

1906

UNDERTAKEN BY

NELSON ANNANDALE AND HERBERT C. ROBINSON

UNDER THE AUSPICES OF THE UNIVERSITY OF EDINBURGH AND
THE UNIVERSITY OF LIVERPOOL

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PART III

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REPORT ON THE BUTTERFLIES OF THE
FAMILY LYCAENIDAE

BY
HAMILTON H. DRUCE, F.Z.S., F.E.S.

INTRODUCTORY NOTE

WE paid less attention to the *Lycaenidae* than to other butterflies, and our collection is a small one as regards this family: roughly speaking, there are only about twice as many individuals as species represented. In the Malay Peninsula the 'Blues' have much the same habits as in other tropical countries. Most of them delight in extremes of light and shade, are attracted to putrid animal and vegetable substances, and frequent the edges of streams and other places where they can suck up moisture. Other observers have noted that while they rest the wings are often given a rotary movement, which agitates the 'tails,' so common at the posterior extremity of the wings in this family, in a very lively manner, giving them the appearance of antennae, while the spots generally present at their base represent eyes. It is obvious, from the mutilations noted on the wings that birds are attracted to the false head thus simulated, and that the insects often escape capture and destruction with the loss of a part of the wings which is of very little, if any, direct importance to them. This is certainly true of a large number of species in Malaya; but there are several common species (especially *Loxura atymnus*, a copper-coloured form, in which the 'tails' are very stout) which rest with their wings slightly separated from one another and absolutely still. A comparison between the state of the wings in worn specimens in such a form and in another equally common in which the wings are rotated would be interesting; but our limited collection does not provide sufficient material for such a comparison. Something more may be said with regard to the 'tails' of butterflies, especially in the genus *Cyrestes*, in Mr. ROBINSON'S Report on the remainder of our butterflies, the publication of which, it is hoped, may not be long delayed.

NELSON ANNANDALE

REPORT ON THE BUTTERFLIES OF THE FAMILY LYCAENIDAE

By HAMILTON H. DRUCE, F.Z.S., F.E.S.

1. *Gerydus biggsii*

Gerydus biggsii, *Dist. Rhop. Malay.*, p. 206, pl. 22, fig. 12.

1. Mabek, Jalor. 7th July, 1901.

‘Flying in open space, surrounded by thick jungle, at the top of small hill.’

2. *Gerydus*, sp. (?)

♂, ♀ of an apparently undescribed species allied to *G. symetbus*, Cr. and *G. improbus*, H. H. Druce.

♂, ♀ (*in cop.*) Jeram Kawan, Batang Padang, South Perak. 14th February, 1902.

3. *Paragerydus horsfieldi*

Miletus horsfieldi, *Moore, Cat. Lep. Mus. E.I.C.*, vol. i, p. 19, pl. 1a, fig. 2.

1. Mabek, Jalor. 23rd July, 1901.

4. *Megisba malaya*

Lycaena malaya, *Horsf. Cat. Lep. E.I.C.*, p. 70.

1. Label missing.

5. *Cyaniris melaena*

Cyaniris melaena, *Doherty, J.A.S.B.*, vol. lviii, p. 434, pl. 23, fig. 13 (1889).

One ♂ agreeing with DISTANT's figure of *C. jyntheana* de Nicév. as regards the width of the black borders.

1. Bukit Besar, Nawngchik. 2,500 feet. 6th May, 1901.

‘On stones in stream.’

6. Cyaniris albocaeruleus

Polyommatus albocaeruleus, Moore, *P.Z.S.*, 1879, p. 139.

1. No label. Probably Bukit Besar.

7. Cyaniris musina(?)

Cyaniris musina, Snell. *Tijd. voor, Ent.* vol. xxxv., p. 145, 1892.

I identify this with some doubt; it is not much like DE NICÉVILLE'S figure.

1. Label missing. Probably Bukit Besar.

8. Cyaniris selma, H. H. Druce.

Cyaniris selma, H. H. Druce, *P.Z.S.*, 1895, p. 573, pl. 32, fig. 10, ♂.

One ♂ agreeing exactly with type of *C. selma* on underside, but darker blue above.

1. Label missing. Probably Bukit Besar.

9. Cyaniris lambi

Cyaniris lambi, Distant, *Anns. Mag. Nat. Hist.*, ser. v, vol. x, p. 245 (1882).

Three specimens, ♂, ♂, which I identify without doubt as this species, which is very distinct. DISTANT'S figure is not at all good, and makes it look much more like *C. puspā* HORSF. than *C. lavendularis* MOORE, to which as DISTANT states (*Rhop. Exot.* p. 211) it is nearly allied. Dr. BUTLER, in his recent 'List of the species of *Cyaniris*,' *Anns. Mag. Nat. Hist.*, ser. 7, vol. 5, does not mention *C. lambi*.

3. Bukit Besar, Nawangchik. 2,500 feet. 30th April, 1st and 8th May, 1901.

'Flying about stream and path in morning, at mid-day, and in afternoon, often resting on stones. Flight very slow.'

10. Cyaniris splendens

C. splendens, Butler, *Anns. Mag. Nat. Hist.*, ser. 7, vol. 5, p. 444 (1900).

One ♂ much damaged.

- Telôm, Perak-Pahang boundary. 4,000 feet. 22nd January, 1902.

11. Cyaniris sp. (?)

Several specimens much rubbed.

Allied to *C. placida* de Nicév. and *C. jnyteana* de Nicév.

5. Telôm, Perak-Pahang boundary. 4,000 feet. 17th and 20th January, 1902.

'At edge of jungle stream, on stones in stream, and in thick jungle.'

12. Zizera karsandra

Polyommatus karsandra, *Moore, P.Z.S.*, 1865, p. 505, pl. 31, fig. 7.

1. Biserat, Jalor. 4th July, 1901.

‘Flying over scanty vegetation on sand during rain at sunset.’

13. Zizera otis

Papilio otis, *Fab. Mant. Ins.*, vol. ii, p. 73 (1787).

1. Biserat, Jalor. 14th July, 1901.

‘Flying over scanty grass at dusk.’

14. Una usta

Zizera (?) *usta*, *Dist. Anns. Mag. Nat. Hist.*, ser. 5, vol. xvii, p. 531 (1886).

2. Telôm Perak-Pahang boundary. 4,000 feet. January, 1902.

‘At edge of stream.’

15. Nacaduba noreia

Lycaena noreia, *Feld. Verh. zool.-bot. Gesell. Wien.* vol. xviii, p. 282 (1868).

1. Bukit Besar, Nawngchik. 500-800 feet. 19th April, 1902.

16. Nacaduba atratus

Lycaena atratus, *Horsf. Cat. Lep. E.I.C.*, p. 78 (1828).

1. Bukit Besar, Nawngchik. 2,500 feet.

‘Edge of stream ; morning.’

17. Nacaduba bhutea

N. bhutea de Nicév. J.A.S.B., vol. lii, p. 72, pl. 1, fig. 13 (1883).

One specimen which differs only from Sikkim specimens by the total absence of the tails. It may prove to be a distinct species.

1. Bukit Besar, Nawngchik. 2,500 feet. 6th May, 1901.

‘On stones in stream.’

18. Nacaduba ardates

Lycaena ardates, *Moore, P.Z.S.*, 1874, p. 574, pl. 67, fig. 1.

1. Perak boundary, Rhaman. 18th April, 1902.

19. Jamides bochus

Papilio bochus, *Cr. Pap. Exot.*, v. iv, p. 210, pl. 391, figs. C, D (1782).

1. Biserat, Jalor. 8th July, 1901.

‘Flying among bushes ; midday.’

2 ♀. Patani town. 9th September, 1901.

20. Lampides elpis

Polyommatus elpis *Godt. Enc. Méth.* vol. ix, p. 654 (1823).

1. Bukit Besar, Nawngchik, 29th August, 1901.

21. Lampides subdita

L. subdita, *Moore, Journ. Linn. Soc. Zoology*, vol. xxi, p. 41 (1886).

7. Biserat, Jalor. July, 1901.

‘Common on jungle road, Biserat, in July.’

1. Bukit Besar, Nawngchik. 2,000 feet. 7th September, 1901.

1. Jarum, Hulu Rhaman. 22nd April, 1902.

22. Lampides celeno

Papilio celeno, *Cr. Pap.*, Ex. I, t. 31, figs. C, D (1775).

1. Biserat Jalor. 12th July, 1901.

‘In long grass.’

1. Ban Sai Kau, Nawngchik. September, 1901.

‘Secondary jungle ; afternoon.’

1. Bukit Besar, Nawngchik. 500-800 feet. 19th May, 1901.

1. Jarum, Hulu Rhaman. 22nd April, 1902.

23. Catochrysops strabo

Hesperia strabo, *Fab. Ent. Syst.*, vol. iii, p. 287 (1793).

1. Perak Boundary, Rhaman. 18th April, 1902.

24. Catochrysops platissa

Lycaena platissa, *Herr-Schf., Stett. Ent. Zeit.*, vol. xxx, p. 74, pl. IV, fig. 20.

3. Biserat, Jalor. 12th July, 1901.

‘Among long grass at midday.’

25. Castalius rosimon

Papilio rosimon, *Fab. Syst. Ent.*, p. 523 (1775).

4. Biserat, Jalor. June, July, August, 1901.

‘On jungle paths.’

1. Bukit Besar, Nawngchik. 19th May, 1901.

‘Clearing at base of hill.’

1. Perak boundary, Rhaman. 5th April, 1902.

26. Castalius ethion

Lycaena ethion, *Doub. and Hew. Gen. Diur. Lep.*, vol. ii, p. 490, pl. 76, fig. 3 (1852).

1. Biserat, Jalor. 14th July, 1901.

1. Mabek, Jalor. 27th July, 1901.

27. Castalius roxus

Polyommatus roxus, *Godt. Enc. Méth.*, vol. ix, p. 659 (1823).

4. Biserat, Jalor. 11th to 16th July, 1901.

‘In morning, at mid-day, and in afternoon. In jungle, and on wet sand and newly dug earth.’

1. Mabek Jalor. 23rd July, 1901.

1. Telôm, Perak-Pahang boundary. 3,500 feet. January, 1902.

28. Polyommatus boeticus

Papilio boeticus, *Linn. Syst. Nat.* ed. xii, vol. i, p. 789 (1767).

♂, ♀ (*in. cop.*). Jambu, Jhering. 5th June, 1901.

29. Amblypodia anita

Amblypodia anita, *Hew. Cat. Lyc. B.M.*, p. 14, pl. 8, figs. 90-91 (1862).

1. Biserat, Jalor. 21st October, 1901.

‘Flying in jungle at mid-day.’

1. Cape Patani, Jhering. 10th June, 1901.

‘Flying at mid-day among undergrowth in casuarina wood by sea.’

30. Arhopala centaurus

Papilio centaurus, *Fab. Syst. Ent.*, p. 520 (1775).

1. Mabek, Jalor. 27th July, 1901.

‘In jungle ; afternoon.’

1. Ban Sai Kau, Nawngchik. 21st May, 1901.

‘Wings much injured when taken. On wing at mid-day. Sluggish.’

Bukit Besar. About 400 feet above Sai Kau.

‘In large numbers on flowers of *Melastoma*. Dull morning.’

31. Arhopala perimuta

Amblypodia perimuta, *Moore, Horsf. and Moore Cat. Lep. E.I.C.*, vol. i, p. 42 (1857).

1. Biserat, Jalor. 14th July, 1901.

‘On jungle path ; late afternoon.’

32. Apporasa atkinsoni

Amblypodia atkinsoni, *Hew. Ill. Diur. Lep.*, p. 149, pl. 3b, figs. 48 and 49 (1869).

1. Mabek, Jalor. 24th July, 1901.

‘Resting on bush in open at dusk.’

33. Mahathala ameria

Amblypodia ameria, *Hew. Cat. Lyc. B.M.*, p. 14, pl. 8, figs. 85 and 86 (1862).

1. Mabek, Jalor. 23rd July, 1901.

‘Flying among undergrowth of jungle at mid-day.’

34. Curetis malayica

Anops malayica, *Feld. Reise Novara, Lep.*, vol. ii, p. 221, pl. 28, fig. 18 (1865).

1. Ban Sai Kau, Nawngchik. 16th September, 1901.

‘In bed of stream, sitting on granite rock with wings closed ; harmonizing exactly with colour of stone, and almost impossible to see.’ H. C. R.

35. Ilerda epicles

Polyommatus epicles, *Godt. Enc. Méth.*, vol. 9, p. 646 (1823).

3. Telôm, Perak-Pahang boundary. 4,000 feet. 22nd, 23rd January, 1902.

36. Spindasis syama

Amblypodia syama, *Horsf. Cat. Lep. E.I.C.*, p. 107 (1829).

2. Biserat, Jalor. 12th July and 18th October, 1901.

‘Flying among long grass on river bank at mid-day, and on flowers of shrub with many other insects of different orders.’

37. Suasa suessa

Suasa suessa, de Nicév, *J.B.N.H. Soc.*, vol. vii, pl. H, figs. 8, 9 (1892).

1. Bukit Besar, Nawngchik. *Circa* 1,500 feet. 7th September, 1901.

38. Hypolycaena erylus

Polyommatus erylus, *Godt, Enc. Méth.*, vol. ix, p. 633.

1. Bukit Besar, Nawngchik. Base of hill. 19th May, 1823.
1. Cape Patani. 30th September, 1901.

‘Flight very rapid.’

39. Zeltus etolus

Papilio etolus, *Fab. Mant. Ins.* vol. ii, p. 66 (1787).

2. Biserat, Jalor. 29th June and 14th July, 1901.

‘On jungle path, late afternoon, and on open sunny road overgrown with low shrubs.’

1. Bukit Besar, Nawngchik. 2,500 feet. 18th June, 1901.

‘Flying in clearing after rain, afternoon.’

40. Cheritra freja

Hesperia freja, *Fab. Ent. Syst.* vol. iii, p. 263 (1793).

1. Biserat, Jalor. 25th October, 1901.

41. Biduanda thesmia

Myrina thesmia, *Hew. Ill. Diur. Lep.* p. 32, pl. 4, figs. 25, 27 (1863).

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|----|-------------------------|-------------------------------|
| 1. | Biserat, Jalor. | 3rd July, 1901. |
| 1. | Bukit Besar, Nawngchik. | 2,500 feet. (?) |
| 1. | Bukit Besar, Nawngchik. | 500-800 feet. 19th May, 1901. |

'At edge of jungle ; afternoon.'

42. Marmessus moorei

Sithon moorei, *Dist. Anns. Mag. Nat. Hist.* ser. 5, vol. x, p. 246 (1882).

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| 4. | Biserat, Jalor. | 3rd and 14th July, 1901. |
|----|-----------------|--------------------------|

'Flies low ; secondary jungle ; afternoon.'

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| 1. | Mabek, Jalor. | 25th July, 1901. |
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'Flying at edge of jungle ; midday.'

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| 1. | Bukit, Besar, Nawngchik. | 2,500 feet. 3rd September, 1901. |
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43. Loxura atymnus

Papilio atymnus, *Cr. Pap. Ex.* vol. 4, pl. 331, figs. D, E (1780).

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| 5. | Biserat, Jalor. | 29th June to 12th July, 1901. |
| 3. | Mabek, Jalor. | 25th and 27th July, 1901. |

'This species does not give its wings a rotatory movement, as many of the tailed *Lycaenidae* do when at rest, but sits with them partially expanded and quite motionless. It is common in the Patani States.'

44. Yasoda pita

Loxura pita, *Horsf. Cat. Lep. E.I.C.*, p. 122 (1829).

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| 1. | Bukit Besar, Nawngchik. | 2,500 feet. 30th August, 1901. |
|----|-------------------------|--------------------------------|

45. Sithon nedymond

Papilio nedymond, *Cr. Pap. Exot.* vol. iv, p. 19, pl. 299, figs. E, F (1780).

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|----|---------------|------------------|
| 1. | Mabek, Jalor. | 25th July, 1901. |
|----|---------------|------------------|

'Flying in jungle at mid-day.'

46. Deudorix epijarbas

Dipsas epijarbas, *Moore, Horsf. and Moore, Cat. Lep. Mus. E.I.C.*, p. 32 (1857).

1. Biserat, Jalor. 18th October, 1901.

1. Bukit Besar, Nawngchik. 2,500 feet. 7th May, 1901.

‘During life the real eye of this species is, like the “eye” at the base of the tail, black surrounded by a white ring.’

47. Rapala varuna

Thecla varuna, *Horsf. Cat. Lep. E.I.C.*, p. 91 (1829).

1. Biserat, Jalor. 8th July, 1901.

‘Flying in jungle at mid-day.’

48. Rapala barthema

Deudorix barthema, *Dist. Rhop. Malay*, p. 280 (1885).

1. Biserat, Jalor. 14th July, 1901.

‘Jungle path ; morning.’

49. Rapala utimutis

Deudorix utimutis, *Dist. Rhop. Malay*, p. 279, pl. 23, fig. 22 (1885).

1. Biserat, Jalor. 18th October, 1901.

50. Rapala jarbas

Papilio jarbas, *Fab, Mant. Ins.*, vol. ii, p. 68 (1787).

1. Jeram Kawan, South Perak. 12th February, 1902.

‘Resting on leaf, with wings partially expanded and still.’

51. Bindahara phocides

Hesperia phocides, *Fab. Ent. Syst.*, vol. iii, p. 282 (1793).

1. Biserat, Jalor. 7th July, 1901.

ACULEATE HYMENOPTERA

BY
LIEUT.-COLONEL C. T. BINGHAM

INTRODUCTORY NOTE

THERE is little to be said, from a bionomic point of view, on the collection of *Hymenoptera*, which Colonel BINGHAM¹ has been good enough to report upon, except as regards the number of ants closely resembled by other insects and spiders and the habits of *Oecophylla smaragdina*. The species were collected quite indiscriminately, but it is probable that the ants are proportionately better represented than the other divisions of the *Aculeata*.

As regards distribution, more extensive collections will possibly show that there is a marked difference between the Hymenopterous fauna of the East and West Coasts of the Peninsula—a difference which finds its parallel in the case of other groups.

It may be noted, for instance, that *Xylocopa oestuanus*, almost the commonest bee in the Patani States, is decidedly a rare insect in Perak and Selangor; whereas the larger species of *Scolia* and *Salius*, such as *Scolia procer* and *Salius ducalis*, two of the most characteristic forest insects on the West Coast, are of very sporadic occurrence in Patani. The differences are probably correlated with rainfall, for in the latitude of Patani there are distinct wet and dry seasons, while in Perak and the other Western States to the south of it the wettest month of one year is not infrequently the driest of the next.

HERBERT C. ROBINSON

SELANGOR STATE MUSEUM
KUALA LUMPUR
FEDERATED MALAY STATES
June 2, 1904

1. The editors of *Fasciculi Malayenses* must express their special indebtedness to Colonel Bingham, who, in their absence in different parts of the East, has kindly made arrangements regarding the plate and proofs. As some confusion appears to have arisen on the point we may perhaps point out that the editors, not the author, of the various reports in *Fasciculi Malayenses* are responsible for all statements enclosed between single inverted commas.—Edd.

REPORT ON THE ACULEATE HYMENOPTERA

BY LIEUT.-COLONEL C. T. BINGHAM

OF the one hundred and seventy-four forms of Aculeate Hymenoptera collected by the Expedition, eight proved to be previously undescribed.

Full diagnoses of these eight were published in the Appendix to Part II of this work. Of the rest, nineteen forms only have not so far been reported as occurring within the limits of British India, as defined in the volume on Mammals in the Fauna of India series. That this should be so is not surprising, as the collection was made in a country of which the configuration and climate is very like that of Tenasserim. Again, the commoner forms which are naturally the first to be procured have often a very wide range, and although, in certain cases, these may be modified into local races; such races in the Hymenoptera seem to be rarely constant. Another factor which has to be taken into consideration is that in certain widely distributed forms similar variations seem frequently to occur throughout the limits of their range.

No detailed analysis of the collection is attempted as our knowledge of the Hymenopterous fauna of Siam and of Pahang, and the rest of the Malay Peninsula to the south, is still very imperfect.

TUBULIFERA

CHRYSIDIDAE

STILBUM

1. *Stilbum cyanurum*, var. *splendidum*

Chrysis splendida, *Fabr. Syst. Ent.*, 1775, p. 357.

Stilbum cyanurum, var. *splendidum*, *Dalla Torre. Cat. Hym.* vi, 1892, p. 40.

Biserat, Jalor. October.

Spread over both hemispheres.

'Apparently parasitic on several Hymenopterous species, which dug galleries in the house-posts.'

CHRYSIS, Linn.**Hexachrysis**, Lichtens**2. Chrysis (Hexachrysis) principalis**

Chrysis principalis, *Smith, Trans. Ent. Soc.*, 1874, p. 461.

Biserat, Jalor.

Found also in India. Recorded from the Himalayas, Bengal, Bombay, Ceylon, Burma, Tenasserim, and China.

HETEROGYNA**FORMICIDAE****Dorylinae****AENICTUS****3. Aenictus clavatus**

Aenictus clavatus, *Forel, Journ. Bomb. N. H. Soc.* xiii (1901), pp. 467 and 471, ♂.

♂'s. Biserat, Jalor. October.

Very dark in colour and somewhat more slender than typical specimens. Described originally from South-Western India. Occurs in Sikhim and Burma.

Ponerinae**MYOPOPONE**, Roger**4. Myopopone castanea**

Amblyopone castanea, *Smith, Journ. Linn. Soc.* v (1860), p. 105, pl. i; fig. 6, ♀; *Roger, Berl. Ent. Zeit.* v (1861), pp. 50-52, ♀, ♀, ♂.

♀. Telôm, Perak-Pahang boundary. 4,000 feet. January, 1902.

‘Flying, at mid-day.’

Found throughout the Indo-Malayan region.

ODONTOMACHUS, Latr.**5. Odontomachus haematoda**

Formica haematoda, *Linn. Syst. Nat.* Ed. 10, i, 1758, p. 582, ♀.

Biserat, Jalor. October.

‘Nest under fallen tree.’

Found throughout the greater part of the Indo-Malayan region. Has a wide distribution, extending to Africa, and even to America.

6. Odontomachus rixosus

Odontomachus rixosus, *Smith, Journ. Linn. Soc.* ii (1857), p. 64, ♀.

Kampong, Jalor. November.
Bukit Besar, Nawngchik. 2,500 feet. October.

Found also in Assam, Burma, Sumatra, and Java.

LOBOPELTA, Mayr.**7. Lobopelta distinguenda**

Lobopelta distinguenda, *Emery, Ann. Mus. Civ. Gen.* xxv (1887), p. 430, pl. i, fig. 4.

Bukit Besar, Nawngchik. 2,500 feet. May.

‘Malay name “Semut api.”’ I believe the red tree ant (*Oecophylla smaragdina*) is also called ‘Semut api,’ or ‘fire-ant’ by the Malays.

ODONTOPONERA, Mayr.**8. Odontoponera transversa**

Ponera transversa, *Smith, Journ. Linn. Soc.* ii (1857), p. 68, ♀.

Odontoponera transversa, *Forel, Journ. Bomb. N. H. Soc.* xiii (1900), p. 314, ♀.

Mabek, Jalor. July.
Bukit Besar, Nawngchik. August.

‘Taken off inflorescence of tree in jungle.’

1. The native names are often very local, and are used somewhat indiscriminately.—*Edd.*

DIACAMMA, Mayr.**9. Diacamma rugosum**

Ponera rugosa, *Le Guillon, Ann. Soc. Ent. Fr.* x (1840), p. 318.

Ponera versicolor, *Smith, Journ. Linn. Soc.* ii (1857), p. 26.

Diacamma rugosum, *Mayr., Verh. Zool. Bot. Ges. Wien.* xii (1862), p. 718.

Gedong, South Perak. January.

10. Diacamma vagans

Ponera vagans, *Smith, Journ. Linn. Soc.* iv (1860), p. 103, ♀.

Diacamma vagans, *Mayr., Verh. Zool. Bot. Ges. Wien.* xii (1862), p. 718.

Biserat, Jalor.

‘Running on sand below bushes on which ant-like Attidae were found.’

Gedong, South Perak. January.

Spread through the Indo-Malayan and Austro-Malayan regions.

ECTOMOMYRMEX, Mayr.**11. Ectomomyrmex astutus**

Pachychondyla astuta, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 107, ♀.

Ectomomyrmex sundaicus, *Mayr., Tijds. v. Ent.* x (1867), p. 85, ♀.

Ectomomyrmex astutus, *Bingh., Faun. Brit. Ind.* ii, 1903, p. 86, fig. 45, ♀.

Bukit, Jalor. October 31, 1901.

Spread through the Indo-Malayan region and extending to Australia.

CRYPTOPONE, Emery**12. Cryptopone testacea**

Amblyopone testacea, *Motsch., Bull. Soc. Nat. Mus.* xxxvi, 2 (1863), p. 15, ♀.

Cryptopone testacea, *Emery, Ann. Soc. Ent. Fr.*, 1893, p. 240, ♀.

2 ♀'s. Biserat, Jalor. October.

This species, though much smaller, superficially resembles *Pseudoponera amblyops*, EMERY, and *P. darwini*, FOREL. These latter, however, have the hind tibiae furnished with two calcaria, whereas *Cryptopone testacea* has but one. *C. testacea* was originally described from Ceylon.

MYRMICINAE**SIMA**, Roger**13. Sima rufonigra***Eciton rufonigra*, *Jerdon, Madr. Journ. Lit. Sci.* xvii (1851), p. 111.*Sima rufonigra*, *Forel, Journ. Bomb. N. H. Soc.* xiv (1903), pp. 708, 709, ♀.

Patani town.

Biserat, Jalor.

Ban Sai Kau, Nawngchik.

Gedong, South Perak.

'A very common species throughout the Malay Peninsula, preferring sandy localities. It was particularly abundant about the houses in Patani at all seasons, but was more common at Biserat in September and October than in June and July. At this place we took several specimens of an Attid spider which resembles it with wonderful detail, but we are not yet able to say whether the spider is the same that mimics the species in India, and we never took it actually together with the ant. The Malay name of the ant in the Patani States is "*semut sabong*," and the term is more fixed than most which the Malays apply to insects. On several occasions we showed the mimicking spider to natives, who always called it by this name.'

Common throughout nearly the whole of India, Assam, Burma, Tenasserim, and Ceylon. The virulence of the sting is noted by Messrs. ANNANDALE and ROBINSON, but they do not regard it as quite so virulent as that of *Lobopelta distinguenda*.

14. Sima nigra*Eciton nigra*, *Jerdon, Madr. Journ. Lit. and Sci.* xvii (1851), p. 112, ♀ ; *id.**A. M. N. H.* (2) xiii (1854), p. 53, ♀.*Tetraoponera atrata*, *Smith, A. M. N. H.* (2), ix (1852), p. 44.*Pseudomyrma carbonaria*, *Smith, Journ. Linn. Soc.* vii (1863), p. 20, ♀, ♀.*Sima nigra*, *Forel, Journ. Bomb. N. H. Soc.* xiv (1903), p. 709, ♀.

Biserat, Jalor.

Senggora town. December.

Recorded also from Continental India, Ceylon, Burma, and Tenasserim.

MYRMICARIA, Saunders**15. Myrmicaria brunnea***Myrmicaria brunnea*, *Saunders, Trans. Ent. Soc.* iii (1841), p. 57, pl. v, fig. 2, ♂.

D

Myrmicaria carinata, *Smith, Journ. Linn. Soc.* ii (1857), p. 73, ♀.

Heptacondylus subcarinatus, *Smith, Journ. Linn. Soc.* ii (1857), p. 73, ♀.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

Makek, Jalor. July.

‘Taken at Mabek on leaves of shrub, on which an Attid spider closely resembling them was also obtained at the same time.’

CATAULACUS, Smith

16. *Cataulacus hispidus*

Cataulacus hispidus, *Smith, Trans. Ent. Soc.*, 1876, p. 611, pl. ii, fig. 11, ♀.

Biserat, Jalor. October.

‘Nesting in the upper part of small termite’s nest on a small tree in secondary jungle. A millipede and a scorpion were collected in the same nest.’ H.C.R.

SMITH’S type is from Singapore.

17. *Cataulacus latus*

Cataulacus latus, *Forel, Grandidier Hist. Phys. Nat. Pol. Madagasc.* xx, pt. II (1892), p. 144; *Wroughton, Journ. Bomb. N. H. Soc.* vii (1892), p. 178, pl. c, figs. 8-10.

Mabek, Jalor. July.

Found also in India (Bengal), Burma, and Tenasserim.

CREMASTOGASTER, Lund.

18. *Cremastogaster dohrni*

Cremastogaster dohrni, *Mayr., Verb. Zool. Bot. Ges. Wein.* xxviii (1878), pp. 681 and 682, ♀.

Biserat, Jalor.

‘From among low shrubs accompanied by a small larval Hemipteron (*Pyrrhocoridae* ?), which bore a very close resemblance to them.’

Recorded also from Ceylon, Burma, and Tenasserim.

19. *Cremastogaster mogdiliani*

Cremastogaster mogdiliani, *Emery, Ann. Mus. Civ. Gen.* xl (1900), p. 696, ♀.

Bukit Besar, Nawngchik. 2,500 feet. May.

‘Running about with small Carabid beetles, which closely resembled it in form and gait, on the broad leaves of Zingiberaceous plants.’

Described originally from Tenasserim.

20. Cremastogaster rothneyi

Cremastogaster rothneyi, Mayr., *Verh. Zool. Bot. Ges. Wien.* xxviii (1878), pp. 681-685, ♀.

Bidor, South Perak. February.

Recorded also from Continental India.

21. Cremastogaster difformis

Cremastogaster difformis, Smith, *Journ. Linn. Soc.* ii (1857), p. 76, ♀.

Mabek, Jalor. July.

'On tree-trunks in rice field.'

Recorded also from Southern Tenasserim, Borneo, Sumatra, and Java.

PHIDOLOGITON, Mayr.**22. Phidologiton affinis**

Oecodoma affinis, Jerdon, *Madr. Journ. Lit. and Sci.* xvii (1851), p. 110, ♀.

Atta bellicosa, Smith, *Cat. Hym. Brit. Mus.* vi, 1858, p. 164, ♀.

Solenopsis laboriosa, Smith, *Journ. Linn. Soc.* vi (1861), p. 48, ♀.

Phidologiton affinis, Roger, *Verz. d. Formicid.* 1863, p. 30.

Biserat, Jalor.

'They made runs on the ground leading in various directions from the nest and depressed beneath the general level. The nests themselves were buried at a depth of some inches.'

Indo-Malayan region.

MERANOPLUS, Smith**23. Meranoplus mucronatus**

Meranoplus mucronatus, Smith, *Journ. Linn. Soc.* ii (1857), p. 82, pl. ii, fig. 6, ♀.

Sungkei, South Perak. February.

Described originally from Mount Ophir, Malacca. Recorded also from Burma.

24. Meranoplus bicolor

Cryptocerus bicolor, Guér., *Cuv. Iconogr. Regn. Anim. Ins.* iii, 1838, p. 425.

Meranoplus bicolor, Smith, *Trans. Ent. Soc.* (2), ii (1854), p. 224, pl. xx, fig. 6.

Bukit Besar, Nawngchik. 2,500 feet. September.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

'Among long grass.'

Common through the Indo-Malayan region.

PRISTOMYRMEX, Mayr.**25. *Pristomyrmex brevispinosus***

Pristomyrmex brevispinosus, *Emery, Ann. Mus. Civ. Gen.* xxv (1887), p. 451, ♀.

Bukit Besar, Nawngchik. 2,500 feet.

‘On ripe fruit.’

Recorded also from the Burma hills and Sumatra.

MONOMORIUM, Mayr.**26. *Monomorium latinode***

Monomorium latinode, *Mayr., Ann. Mus. Civ. Gen.* ii (1872), p. 152, ♀.

Biserat, Jalor. October.

‘Large numbers found in portfolio shut up in box. No nest had been formed, but the workers surrounded three females, each of which occupied a corner of the portfolio.’

Spread throughout India, Ceylon, and Burma.

PHIDOLE, Westw.**27. *Phidole megacephala***

Formica megacephala, *Fabr., Ent. Syst.* ii, 1793, p. 361.

Phidole pusilla, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 173, pl. ix, figs. 18-20.

Phidole megacephala, *Roger, Verz. d. Formicid.* 1863, p. 30.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

Of almost universal distribution in both hemispheres.

Dolichoderinae**DOLICHODERUS**, Lund.**28. *Dolichoderus fuscus***

Dolichoderus fuscus, *Emery, Ann. Mus. Civ. Gen.* xxvii (1889), p. 509.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

‘Surrounding Cicadidae on young shoot of tree.’

Described originally from Tenasserim.

29. Dolichoderus semirugosus

Hypoclinea semirugosa, *Mayr., Verh. Zool. Bot. Ges. Wien.* xx (1870), p. 956, ♀.

Dolichoderus semirugosus, *Forel, Bull. Soc. Vaud. Sc. Nat.* xv, p. 80, 1878, p. 386, ♀.

Biserat, Jalor. October.

Described originally from Borneo.

30. Dolichoderus cuspidatus

Polyrachis cuspidatus, *Smith, Journ. Linn. Soc.* ii (1857), p. 63, ♀.

Dolichoderus cuspidatus, *Forel, Bull. Soc. Vaud. Sc. Nat.* xv, p. 80, 1878, p. 386, ♀.

Bukit Besar, Nawngchik. 2,500 feet. September.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

‘Very numerous on growing fruit in jungle.’

TAPINOMA, Först.**31. Tapinoma melanocephalum**

Formica melanocephala, *Fabr., Ent. Syst.* ii, 1793, p. 353, ♀.

Formica nana, *Jerdon, Madr. Journ. Lit. and Sc.* xvii, 1851, p. 125, ♀.

Myrmica pellucida, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 124, ♀.

Tapinoma melanocephalum, *Mayr., Verh. Zool. Bot. Ges. Wien.* xii (1862), p. 651.

Bukit Besar, Nawngchik. October.

Spread through the tropics of both hemispheres.

Camponotinae**OECOPHYLLA**, Smith**32. Oecophylla smaragdina**

Formica smaragdina, *Fabr., Syst. Ent.*, 1775, p. 828, ♀.

Formica macra, *Guerin Duperry, Voy. Coq. Zool.* ii (2), 1850, p. 202, pl. viii, fig. 1, ♀.

Oecophylla smaragdina, *Smith, Journ. Linn. Soc.* iv (1860), p. 102.

Ban Sai Kau, Patani, Biserat, Jambu, Nawngchik, South Perak, Upper Perak, Penang, Senggora, Patalung, Trang, and Selangor.

‘ In the Malay Peninsula it is common everywhere, except in the central jungles and on the hills generally. On Bukit Besar we did not find it above two thousand feet except on one occasion, when two gravid females attempted, without success, to found new colonies in the clearing at two thousand five hundred feet. It is particularly abundant in the sandy wastes round Patani and on the limestone hills near Biserat—both dry localities—and probably cannot stand any great degree of moisture. In these places the nests, which may be either quite near the ground, on stunted bushes, or at the top of jungle trees, attain the dimensions of a football, and several are often found within a radius of a few yards.

‘ The habits of the “tailor ant,” and especially the way in which the larvae are employed in fastening together the leaves out of which the nests are made, have been described by several naturalists, whose observations on the production of silk by the larvae, and on the manner in which they are applied by the workers to any rent in the nest, we can confirm from repeated observation. The food of the species is very varied, consisting partly of other insects and spiders, which the workers can frequently be seen catching at the base of the trees on which their nests occur, and partly of vegetable juices, especially those of fruits like the orange. On the trunks of orange trees bearing ripe fruit two streams of workers can often be distinguished, one ascending with their abdomens small and opaque, the other descending with them distended and translucent. In the nests we found Coccidae, probably kept because of the waxy substance they produced, and small spiders which looked white and bleached. In several instances we also discovered black winged ants belonging to other species, though alien workers were not seen. It is hard to avoid the conclusion that these spiders and ants were mere stalled cattle, preserved to be killed for the food of the community at a seasonable time, for we also saw the workers carrying them into the nest. Some doubt may, however, be cast on this view by another observation, namely, that workers belonging to the species *Oecophylla smaragdina*, but attached to other nests, were seen to be carried in too, apparently without offering resistance or being injured in any way.

‘ One of us carried out the following experiment several times over :— He took a worker and placed it on a leaf at the entrance to a nest to which it did not belong. It was immediately surrounded by the workers of that nest, who passed all its limbs through their jaws, quite gently, and then hurried it inside. It offered no resistance. A few minutes later the nest was opened and no trace was found of any worker which had been injured or dismembered. To make the experiment absolutely conclusive the introduced worker should

have been marked in some way, but we think, even as things were, that the facts go a long way towards proving that the communities of this ant are in the habit of adopting workers from other nests, and it is possible that the winged forms introduced may be brought in accidentally, or through what might be called, for want of a more exact term, stupidity. They did not belong to species which could possibly be confused with *Oecophylla smaragdina*, and mature females of the latter are only found in the nest at swarming time. From this it would appear that the life of a nest cannot last for more than a year, unless gravid females are introduced, for which there is no evidence; and in any case the leaves out of which the nests are made are always fresh and green.

Swarming occurs, both in Penang and the Patani States, chiefly in April and May. After the nuptial flight, the males probably die, and the females, after biting off their wings—often leaving a ragged piece of membrane at the base—crawl away and lay their eggs either in a curled-up leaf or, very commonly, at the base of the large, prickly, stiff leaves of a *Pandanus*, out of which hedges are often made. At Ban Sai Kau we found enormous numbers of females in this position in the village hedges late in May. The female sits over her eggs, with her formidable jaws open and pointing in the direction from which danger is most likely to threaten, until the grubs are hatched, but what happens later we do not know; probably the first batch of workers to reach maturity migrate to a shrub or tree with soft flexible leaves of a convenient size, taking either the female or the immature larvae and pupae, or both, with them, as nests are not made among *Pandanus* leaves, which are far too large, stiff, and heavy to be sewn together, though their prickles and stiffness protect the laying females.

Oecophylla smaragdina is very extensively mimicked in the Malay Peninsula, probably more so than any other insect. Our own collection includes at least three spiders, two larval Hemiptera, a Dipteron, and a newly-hatched mantis (probably *Hierodula modesta*), which resemble it very closely. All of these were taken in an environment which it frequented, though it was not possible to say in any case that an actual bionomic association existed. One of the spiders, probably a species of *Amyciaea*, had captured and was devouring a specimen of the ant. Though *Oecophylla smaragdina* is evidently a successful form, not only having a wide range but also being exceedingly abundant wherever it occurs, it does not lack enemies; many animals eat it, despite its powerful offensive and defensive weapons. One of us has seen a specimen of the lizard, *Calotes versicolor*, an exceedingly common form in Lower Siam, sitting beside a stream of workers and

devouring them as they passed. Several species of squirrel eat it readily, as also do monkeys (*Macacus*), and numbers of small birds. We have taken several spiders (mostly Attidae) feeding on workers. The Siamese and Chinese both use the ant as an article of diet, eating both adults and grubs.'

A common ant throughout the Indo-Malayan and Austro-Malayan regions.

PSEUDOLASIUS, Emery

33. Pseudolasius familiaris

Formica familiaris, *Smith, Journ. Linn. Soc.* v (1861), p. 68, ♀.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

'From rotten log in jungle.'

Occurs also in Burma and Tenasserim, and through the Indo-Malayan region.

COLOBOPSIS, Mayr.

34. Colobopsis saundersi

Colobopsis saundersi, *Emery, Ann. Mus. Civ. Gen.* xxvii (1889), p. 516, ♀.

♀. Kuala Lumpur, Selangor. April.

'At light; rainy evening.'

Taken also in Tenasserim.

35. Colobopsis pubescens

Colobopsis pubescens, *Mayr., Verh. Zool. Bot. Ges. Wien.* xii (1882), p. 691, ♀, ♂.

Patani. October.

Found also in Burma and Tenasserim. Described originally from the Celebes.

CAMPONOTUS, Mayr.

36. Camponotus mitis

Formica mitis, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 20, ♀.

Formica ventralis, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 20, ♀.

Camponotus maculatus, *Fabr., race mitis (Smith), Forel., Journ. Bomb. N. H. Soc.* vii (1892), pp. 230 and 242, ♀.

Camponotus mitis, *Bingh., Faun. Brit. Ind. Hym.* ii, 1903, p. 355, figs. 112 and 113.

Biserat, Jalor. May.

'Under bark of tree.'

Bukit Besar, Nawngchik. 2,500 feet. September.

'Two nests in rotten wood.'

Spread through the Indo-Malayan region to New Guinea.

37. Camponotus rufoglaucus

Formica rufoglauca, *Jerdon, Madr. Journ. Lit. and Sci.* xvii (1851), p. 124.

Camponotus rufoglaucus, *Forel., Journ. Bomb. N. H. Soc.* vii (1892), pp. 226 and 227, ♀.

Biserat, Jalor.

October.

Bukit Besar, Nawngchik. 2,500 feet. September.

India ; Ceylon ; Assam ; Burma ; Tenasserim.

38. Camponotus paria

Camponotus micans, *Nzl. race paria*, *Emery, Ann. Mus. Civ. Gen.* xxvii (1889), p. 513, ♀.

Camponotus rufoglaucus, *Jerd. race paria (Emery)*, *Forel., Journ. Bomb. N. H. Soc.* vii (1892), pp. 226 and 238, ♀.

Camponotus paria, *Bingh., Faun. Brit. Ind. Hym.* ii, 1903, p. 384, ♀, ♂.

Mabek, Jalor. July.

'On yellow pea-like plant in company with several ant-like spiders.'

Found also throughout India ; Assam ; Burma ; Tenasserim, and Ceylon.

39. Camponotus carin

Camponotus dorycus, *Smith, race carin*, *Emery, Ann. Mus. Civ. Gen.* xxvii (1889), p. 512, ♀.

Camponotus carin, *Emery, Dalla. Torre. Cat. Hym.* vii, 1893, p. 23.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

Described originally from Tenasserim.

40. Camponotus angusticollis

Formica angusticollis, *Jerdon, Madr. Journ. Lit. and Sci.* xvii, 1851, p. 120, ♀, ♂.

Formica ardens, *impetuosa et callida*, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, pp. 17 and 18.

Camponotus angusticollis, *Forel., Journ. Bomb. N. H. Soc.* vii (1892), pp. 226 and 235, ♀.

Bukit Besar, Nawngchik. 2,500 feet. August.

'In dead wood in jungle.'

Common in Western and Central India and Upper Burma.

41. Camponotus gigas

Formica gigas, *Latr., Hist. Nat. Fourm.*, 1802, p. 105, pl. ii, fig. 36, ♀.
 Camponotus gigas, *Mayr., Verh. Bot. Ges. Wien.* xii (1862), p. 669, ♀.

Bukit Besar, Mabek, and Kuala Lumpur.

‘A common species on jungle paths. I have found solitary female specimens hidden in crevices in tree-trunks in September in Kelantan; Malay name, *semut gajab* (elephant ant).’ N.A.

Found throughout the Malay Peninsula, Borneo, and Sumatra, also in the extreme south of Tenasserim.

42. Camponotus camelinus

Formica camelina, *Smith, Journ. Linn. Soc.* ii, 1857, p. 57, ♀.
 Formica singularis, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 27 (*var.*)
 Camponotus camelinus, *Forel., Journ. Bomb. N. H. Soc.* vii (1892), p. 224, ♀.

Bukit Besar, Nawngchik. 2,500 feet. September.

‘A solitary specimen running on a gingerwort leaf. A Locustid closely resembling it was taken on the same day on the same plant.’

Recorded also from Sikhim; Assam; Burma and Tenasserim.

43. Camponotus auriventris

Camponotus auriventris, *Emery, Ann. Mus. Civ. Gen.* xxvii (1889), p. 514, ♀.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

‘In rotten wood.’

Described originally from Burma.

ECHINOPLA, Smith**44. Echinopla melanarctos**

Echinopla melanarctos, *Smith, Journ. Linn. Soc.* ii (1857), p. 79, pl. i, figs. 25-29, ♀.

Bukit Besar, Nawngchik. August.

Extends to Sumatra and Borneo.

45. Echinopla pallipes

Echinopla pallipes, *Smith, Journ. Linn. Soc.* ii (1857), p. 80, ♀.

Telôm, Perak-Pahang boundary. 4,000 feet. January.

Described originally from Borneo, also recorded from Celebes.

POLYRHACHIS, Smith**46. *Polyrhachis bihamata***

Formica bihamata, *Drury, Ill. Nat. Hist.* ii, 1773, p. 73, pl. xxxviii, figs. 7, 8.

Formica affinis, *Le Guillon, Ann. Soc. Entr. Fr.* x (1841), p. 314.

Polyrhachis bihamata, *Smith, Journ. Linn. Soc.* ii (1857), p. 58, pl. i, fig. 9, ♀.

Mabek, Jalor.

July.

Bukit Besar, Nawngchik. 2,500 feet. September.

Found throughout the Malayan sub-region : extending to Madagascar.

47. *Polyrhachis ypsilon*

Polyrhachis ypsilon, *Emery, Ann. Mus. Civ. Gen.* xxiv (1886), p. 239, ♀.

Gedong, South Perak. January.

Recorded from the Malayan sub-region and from Ceylon.

48. *Polyrhachis armata*, var. *defensus*

Formica armata, *Le Guill., Ann. Soc. Ent. Fr.* x (1841), p. 313, ♂.

Polyrhachis armata, *Forel, Journ. Bomb. N. H. Soc.* viii (1893), pp. 26, 34, ♀.

Found also in Burma ; Tenasserim ; Sumatra ; and Java.

49. *Polyrhachis laevissima*

Polyrhachis laevissima, *Smith, Cat. Hym. Brit. Mus.* vi (1858), p. 64, pl. iv, fig. 42, ♀.

Biserat, Jalor. October.

‘ A very common species at Biserat and also on Cape Patani. At the former locality a nest containing many winged individuals was noted in October. It was in a bamboo which had been cut off in an internode in building a shed. The open end of the cylinder thus exposed, which lay horizontally, was filled in, except for a small aperture above, with a curtain of stout silk interwoven with fragments of bamboo produced by beetles burrowing in the wood. Close to this nest was a clump of acacias, which produced a sweet substance from glands on the leaf-stalks. This was evidently a source of attraction both to the ants and to several other insects. Attidae, apparently belonging to several species, were taken, which appeared to mimic this ant, both on these acacias at Biserat and on other shrubs at Jambu and Cape Patani. Though they were generally found in the immediate vicinity of the insects, a mutual distrust appeared to exist, and an ant which was put into a glass tube with one of the spiders was immediately paralysed by a bite. It was noticed that the spiders were about earlier in the day than the ants, which stayed in their rest until the sun had dispelled the night mist—that is to say, until between nine and ten a.m.’

50. *Polyrhachis nigripilosa*

Polyrhachis nigripilosa, *Mayr., Ann. Mus. Civ. Gen.* ii (1872), p. 141, ♀.

Biserat, Jalor.

June.

Bukit Besar, Nawngchik. 2,500 feet. August.

‘Running on gingerwort leaf, on which a mimetic (?) parasitic Hymenopteron (mistaken for a larval Locustid, which also resembles it) was captured at the same time.’

51. *Polyrhachis mayri*

Polyrhachis relucens, *Mayr. (nec Latr.), Verh. Zool. Bot. Ges. Wien.* xii (1862), p. 685.

Polyrhachis mayri, *Roger, Verz. Form. Gatt. N. Art.*, p. 7.

Bukit Besar, Nawngchik. 2,500 feet. September.

‘Running about on leaves of low shrubs.’

Found also almost throughout the Indo-Malayan region.

52. *Polyrhachis piliventris*

Polyrhachis piliventris, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 60, pl. iv, fig. 24, ♀.

‘The species was taken in nests in tree-trunks on Bukit Besar and at Telôm. In the former locality one of us noted that the ants were accompanied by several individuals of a Reduviid bug, unfortunately immature, which entered the nest with them. It was about the same size as the workers, in some cases rather larger, and bore a generalised resemblance to an ant, especially in its movements, which were very rapid. Its abdomen was broad and flattened from above downwards, with the dorsal surface closely set with short, stiff hairs. On these hairs were fastened the shrivelled bodies of ants apparently belonging to the species under consideration. To a human eye these dead bodies certainly did not increase the bug’s resemblance to an individual ant, though they helped to conceal it in a swarm; but is possible that they may have appealed in some way to the sense of recognition which it is well known that ants possess as regards the members of the community. The bodies were so shrivelled that it is probable that they had been sucked dry before being disposed on the bug’s back; but we were unable to discover anything about the relationship which existed between it and what were probably its victims. The habit is paralleled in a common European Reduviid.’

Originally described from Singapore.

53. Polyrhachis rufipes

Polyrhachis rufipes, *Smith, Cat. Hym. Brit. Mus.* vi, 1858, p. 66, pl. iv, fig 28,
♀.

♀. Biserat, Jalor.

‘Running among long grass and low shrubs.’

Corresponding well with the type which is from Borneo.

FOSSORES**MUTILLIDAE****MUTILLA**, Linn.**54. Mutilla oculata**

(Pl. A, figs. 1, 1a, ♂)

Mutilla oculata, *Fabr., Syst. Piez.*, 1804, p. 432, ♀; ♂, Bingham, *Fasic. Malay. Zool.* vol. 1, appendix p. iii.

Biserat.

Ban Sai Kau, foot of Bukit Besar.

Bukit Besar. 2,500 feet.

Recorded also from China and Cochinchina.

55. Mutilla stephani

Mutilla stephani, *Magr., Ann. Mus. Civ. Gen.* xxxii (1892), p. 227, ♂.

Bukit Besar. 2,500 feet.

This species was described originally from the Karen Hills, in Burma. The ♀ is unknown.

56. Mutilla cariana

Mutilla cariana, *Magr., Ann. Mus. Civ. Gen.* xxxii (1892), p. 231, ♂.

A single ♂ of this very beautiful species obtained on Bukit Besar, at 2,500 feet.

Like the last, originally described from the Karen Hills, Burma. The ♀ is unknown.

57. Mutilla dimidiata

Mutilla dimidiata, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 628, ♂.

Mutilla rufogastra, *Lepel, l.c.*, p. 629, ♂.

Mutilla sexmaculata, *Smith (nec. Swed.) Cat. Hym. Brit. Mus.* iii, 1855, p. 37.

Obtained at Biserat.

A common and widely-spread species.

58. Mutilla kirbyi

Mutilla kirbyi, *Magr. Ann. Mus. Civ. Gen.* xxxii (1892), p. 216, ♀.

A single ♀, closely resembling *M. kirbyi* and which, I believe, is a variety of that insect. Differs from the typical form only in colour, as follows: scape of antennae and femora of the posterior pair of legs, red; basal abdominal segment, black, with no grey pile on it or on the legs.

♀. Bukit Besar. 2,500 feet. 10th May, 1901.

‘Taken on flowers on a tree in the jungle.’

59. Mutilla fuscipennis

Mutilla fuscipennis, *Fabr., Syst. Piez.*, 1804, p. 436, ♂.

Mutilla analis, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 630.

♂. Sungkei. 7th February, 1902.

SCOLLIIDAE**TIPHIA, Fabr.****60. Tiphia rufofemorata**

Tiphia rufofemorata, *Smith, Cat.* iii, 1855, p. 83, ♀.

A single ♀. Bukit Besar. 2,500 feet.

Described originally from Northern India; spread generally through India, Burma, and Ceylon.

61. Tiphia fumipennis

Tiphia fumipennis, *Smith, Journ. Linn. Soc.* (1858), p. 90, ♀.

♂. Semangko, Selangor. 2,700 feet.

Originally described from Borneo. Found also in Tenasserim.

62. Tiphia consueta

Tiphia consueta, *Smith, Desc. New. Spec. Hym. Brit. Mus.*, 1879, p. 184, ♀.

A pair, ♂ and ♀, from Bukit Besar and Biserat respectively.

Originally described from Ceylon. The ♂ is similar to the ♀ with, of course, the sexual differences in the abdomen and neuration of the forewing.

SCOLIA, Fabr.

(With three cubital cells in forewing. **Triscolia**)

63. Scolia procera

Scolia procera, *Illig. Mag. f. Insect* i (1802), p. 196, ♀, ♂.

Scolia patricialis, *Burm. Abb. Nat. Ges. Halle*. i, pt. IV (1853), p. 19.

A pair, ♀ and ♂, from Biserat.

Spread generally through the Indo-Malayan region.

64. Scolia rubiginosa

Scolia rubiginosa, *Fabr., Ent. Syst.* ii (1790), p. 230.

Bukit Besar, Biserat, Patani.

A very common species spread through the Indo-Malayan region.

65. Scolia opalina

Scolia opalina, *Smith, Journ. Linn. Soc.*, 1858, p. 89, ♀, ♂.

A single very small ♂ from Biserat.

Originally described from Borneo; probably spread in the zones of heavy rainfall throughout the Indo-Malayan region.

66. Scolia capitata

Scolia capitata, *Guer., Voy. Coq.* ii, pt. II (1830), p. 248, ♂.

Scolia ruficeps, *Smith, Cat. Hym. Brit. Mus.* iii, 1855, p. 111, ♀, ♂.

A single ♂ from Biserat.

Originally described from the Philippines. Probably with the same distribution as the last.

(With two cubital cells in forewing. **Discolia**)

67. Scolia humeralis

Scolia (Discolia) humeralis, *Sauss., Sauss. and Sich., Cat. Spec. Gen. Scol.*, 1864, p. 321, ♂.

Scolia quadripustulata, *Fabr., var. humeralis et bipustulata*, *Magr. Ann. Mus. Civ. Gen.* xxxii (1892), p. 241.

A pair, ♀ and ♂, from Patani.

Originally described from Singapore, extends into Burma. This species is variable in colour. Both specimens in the collection have the abdomen entirely black, with no trace of red; otherwise, however, they agree with SAUSSURE'S description, and with specimens in the British Museum collection.

68. *Scolia robinsoni*

(Pl. A, figs. 2, 2a-2e, ♀)

Scolia robinsoni, *Bingham, Fascic. Malay. Zool.*, vol. i, appendix, p. iv.

Bukit Besar. 2,500 feet. 4th September, 1901.

Described from a single ♀.

This very beautiful species is allied to *S. leviceps*, SMITH, *S. soror*, SMITH, and *S. sarntheinii*, DALLA TORRE (= *S. carbonaria*, SAUSS. nec. KLUG), but can at once be distinguished by the remarkably elongate median segment and by the sculpture.

69. *Scolia vollenhoveni**Scolia vollenhoveni*, *Sauss., Stett. Ent. Zeit.* xx (1859), p. 188, ♀, ♂.*Scolia* (*Discolia*) *vollenhoveni*, *Sauss. and Sich., Cat. Spec. Gen. Scol.*, 1864, p. 112, ♀, ♂.

2 ♂'s of this lovely and very distinct little species collected at Biserat.

Originally described from Sumatra. According to SAUSSURE, it occurs also in Turkestan.

ELIS, Fabr.(With two cubital cells in forewing. **Dielis**)**70. *Elis luctuosa****Scolia luctuosa*, *Smith, Cat. Hym. Brit. Mus.* iii, 1855, p. 101, ♀.

A single typical ♀ collected at Biserat.

A fairly common species throughout the Indo-Malayan region.

71. *Elis tristis**Elis* (*Campsomeris*) *tristis*, *Sauss., Stett. Ent. Zeit.* xx (1859), p. 265, ♀.

A single typical ♀ collected at Patani.

Found pretty well throughout the Indo-Malayan region.

72. *Elis fimbriata**Scolia thoracica*, *Klug. (nec. Fabr.), Beitr. z. Naturk* (1805), p. 33.*Scolia fimbriata*, *Burm., Abb. Naturf. Ges. Halle* i, pt. iv (1853), p. 25, ♀.*Campsomeris collaris*, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 498, ♀.*Elis* (*Dielis*) *fimbriata*, *Sauss. and Sich., Cat. Spec. Gen. Scol.*, 1864, p. 189, ♀.

3 typical ♀'s procured at Sungkei, in Perak, and at Patani.

A fairly common insect throughout the Indo-Malayan region.

73. Elis annulata

Tiphia annulata, *Fabr., Ent. Syst.* ii, 1793, p. 225, ♀.

Campsomeris servillei, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 501, ♀.

Scolia annulata, *Smith, Cat. Hym. Brit. Mus.* iii, 1855, p. 100, ♀.

Elis (*Dielis*) *annulata*, *Sauss. and Sich., Cat. Spec. Gen. Scol.*, 1864, pp. 196 and 299, ♀ ♂.

6 ♂ ♂, all taken at Biserat.

This and the ♂♂ of the preceding forms are most difficult to discriminate. *Elis annulata*, ♂, has the clypeus generally marked with yellow; *E. fimbriata*, ♂, has it generally immaculate, black. The former is also, as a rule, smaller, more slender, with the yellow markings on the abdomen narrower than *E. fimbriata*, ♂, but withal I have seen many specimens that I have been unable to assign to one, rather than to the other form. One such specimen was collected, 9th January, 1902, at Gedong. Like *E. fimbriata*, *E. annulata* is found throughout the Indo-Malayan region.

74. Elis iris

Colpa iris, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 547, ♂.

Elis (*Campsomeris*) *phalerata*, *Sauss., Ann. Soc. Ent. Fr.* (3), vi (1858), p. 233, ♀, ♂.

Elis (*Dielis*) *iris*, *Sauss. and Sich., Spec. Gen. Scol.*, 1864, p. 201, ♀ ♂, pl. ii, fig. 19, ♀.

A single pair of this beautiful form; the ♀ from Biserat, ♂ from Telôm.

Found throughout the Indo-Malayan region.

POMPILIDAE**POMPILUS**, *Fabr.***75. Pompilus analis**

Sphex analis, *Fabr., Spec. Ins.* i, 1781, p. 448.

Sphex sanguinea, *Christ. Naturg. d. Ins.*, 1791, p. 291, ♀, pl. xxviii, fig. 6.

Pompilus analis, *Fabr., Suppl. Ent. Syst.*, 1798, p. 246.

A single ♀ from Patani.

Occurs throughout the Indo-Malayan region.

76. Pompilus unifasciatus

Pompilus unifasciatus, *Smith, Cat. Hym. Brit. Mus.* iii, 1855, p. 145, ♀, ♂.

A single ♀ from Bidor.

Common throughout India, Burma, Malacca, to China and Japan.

77. Pompilus bracatus

Pompilus bracatus, *Bingh.*, *Journ. Bomb. N. H. Soc.* v (1890), p. 236, ♀.

Biserat.

A common species, also from Sikhim to Tenasserim, and I have seen specimens from Japan.

78. Pompilus clotho

Pompilus clotho, *Smith, Desc. New Sp. Hym. Brit. Mus.*, 1879, p. 146, ♀.

A single ♀ from Biserat.

Originally described from Sumatra.

PSEUDAGENIA, Kohl.**79. Pseudagenia aegina**

Agenia aegina, *Smith, Journ. Linn. Soc.* ii, 1857, p. 94, ♀.

Pseudagenia aegina, *Kohl., Verh. Zool. Bot. Ges. Wien.* xxxiv, 1884, p. 42.

A single ♀ from Kampong Mabek.

Throughout the Indo-Malayan region.

80. Pseudagenia clypeata

Pseudagenia clypeata, *Bingh.*, *Journ. Linn. Soc.*, 1896, p. 427.

♀. Bukit Besar. 2,500 feet.

Described originally from Burma.

81. Pseudagenia marpesia

(Plate A, figs. 3, 3a, 3b, ♀)

Pseudagenia marpesia, *Bingham, Fascic. Malay. Zool.*, vol. i, Appendix, p. iv.

Bukit Besar. 28th August, 1901.

'Flying in clearing at midday carrying a large spider.'

CEROPALES, Latr.**82. Ceropales pernix**

Ceropales pernix, *Bingh.*, *Journ. Linn. Soc.*, 1896, p. 425, ♂.

♂. Sungkei. 11th February, 1902.

'On flowers.'

Common in Tenasserim.

83. Ceropales ligea

(Plate A, figs. 4, 4a-4c, ♀)

Ceropales ligea, *Bingham, Fascic. Malay. Zool.*, vol. i, Appendix, p. v.

Sungkei, South Perak. 11th February, 1902.

In a collection of Burmese hymenoptera which I have not yet worked out there are two ♀'s of this species.

MACROMERIS, Lepel**84. Macromeris violacea***Macromeris violacea*, *Lepel, Magas. Zool.* i (1831), pp. 29 and 30, pl. xxx, ♂.

2 ♀'s. Jeram Kawan.

Fairly common from Bengal to New Guinea.

SALIUS, Fabr.**(Priocnemis.** Tarsal claws unidentate)**85. Salius verticalis***Priocnemis verticalis*, *Smith, Journ. Linn. Soc.*, 1857, p. 94, ♀.*Salius verticalis*, *Kobl., Verb. Zool. Bot. Ges. Wien.* xxxiv (1884), p. 45.

A single ♀ from Bukit Besar.

Common in Burma and extending into the Malayan sub-region.

86. Salius iridipennis*Mygnumia iridipennis*, *Smith, Journ. Linn. Soc.*, 1857, p. 98, ♀.*Salius iridipennis*, *Cam. Mem. Manch. L. and Ph. Soc.* (4), iv (1891), p. 444.

A single ♀ from Bukit Besar.

Occurs in the Indo-Malayan region from Sikhim to Borneo.

87. Salius bipartitus*Calicurgus bipartitus*, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 406.*Priocnemis peregrinus*, *Smith, Trans. Ent. Soc.*, 1875, p. 37.*Salius bipartitus*, *Bingb., Faun. Ind. Hym.* i, 1897, p. 137, ♂, pl. ii, fig. 1.

♀. Mabek. 24th July, 1901.

♀. Biserat. 18th October, 1901.

88. *Salius javanus*

Calicurgus javanus, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 408.

Pompilus javanus, *Smith, Cat. Hym. Brit. Mus.* iii, 1855, p. 146.

♀. Gedong. 9th January, 1902.

Spread through the Malayan sub-region.

89. *Salius sericosoma*

Pompilus sericosoma, *Smith, Cat. Hym. Brit. Mus.* iii, 1855, p. 146, ♀.

Salius (*Priocnemis*) *sericosoma*, *Kohl., Verb. Zool. Bot. Ges. Wien.* xxxiv (1884), p. 45.

♀. Bukit Besar. 2,500 feet.

Described originally from Sumatra. Common in Tenasserim.

Hemipepsis*, Dahlb. (Tarsal claws bidentate)*90. *Salius ducalis***

Mygnimia ducalis, *Smith, Journ. Linn. Soc.*, 1857, p. 98, ♀.

Salius ducalis, *Kohl., Verh. Zool. Bot. Ges. Wien.* xxxiv (1884), p. 45.

A single ♀ of this magnificent species, which seems to be confined to Siam and the Malay peninsula, was procured in the Batang Padang district. In Borneo the very closely allied form *S. princeps*, SMITH, is mimicked by *Nothopeus fasciatipennis*, WATERHOUSE, a longicorn beetle with remarkably short elytra (see *Trans. Ent. Soc.*, 1885, p. 369, pl. x, figs. 11 and 12.

91. *Salius ceylonicus*

Hemipepsis flava, ♀ var., *Dahlb., Hym. Eur.* i, 1843, p. 462 (*nec. Priocnemis flavus, Dblb. t.c.*, p. 457).

Mygnimia ceylonica, *Sauss., Novara Reise Hym.* (1867), p. 64, ♀.

Salius ceylonica, *Cam. Mem. Manch. Lit. and Phil. Soc.* x (1896), p. 215, pl. ii, figs. 3 and 4.

A single ♀ from Telôm. 4,000 feet.

Found also in India, Burma, and Ceylon.

92. *Salius aureosericeus*

Pompilus aureosericeus, *Guér. Voy. Coq. Zool.* ii, pt. 11, 1830, p. 256, ♀.

Mygnimia aureosericea, *Smith, Cat. Hym. Brit. Mus.* iii, 1855, p. 182.

Salius aureosericeus, *Kohl., Verb. Zool. Bot. Ges. Wein.* xxxiv (1884), p. 45.

A single ♂ taken at Biserat.

Recorded also from Southern India, Tenasserim, and Java. There is great variation in size in this form, and also in venation.

SPHIGIDAE**TACHYTES**, Panz.**93. Tachytes modesta**

Tachytes modestus, *Smith, Cat. Hym. Brit. Mus.* iv, 1856, p. 299, ♀.

♀. Biserat, 19th October, 1901.

Recorded from India, Burma, Tenasserim, and China.

LARRA, Latr.**94. Larra carbonaria**

Larrada carbonaria, *Smith, Journ. Linn. Soc.*, 1858, p. 102, ♀.

Larra carbonaria, *Kohl., Verb. Zool. Bot. Ges. Wien.*, 1884, p. 242.

2 ♀'s. Semangko Pass. From 2,700 to 3,000 feet. May, 1902.

Described originally from Singapore.

95. Larra nana

Larra nana, *Bingb., Faun. Brit. Ind. Hym.* i, 1897, p. 200, ♀.

♂, ♀. Gedong, Bukit Besar. 2,500 feet.

Described originally from Tenasserim. ♂ similar to ♀, but smaller, with sculpture a little coarser.

NOTOGONIA, Costa.**96. Notogonia laboriosa**

Larrada laboriosa, *Smith, Cat. Hym. Brit. Mus.* iv, 1856, p. 278, ♀.

Larra laboriosa, *Kohl., Verb. Zool. Bot. Ges. Wien.* xxxiv (1884), p. 245.

Notogonia laboriosa, *Cam. Ent. M. Mag.* xxvi (1890), p. 314.

♀. Cape Patani. 25th January, 1902.

Extends from Burma and Tenasserim to the Philippines.

LIRIS, Fabr.**97. Liris aurata**

Sphex aurata, *Fabr., Mant. Ins.* i, 1787, p. 276.

Pompilus auratus, *Fabr., Suppl. Ent. Syst.*, 1798, p. 250.

Liris aurata, *Fabr., Syst. Piez.*, 1804, p. 228.

Larrada aurulenta, *Smith, Cat. Hym. Brit. Mus.* iv, 1856, p. 276, pl. vii, fig. 5, ♀.

♀. Biserat. 26th June, 1901.

♀. Mabek. 27th July, 1901.

‘Flying in rice-field.’

A common and widely-spread insect from Eastern Africa, through Persia, India, Burma, China, Japan, and the Malayan sub-region.

LYRODA, Say.

98. Lyroda venusta

Lyroda venusta, *Bingb., Faun. Brit. Ind. Hym. i*, 1897, p. 210, ♀.

♀. Biserat.

‘Flying about in low vegetation in orchard at dusk.’

Described originally from Burma.

TRYPOXYLON, Latr.

99. Trypoxylon bicolor

Trypoxylon bicolor, *Smith, Cat. Hym. Brit. Mus. iv*, 1856, p. 377, ♀.

♀. Biserat.

‘Collecting mud from puddle at edge of jungle path.’

AMMOPHILA, Kirby

100. Ammophila atripes

Ammophila atripes, *Smith, A.M.N.H. (2)*, ix (1852), p. 46.

Ammophila simillima, et *pulchella*, *Smith, Cat. Hym. Brit. Mus. iv*, 1856, pp. 217 and 218.

Ammophila spinosa, *Smith, A.M.N.H. (4)*, xii (1873), p. 259, ♀.

Ammophila buddha, *Cam. Mem. Manch. L. and Ph. Soc. (4)*, ii (1889), pp. 93 and 94.

♀. Biserat.

‘Among bushes at edge of rice-field—dusk.’

Both this and the next form are common, and spread generally through the Indo-Malayan region.

101. Ammophila nigripes

Ammophila nigripes, *Smith, Cat. Hym. Brit. Mus. iv*, 1856, p. 215, ♂.

♂. Sungkei. 10th February, 1902.

‘On sand.’

India, Burma, Sumatra, Borneo.

SCELIPHRON, Klug.**102. Sceliphron javanum**

Pelopoëus javanus, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 309, ♀.

Sceliphron javanum, *Dalla. Torre., Cat. Hym.* viii, 1897, p. 386.

2 ♀'s. Biserat. June to October, 1901.

Jalor. June, 1901.

‘Building clay nests inside houses.’

Spread through the Indo-Malayan region.

103. Sceliphron madraspatanum

Sphex madraspatanus, *Fabr., Ent. Syst.* ii, 1793, p. 204.

Pelopoëus madraspatanus, *Fabr., Syst. Piez.*, 1804, p. 203.

Pelopoëus separatus, *Smith, A.M.N.H.* (2), ix (1852), p. 47.

Sceliphron madraspatanum, *Klug., Neu. Schrift. Ges. Naturf. Fr. Berlin* iii (1801), p. 565.

2 ♀'s. Biserat.

‘Flying about house in midday.’

Found throughout the Indo-Malayan region.

104. Sceliphron violaceum

Sphex violacea, *Fabr., Syst. Ent.*, 1775, p. 346.

Pelopoëus violaceus, *Ach. Costa. Ann. Mus. Zool. Napoli.* iv (1867), p. 76.

Sceliphron violaceum, *Dalla. Torre., Cat. Hym.* viii, 1897, p. 392.

Pelopoëus bengalensis, *Smith, Cat. Hym. Brit. Mus.* iv, 1856, p. 230.

♀. Biserat, 24th October, 1901.

Spread through the Ethiopian and Indo-Malayan regions.

SPHEX, Linn (apud Kohl.)**105. Sphex lobatus**

Sphex lobatus, *Fabr., Syst. Ent.*, 1775, p. 348.

Sphex smaragdinus, *Drury, Ill. Exot. Ins.* iii, 1782, p. 57, pl. xlii. fig. 2.

Sphex coerulea, *Christ., Naturg. d. Ins.*, 1791, p. 308, pl. xxx, fig. 6, ♀.

Chlorion lobata, *Latr., Hist. Nat. Ins.* iii, 1802, p. 330.

2 ♀'s. Bukit Besar, Biserat, Patani

Common throughout the Indo-Malayan region.

106. Sphex aurulentus

Sphex aurulenta, *Fabr., Mant. Ins.* i, 1787, p. 274.

Sphex ferruginea, *Lepel, Hist. Nat. Ins. Hym.* iii, 1845, p. 345, ♀.

Sphex aurulentus, *Kohl., Ann. Naturh. Hofences* x, 1895, p. 53, ♀, ♂.

2 ♀'s. Bidor, South Perak. 3rd to 20th February, 1902.

Common throughout the Indo-Malayan region.

BEMBEX, Fabr.**107. Bembex trepanda**

Bembex trepanda, *Dahlb., Hym. Eur.* i, 1845, pp. 181 and 490.

♀. Patani.

'Flying with great rapidity over sand at midday.'

Found generally spread through the Indo-Malayan region.

STIZUS, Latr.**108. Stizus simillimus**

Larra simillina, *Smith, Journ. Linn. Soc.* iii, 1858, p. 159, ♀.

Stizus simillimus, *Handl. Sitzber. Akad. Wiss Wien.* ci, 1892, p. 56.

♀. Sungkei. 11th February, 1902.

'Carrying off Homopteron of greater bulk than itself; clasped its prey by the head with its second legs.'

A wide-spread form.

CERCERIS, Latr.**109. Cerceris ferox**

Cerceris ferox, *Smith, Cat. Hym. Brit. Mus.* iv, 1856, p. 454, ♀.

♀. Biserat.

Occurs in Tenasserim and in Sumatra.

110. Cerceris pictiventris

Cerceris pictiventris, *Dahlbom., Hym. Eur.* i, 1845, p. 498.

Cerceris novarae, *Sauss., Novara Reise Hym.*, 1867, p. 92, ♀.

Cerceris fervens, *Smith, A.M.N.H.* (4) xii (1873), p. 411, ♀.

♀. Biserat. 20th October, 1901.

Found throughout India, Ceylon, Burma, and Tenasserim.

111. Cerceris annandali

(Plate A, figs. 5, 5a, ♂)

Cerceris annandali, Bingham, *Fascic. Malay. Zool.*, vol. i, Appendix, p. v.

Biserat. 20th October, 1901.

'Issuing from small hole at edge of jungle path.'

DIPLOPTERA**EUMENIDAE****EUMENES**, Latr.**112. Eumenes circinalis***Eumenes circinalis*, *Fabr., Syst. Piez.*, 1804, p. 286; *Sauss., Etud. Faun. Vesp.* i, 1852, p. 47, pl. x, fig. 7, ♀, ♂.

3 ♀'s. Bukit Besar, Biserat, Sungkei.

'Flying about sandy road at midday.'

Extends from India to Australia.

113. Eumenes lenis*Eumenes lenis*, *Bingb., Faun. Brit. Ind. Hym.* i, p. 347, ♀.

♀. Bidor. 23rd August, 1902.

Described originally from Burma.

114. Eumenes arcuata*Vespa arcuata*, *Fabr., Syst. Ent.*, 1775, p. 371.*Eumenes arcuata*, *Fabr., Syst. Piez.*, 1804, p. 287; *Sauss., Etud. Vesp.* i, 1852, p. 63, ♀.

♀. Bukit Besar. 2,500 feet. 2nd September, 1901.

'Flying at midday near clay bank in clearing.'

One of the commonest of the solitary wasps in Burma.

RHYNCHIUM, Sauss.**115. Rhynchium brunneum***Vespa brunnea*, *Fabr., Ent. Syst.* ii, 1793, p. 264.*Vespa carnatica*, *Fabr., Ent. Syst. Suppl.*, 1798, p. 261.*Rhynchium brunneum et carnaticum*, *Sauss., Etud. Faun. Vesp.* i, 1852, p. 112, pl. xiv, fig. 4, ♂, ♀.*Rhynchium brunneum*, *Smith, Cat. Hym. Brit. Mus.* v, 1857, p. 44.

♀. Biserat. 12th August, 1901.

'From flowers of *Mimosa pudica* ; midday.'

A very common wasp throughout the Indo-Malayan region. DALLA TORRE, in his *Catalogus Hymenopterorum*, puts it as a variety of the next species. The two races are certainly very closely allied.

116. *Rhynchium haemorrhoidale*

Vespa haemorrhoidalis, *Fabr., Syst. Ent.*, 1775, p. 366.

Odynerus dimidiatus, *Guer., Voy. Belang. Zool.*, 1834, p. 503 ; *Atlas, Ins.*, pl. iv, fig. 4.

Rhynchium haemorrhoidale, *Sauss., Etud. Faun. Vesp.* i, 1852, p. 109, ♀, ♂.

Rhynchium haemorrhoidale, *Smith, Cat. Hym. Brit. Mus.* v, 1857, p. 44, ♀.

Bidor. 3rd February, 1902.

Sungkei. 10th February, 1902.

Biserat. 15th October, 1901.

Jambu. 6th June, 1901.

'On flowers of shrub.'

Common throughout the Indo-Malayan region.

117. *Rhynchium smithi*

Rhynchium smithii, *Sauss., Etud. Faun. Vesp.* iii, 1856, p. 174, ♂.

Jambu. 6th June, 1901.

'A pair on flowers of shrub.'

The ♀ resembles the ♂, but is larger. Neither specimen is quite typical, differing from specimens in the British Museum collection in the wings being more hyaline at base, and having a deep blue, not purplish, refulgence.

ODYNERUS, Latr.

118. *Odynerus fraternus*

Odynerus fraternus, *Bingh., Faun. Brit. Ins. Hym.* i, 1897, p. 366, ♀.

2 ♀'s. Biserat. 23rd October, 1901.

Identical with the type from Tenasserim.

119. *Odynerus septemfasciatus*

Odynerus septemfasciatus, *Smith, Journ. Linn. Soc.* ii (1858), p. 110, ♂ ; *Gribobo, Bull. Soc. Ent. Stal.* xxiii (1891), p. 295, ♀.

Biserat. 12th October, 1901.

A single ♀ resembling the ♀ described by GRIBOBO from Sumatra, as having the 'facies of species' of the genus *Vespa*. The type specimen, a ♂ in the collection of the British Museum, is from Borneo.

VESPIDAE

ISCHNOGASTER, Guér.

120. *Ischnogaster fraterna*

Ischnogaster fraterna, *Bingb.*, *Faun. Brit. Ind. Hym.* i, 1897, p. 378, ♀, ♂.

Bukit Besar. 3,500 feet. 29th April, 1901.

‘Flying about and resting on leaves.’

Originally described from Tenasserim.

121. *Ischnogaster eximia*.

Ischnogaster eximia, *Bingb.*, *Journ. Bomb. N. H. Soc.* v (1890), p. 244, ♀, fig. nest.

A single ♀; no locality.

Described originally from Ceylon. I have received specimens lately from Burma and Pahang, Malay Federated States.

122. *Ischnogaster nitidipennis*

(Plate A, figs. 6, 6a, 6b, ♀)

Ischnogaster nitidipennis, *Sauss.*, *Etud. Faun. Vesp.* ii, 1853, p. 10, pl. xxxiv, fig. 4, ♂.

A single ♀. Bukit Besar. 2,500 feet. 25th August, 1901.

Not uncommon in Tenasserim. SAUSSURE described it from Cayenne in America, but I suspect an error in locality, as all the rest of the known forms of *Ischnogaster* are from the Indo-Malayan region.

123. *Ischnogaster nigrifrons*

Ischnogaster nigrifrons, *Smith*, *Journ. Linn. Soc.* ii (1857), p. 113, ♀.

Biserat, Sungkei, and Jeram Kawan.

Noted as very common, and fastening its cells to fibres that have become separated from wooden rafters. In Tenasserim, where it is very common, it fastens its cells to detached straws in the roofs of native houses, rest houses, etc. A nest was figured in my paper, *Journ. Bomb. N. H. Soc.* v, 1890, pp. 233-252.

POLYBIA, Lepel.

124. *Polybia sumatrensis*

Polybia sumatrensis, *Sauss.*, *Rev. et Mag. Zool.*, 1855, p. 374.

Bukit Besar, Biserat, and Sungkei.

‘Flying in numbers round the tops of the bananas, evening.’

Spread through the Indio-Malayan region.

ICARIA, Sauss.**125. *Icaria variegata***

Epipona variegata, *Smith, A. M. N. H.* (2), ix (1852), p. 48.

Icaria variegata, *Sauss., Etud. Faun. Vesp.* ii, 1853-59, p. 237.

Icaria picta, *Sauss., Etud. Faun. Vesp.* ii, 1853-59, p. 238.

Icaria pendula, *Smith, Cat. Hym. Brit. Mus.* v, 1857, p. 98, ♀.

Biserat. 4th July, 1901

'Two individuals with unfinished nest. They were working together alone on the nest, which depended from midrib of the leaf of a shrub in a buffalo lawn.'

Originally described from India. Common throughout Burma and Tenasserim.

126. *Icaria hongkongensis*

Icaria hongkongensis, *Sauss., Etud. Faun. Vesp.* ii, 1853, p. 239, ♀.

A single specimen without locality or date.

Described originally from China.

127. *Icaria flavo-picta*

Icaria flavo-picta, *Smith, Cat. Hym. Brit. Mus.* v, 1857, p. 99, ♀.

Biserat, Bukit Besar, Sungkei.

Originally described from Borneo.

128. *Icaria speciosa*

Icaria speciosa, *Sauss., Rev. et Mag. Zool.*, 1855, p. 374.

Biserat, Sungkei, Semangko Gap. 2,700 feet.

Common through Burma, Tenasserim, and the Malayan sub-region.

POLISTES, Latr.**129. *Polistes sagittarius***

Polistes sagittarius, *Sauss., Etud. Faun. Vesp.* ii, 1853-59, p. 56.

Bukit Besar.

'Malay name, "Tembuang".'

Common through India, Burma, and Tenasserim. Described originally from China.

130. Polistes stigma

Vespa stigma, *Fabr.*, *Ent. Syst.* ii, 1793, p. 275.

Vespa tamula, *Fabr.*, *Ent. Syst. Suppl.*, 1798, p. 263.

Polistes stigma, *Sauss.*, *Etud. Faun. Vesp.* ii, 1853-59, p. 64, pl. vi, fig. 3, ♀.

Bidor. 3rd February, 1902.

Sungkei. 11th February, 1902.

‘On flowers.’

Common throughout the Indo-Malayan region. *P. stigma* is merely a geographical race of *P. marginalis*, *FABR.*, from Africa.

131. Polistes hebraeus

Vespa hebraea, *Fabr.*, *Mant. Ins.* i, 1787, p. 292.

Polistes hebraea, et *macaensis*, *Fabr.*, *Syst. Piez.*, 1804, pp. 272 and 273.

Vespa undata, *Oliv.*, *Encycl. Méth.* vi, 1791, p. 684.

Polistes hebraeus, *Sauss.*, *Etud. Faun. Vesp.* ii, 1853-59, p. 53, ♀.

Bukit Besar. 2,500 feet. 30th April, 1901.

‘Nest from small sapling; stings badly.’

A very wide spread and variable species, occurring in Egypt, Arabia, and Persia, and from Mauritius to the Philippines. The two species in the collection are richly marked with chestnut, black, and yellow. I have similar specimens from the Shevaroy hills in Southern India.

VESPA, Linn.**132. Vespa dorylloides**

Vespa anomala, *Sauss.*, *Etud. Faun. Vesp.* ii, 1853-59, p. 112, pl. xiv, fig. 2, ♀.

Vespa dorylloides, *Sauss.*, *Etud. Faun. Vesp.* ii, 1853-59, p. 256 (*Errata*).

Telôm. 27th January, 1902.

Bidor. 2nd February, 1902.

Sungkei. 8th February, 1902.

‘Although it was abundant every evening in South Perak in January and February, we did not see this species once during the nine months, April to December, spent in the Patani States.’

Common throughout India, Burma, and Tenasserim, extending to Java. More or less crepuscular in habits.

133. Vespa magnifica

Vespa magnifica, *Smith*, *Trans. Ent. Soc. new ser.* ii (1852), p. 45.

Bukit Besar. 2,500 feet. 31st August, 1901.

A single small ♀

Described originally from the Himalayas. Found at high elevations throughout Assam, Burma, and Tenasserim.

134. Vespa cincta

Vespa cincta, *Fabr., Syst. Ent.*, 1775, p. 362.

Vespa affinis, *Fabr., Mant. Ins.* i, 1787, p. 287.

Vespa unifasciata, *Oliv., Encycl. Méth.* vi, 1791, p. 677.

Biserat and Patani.

A single ♀ and several ♂'s.

A common Indian and Malayan wasp. The amount of yellow on the abdomen is very variable.

135. Vespa auraria

Vespa auraria, *Smith, Trans. Ent. Soc.* (2) ii (1852), p. 46, ♀, pl. viii, fig. 8, ♀.

Telôm. 4,000 feet. 23rd January, 1902.

'Closely mimicked by a Syrphid fly taken on the same day and in the same part of the jungle.'

Described originally from the Himalayas. I procured it at high elevations in Tenasserim.

ANTHOPHILA**COLLETIDAE****PROSOPIS**, *Fabr.***136. Prosopis mixta**

Prosopis mixta, *Smith, A. M. N. H.* (2) ix (1852), p. 50, ♀.

Prosopis leucotarsis, *Cam., Mem. Manch. L. and Ph. Soc.* xli, 1897, No. iv, p. 90.

Biserat. 21st October, 1901.

Described by SMITH, from India; no precise locality. Has not yet been recorded from Burma or Tenasserim.

APIDAE**SPHECODES**, *Latr.***137. Sphecodes crassicornis**

Sphecodes crassicornis, *Smith, New. sp. Hym. Brit. Mus.*, 1879, p. 28, ♂.

Sphecodes sodalis, *Smith, t.c.*, p. 28, ♂.

♂. Biserat. 6th August, 1901.

♀. Sungkei. 11th February, 1902.

The type specimen, a ♂, is from Calcutta. The ♀ closely resembles the ♂, but is slightly larger and has no black at the base of the abdomen.

HALICTUS, Latr.**138. Halictus validus**

(Plate A, figs. 7, 7a, ♀)

Halictus validus, *Bingh., Fascic. Malay. Zool.*, vol. 1, Appendix, p. v.

Biserat, Jalor.

Described from three specimens taken in August and October.

NOMIA, Latr.**139. Nomia iredescens***Nomia iredescens*, *Smith, Journ. Linn. Soc.* ii (1858), p. 43, ♀.

Bukit Besar. 1,000 feet. 27th April, 1901.

‘This bee, with several other specimens, was crawling on the surface of a small puddle on the top of a rock in the middle of a stream. In the puddle were numerous Dipterous larvae.’

Common in Tenasserim.

140. Nomia rustica*Nomia rustica*, *Westw., Trans. Ent. Soc.*, 1875, p. 214, ♂.

Biserat. 7th July, 1901.

‘Among short grass in pasture land.’

Described originally from Ceylon.

141. Nomia terminata*Normia terminata*, *Smith, Trans. Ent. Soc.*, 1875, p. 56, ♂.

♀. Semangko, Selangor. 2,700 feet. 14th May, 1902.

Recorded from Sikhim, Burma, and Tenasserim.

NOMADA, Scop.**142. Nomada adusta***Normada adusta*, *Smith, Trans. Ent. Soc.*, 1875, p. 50, ♂, ♀.

Biserat. 17th October, 1901.

A variable insect found throughout Indo-Malayan region.

LITHURGUS, Latr.**143. Lithurgus atratus***Lithurgus atratus*, *Smith, Cat. Hym. Brit. Mus.* i, 1853, p. 145, ♀.

Jeram Kawan, South Perak. 12th February, 1902.

Found throughout the Indo-Malayan region.

MEGACHILE, Latr.**144. Megachile atrata**

Megachile atrata, *Smith, Cat. Hym. Brit. Mus.* i, 1853, p. 182, ♀.

Megachile fulvipennis, *Smith, New. sp. Hym. Brit. Mus.*, 1879, p. 68, ♀ var.

Biserat, Jalor. 29th June, 1901.

‘On flowers of a tall yellow pea.’

Three specimens of the variety named *Fulvipennis*, by SMITH. Recorded from Burma, Tenasserim, the Nicobars, and the Philippines.

145. Megachile bellula

Megachile bellula, *Bingh., Faun. Brit. Ind. Hym.* i, p. 476, fig. 158, ♂, ♀.

Biserat, Jalor. 29th June, 1901.

‘On flowers of a tall yellow pea, with the preceding species.’

Described originally from Burma and Tenasserim. Found also in Sumatra.

146. Megachile disjuncta

Apis disjuncta, *Fabr., Ent. Syst.* ii, 1793, p. 328.

Megachile disjuncta, *Lepel, Hist. Nat. Ins. Hym.* ii, 1841, p. 331, ♀.

Biserat. 12th July, 1901.

‘Flying in house.’

A common Indo-Malayan species. Builds its nests in houses.

147. Megachile velutina

Megachile velutina, *Smith, Cat. Hym. Brit. Mus.* i, 1853, p. 180, ♀.

Biserat. 22nd October, 1901.

‘Flying about house-post.’

A common species in Tenasserim.

ANTHIDIUM, Fabr.**148. Anthidium minutissimum**

(Plate A, fig. 8, ♀)

Anthidium minutissimum, *Bingh., Fascic. Malay.*, vol. i, Appendix, p. vi.

Biserat, Jalor. 18th September, 1901.

‘Flying among low shrubs in the open.’

PAREVASPIS, Ritsema**149. Parevaspis abdominalis**

Stelis abdominalis, *Smith, Journ. Linn. Soc.* iii, 1859, p. 7, ♂.

Parevaspis abdominalis, *Dalla. Torre., Cat. Hym.* x, p. 480.

Biserat, Jalor. 23rd October, 1901.

Common throughout the Indo-Malayan region.

CERATINA, Latr.**150. Ceratina sexmaculata**

Ceratina sexmaculata, *Smith, New sp. Hym. Brit. Mus.*, 1879, p. 92, ♂.

Biserat. August and October.

‘Flying about in low vegetation.’

Extends from China, through Burma to the Malayan sub-region.

151. Ceratina perforatrix

Ceratina perforatrix, *Smith, New sp. Hym. Brit. Mus.*, 1879, p. 92, ♂.

Sungkei, South Perak. 7th June, 1902.

‘Taken on flowers.’

One of the largest and most beautiful of the genus. Has been recorded also from Assam, Burma, and Tenasserim.

152. Ceratina hieroglyphica

Ceratina hieroglyphica, *Smith, Cat. Hym. Brit. Mus.* ii, 1854, p. 226, ♂, ♀.

Ceratina flavipicta, *Morawitz (nec Smith), Hor. Soc. Ent. Ross* xxiv (1890), p. 356.

Ceratina morawitzii, *Stadehn., Zool. Jahrb. Syst.* viii (1894), p. 233.

Biserat. 6th February, 1902.

Sungkei. 6th February, 1902.

‘On flowers.’

Common throughout the Indo-Malayan region.

COELIOXYS, Latr.**153. Coelioxys ducalis**

(Plate A, fig. 9, ♀)

Coelioxys ducalis, *Smith, Cat. Hym. Brit. Mus.* ii, 1854, p. 267.

♀. Bukit Besar. 2,500 feet. 7th August, 1891.

SMITH recorded this magnificent form from India with a doubt. So far as I know, it has not been again procured till collected by Messrs. ANNANDALE and ROBINSON.

154. Coelioxys basalis

Coelioxys basalis, *Smith, Trans. Ent. Soc.*, 1875, p. 48, ♂, ♀.

Biserat. 23rd October, 1901.

Common throughout India, Burma, and Tenasserim.

CROCISA, Jurine**155. Crocisa decora**

Crocisa decora, *Smith, Trans. Ent. Soc.* (2) ii, pt. II (1852), p. 41, ♀.

Crocisa emarginata, pt. *Bingh. (nec Lepel), Faun. Brit. Ind. Hym.* i, 1897,
p. 517, ♂, ♀.

Cape Patani. 10th June, 1901.

'On flowers of shrub.'

Originally described from China.

PODALIRIUS, Latr.**156. Podalirius zonatus**

Apis zonata, *Linn., Syst. Nat.*, 10th ed., i, 1758, p. 576.

Anthophora subcoerulea, *Lepel, Hist. Nat. Ins. Hym.* ii, 1841, p. 30, ♂, ♀.

Anthophora zonata, *Smith, Cat. Hym. Brit. Mus.* ii, 1854, p. 336.

Biserat. August, 1901.

Common throughout the Indo-Malayan region, and extending to Australia.

XYLOCOPA, Latr.**157. Xylocopa latipes**

Apis latipes, *Drury, Ill. Exot. Ins.* ii, pl. xlviii, fig. 2, ♂.

Xylocopa latipes, *Fabr., Syst. Piez.*, 1804, p. 337.

Ban Sai Kau, Nawngchik ; Biserat ; Sungkei ; Tenelong, South Perak.

'Exceedingly abundant ; mines into woodwork of houses and does great damage.'

Found throughout the Indo-Malayan region.

158. Xylocopa auripennis

Xylocopa auripennis, *Lepel, Hist. Nat. Ins. Hym.* ii, 1841, p. 181, ♂, ♀.

Biserat, Bukit Besar. Two rather large ♀'s.

Found throughout the Indo-Malayan region.

159. *Xylocopa collaris*

Xylocopa collaris, *Lepel, Hist. Nat. Ins. Hym.* ii, 1841, p. 189, ♀.
Xylocopa dejeanii, *Lepel, Hist. Nat. Ins. Hym.* ii, 1841, p. 209, ♂.

Bukit Besar. 2 ♂'s. 30th August, 1901.

Biserat. ♂. 20th October, 1901.

A common species in the Indo-Malayan region.

160. *Xylocopa caerulea*

Bombus caeruleus, *Fabr., Syst. Piez.*, 1804, p. 345.
Xylocopa caerulea, *Lepel, Hist. Nat. Ins. Hym.* ii, 1841, p. 200, ♀.

Bukit Besar. 2,500 feet.

'In branch of dead wood, about two inches in diameter; found when cutting up sticks for firewood. The gallery in one instance was about nine inches long, and contained four bees. All the specimens, including the one just hatched, were infested with mites, which inhabited a hole in the forepart of the abdomen.'

Sparsely spread through the Indo-Malayan region.

161. *Xylocopa aestuans*

Apis aestuans, *Linn., Syst. Nat. ed.* 10, i, 1758, p. 579, ♀.
Xylocopa aestuans, *Lepel, Hist. Nat. Hym.* ii, 1841, p. 193, ♂, ♀, pl. xvii, fig. 3, ♀, fig. 4, ♂.

Patani, Bukit Besar, and Biserat. June to October.

'Malay name "Kumbang," a general name applied to all species of the genus *Xylocopa*.'

A common Indo-Malayan species.

APIS, Linn.**162. *Apis dorsata***

Apis dorsata, *Fabr., Ent. Syst.* ii, 1793, p. 328.
Apis bicolor, *Klug., Mag. n. Ent. Ges. Naturk. Berlin*, i (1807), p. 264, pl. vii, fig. 3.
Apis nigripennis, *Lepel, Hist. Nat. Ins. Hym.* i, 1841, p. 403.
Apis testacea, *Smith and Zonata, Smith (nec Guerin), Journ. Linn. Soc.* ii (1858), p. 49, and iii (1859), p. 8.

Bukit Besar. Semangko, Selangor. 2,700 feet. 14th May, 1902.

Spread throughout the Indo-Malayan region.

163. Apis indica

Apis indica, *Fabr., Ent. Syst. Suppl.*, 1798, p. 274.

Apis unicolor, *Latr. Ann. Mus. Hist. Nat.* v, 1804, p. 168.

Apis perottetii, *Guér. Icon. Regne. Anim. Ins.*, 1829, p. 461.

Apis nigrocincta, *Smith, Journ. Linn. Soc.* v, 1861, p. 93.

Bukit Besar. 31st August, 1901.

Biserat. 20th October, 1901.

Telôm. 19th January, 1902.

As common, or more common, than the last form throughout the Indo-Malayan region.

164. Apis florea

Apis florea, *Fabr., Mant. Ins.* i, 1787, p. 305.

Biserat. 17th August, 1901.

Telôm. 4,000 feet. 19th January, 1902.

‘Taken on flowering shrub.’

Not so plentiful as the last two but spread generally through the same region.

MELIPONA, Illiger.**(Trigona)****165. Melipona thoracica**

Trigona thoracica, *Smith, Journ. Linn. Soc.* ii (1857), p. 50.

Melipona thoracica, *Bingh., Faun. Brit. Ins. Hym.* i, 1897, p. 564, pl. iv, fig. 13,

♂.

Biserat. 15th September, 1901.

Telôm. 4,000 feet. 17th January, 1902.

Described by SMITH, from Malacca. Found also in Tenasserim and the hills of Lower Burma.

166. Melipona canifrons

Trigona canifrons, *Smith, Journ. Linn. Soc.* ii (1857), p. 51, ♀.

Melipona canifrons, *Bingh., Faun. Brit. Ind. Hym.* i, 1897, p. 562.

Jeram Kawan, South Perak. February.

Found also in Tenasserim, Borneo, and Sumatra.

167. Melipona nitidiventris

Trigona nitidiventris, *Smith, Journ. Linn. Soc.* ii (1857), p. 50, ♀.

Biserat. October, 1901.

Telôm. 4,000 feet. 22nd January, 1902.

Described originally from Malacca. I have seen specimens also from Sumatra.

168. Melipona apicalis

Trigona apicalis, *Smith, Journ. Linn. Soc.* ii (1857), p. 51, ♀.

Melipona apicalis, *Bingh., Faun. Brit. Ind. Hym.* i, 1897, p. 562, ♀.

Sungkei. February, 1902.

Found also in Burma and Tenasserim, and extending to Borneo.

169. Melipona vidua

Melipona (Trigona) vidua, *Lepel, Hist. Nat. Ins. Hym.* i, 1836, p. 429, ♀.

Melipona vidua, *Bingh., Faun. Brit. Ind. Hym.* i, 1897, p. 561, ♀.

Biserat. 6th August, 1901.

Semangko, Selangor. 15th May, 1902.

Sungkei 7th February, 1902.

Spread through the Indo-Malayan region.

170. Melipona laeviceps

Trigona laeviceps, *Smith, Journ. Linn. Soc.* ii (1857), p. 51, ♀.

Melipona laeviceps, *Bingh., Faun. Brit. Ind. Hym.* i, 1897, p. 563, ♀.

Biserat, Bukit Besar, Patani, Telôm.

‘Nest in house-post in village.’

Common in Tenasserim.

171. Melipona smithii

Trigona ruficornis, *Smith (nec Lamarck), Trans. Zool. Soc.* vii (1870), p. 194, ♀.

Melipona smithii, *Bingh., Faun. Brit. Ind. Hym.* i, 1897, p. 563, ♀.

Gedong.

Described from Northern India. Found also in Burma and Tenasserim.

172. Melipona atripes

Trigona atripes, *Smith, Journ. Linn. Soc.* ii (1857), p. 50, ♀.

Melipona atripes, *Dalla. Torre., Cat. Hym.* x, 1896, p. 576; *Bingh., Faun. Brit. Ind. Hym.* i, 1897, p. 561, ♀.

Telôm. 3,500 feet. 19th January, 1902.

Described from Malacca; extends into South Tenasserim.

173. Melipona castanea

(Plate A, figs. 10, 10a, 10b, ♀)

Melipona castanea, *Bingh., Fascic. Malay.*, vol. i, Appendix, p. vi.

Bukit Besar. 1,500-2,500 feet.

‘Flying round ripe fruit in jungle.’

174. Melipona basimaculata

(Plate A, figs. 11, 11a, 11b, ♂)

Melipona basimaculata, *Bingh.*, *Fascic. Malay.*, vol. i, Appendix, p. vii.

Biserat. Telôm. 15th January, 1902.

‘Resting on ceiling at midday.’

This species resembles *M. ventralis* a little, but is very much larger and with different sculpture.

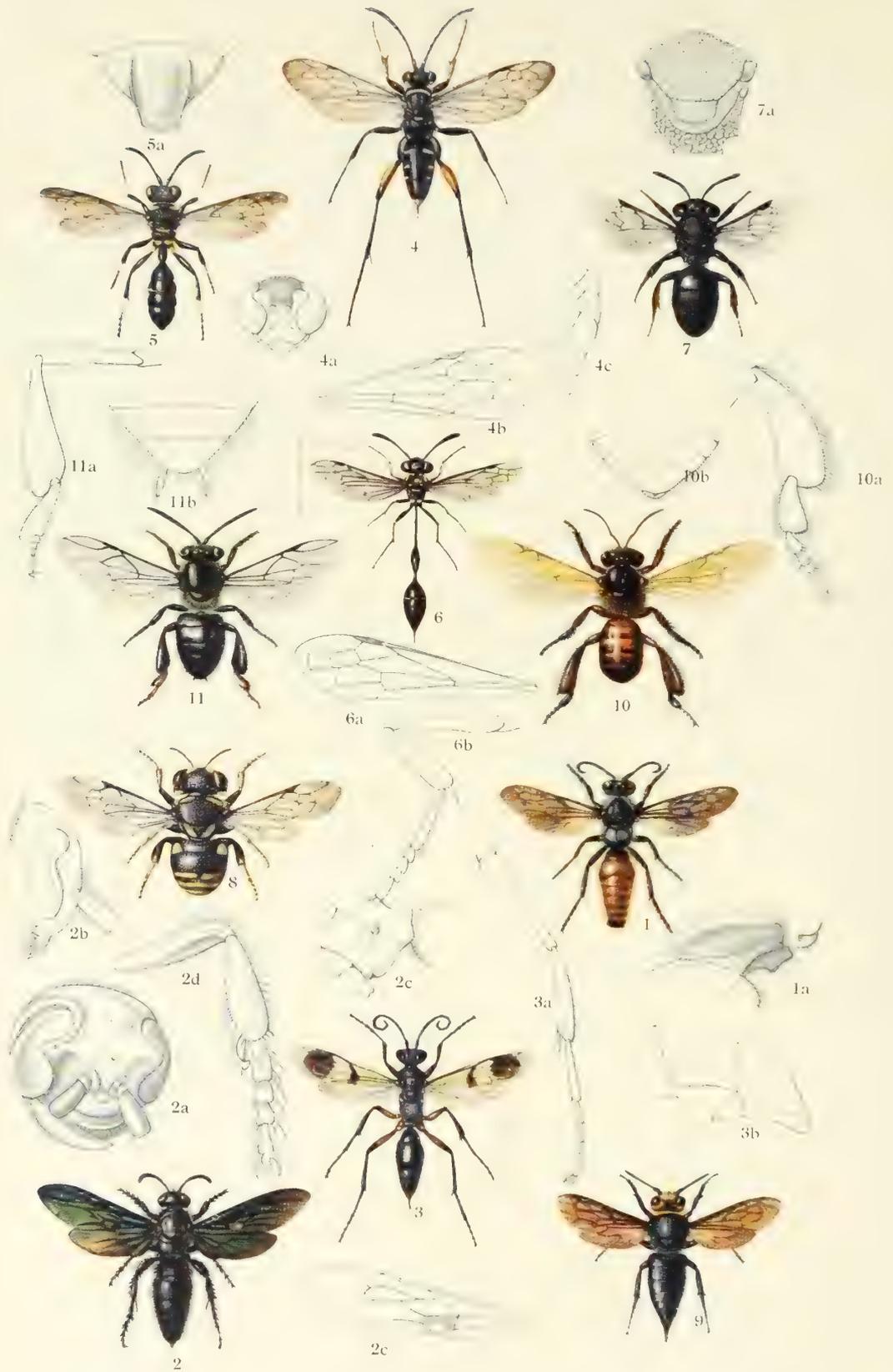


PLATE A

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NOTE.—Figs. 2 and 9 are natural size, the rest enlarged ; details much enlarged.

REPORT ON THE BIRDS

BY

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INTRODUCTORY NOTE

THE most noteworthy point brought out by the present collection is the complete absence of any of the higher mountain birds from Bukit Besar. That this cannot be due to altitude alone is proved by the fact that the mountain fauna is strongly represented on the Selangor Hills at a height considerably less than that of our encampment on Bukit Besar (2,500 feet).

From Mr. OGILVIE-GRANT'S paper it is evident that the avifauna of the Patani States is on the whole more Burmese than Malayan, as is shown by the occurrence of *Gecinus viridanus* instead of *G. vittatus* and by the presence of such species as *Coracias affinis* and *Crypsirhina varians*.

The affinities of the high mountain fauna are puzzling, and both Bornean and Sumatran forms seem to be represented, though as might be expected the latter are predominant. The existence of a species of *Chlorura* is interesting as this genus has not hitherto been recorded from continental Asia.

Taking the Peninsula as a whole, three very distinct faunal zones can be recognized which may be called :—

I. The Indo-Burmese zone : occupying the whole of the coastal districts as far south as Penang on the west coast, and extending to the Pahang River on the eastern side of the Peninsula. This zone is coterminous in range with that of *Thereiceryx lineata*, *Parus cinereus*, and, among plants, with *Casuarina equisetifolia*.

II. The Malayan zone : including the remainder of the Peninsula with the exception of the high mountains. The characteristic forms are *Nyctiornis amicta*, *Cymborhynchus macrorhynchus*, *Hemixus cinereus*.

III. The Himalayo-Sundaic zone : covering the mountains of the main range above three thousand feet as far south as Southern Selangor, and also certain of the loftier isolated massifs. The characteristic forms are *Rhinocichla mitrata*, *Sibia simillima*, etc.

Speaking generally there seems but little more to do on the western side of the Peninsula, even in the mountains, as assiduous collecting for the last year has only resulted in the discovery of one new species and the addition of some five or six others to the list of birds found in the Peninsula.

Gunong Tahan in Pahang may, however, be expected to yield a considerable number of novelties, while it is highly important that the lofty mountains north of Senggora on the east coast, which are as yet absolutely virgin ground, should be thoroughly explored in order to ascertain whether the fauna occurring on Mooleyit in Tenasserin extends so far south.

In the present paper my own notes are distinguished by being enclosed within inverted commas.

HERBERT C. ROBINSON

SELANGOR STATE MUSEUM
KUALA LUMPUR
24th November, 1904

REPORT ON THE BIRDS

BY W. R. OGILVIE-GRANT

BRITISH MUSEUM (NATURAL HISTORY), CROMWELL ROAD, LONDON

DURING their recent expedition to the Siamese Malay States and Perak Messrs. H. C. ROBINSON and NELSON ANNANDALE made a large collection of birds, which they have kindly placed in my hands for identification. Below will be found a complete list with notes. One species of Bulbul (*Pycnonotus robinsoni*) appears to be new. A female Green Weaver-finch of the genus *Chlorura* may likewise represent a distinct form near *C. borneensis*, but until the arrival of male examples I have refrained from naming it. The first set of this fine collection has been presented to the British Museum, the remaining specimens being given to the Royal Scottish Museum, Edinburgh. To save repetition, Mr. J. L. BONHOTE's report 'On the Birds collected during the Skeat Expedition to the Malay Peninsula' (*P.Z.S.*, 1901, pp. 57-81) is quoted as 'BONHOTE.' Mr. E. HARTERT's article 'On Birds from Pahang, Eastern Malay Peninsula' (*Nov. Zool.* ix, pp. 537-580 (1902)) is quoted as 'HARTERT.'

CORVIDAE

1. *Corvus enca*, Horsf.

Corone enca, Sharpe, *Cat. B. Brit. Mus.* iii, p. 43 (1877).

♂ ad. Jeram Kawan, South Perak. 13th February. (No. 663)

The Slender-billed Crow has the iris brown, and the bill and feet black. The Museum possesses only two examples from the Malay Peninsula, procured respectively at Johore and Malacca.

'The above locality is situated in deep jungle many miles from any considerable extent of open country, and I find that the individual secured is recorded in my journal as having a much more subdued and less raucous "caw" than the succeeding species.'

'Malay name, *Gagak hutan*.'

2. Corvus macrorhynchus, Wagl.

Corone macrorhyncha, Sharpe, *Cat. B. Brit. Mus.* iii, p. 38 (1877).

♂ ad.	Ban Sai Kau, Nawngchik.	26th April.	(No. 15)
♂ ad.	Bayu, Jalor.	9th July.	(No. 260)
♂ ad.	Jambu, Jhering.	9th June.	(No. 167)

The Jungle-Crow has the iris brown and the bill and feet black.

‘In the Malay Peninsula at least, the trivial name of this species is somewhat misleading as it is rarely, if ever found far from open country. In Patani and other east coast districts, it is very abundant, roosting and nesting in the crowns of cocoa-nut and sugar palms, but in the Federated Malay States it is comparatively scarce. In Patani, on an easily understood homoeopathic principle, the ashes of a crow’s wing-feathers are in great demand as a specific against grey hair, whilst in South Perak, oil in which the feathers have been boiled is used for a similar purpose. Malay name, *Gagak kampung*.’

3. Platysmurus leucopterus, (Temm.)

Platysmurus leucopterus, *Bonhote*, p. 59.

♂ ad.	Sungkei, South Perak.	8th February.	(No. 621)
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The White-winged Jay has the iris red and the bill and legs black.

‘Apparently rare ; the above individual was shot in deep jungle. Malay name, *Gembala gajah* (Elephant herd).’

4. Crypsirhina varians, (Lath.)

Crypsirhina varians, Sharpe, *Cat. B. Brit. Mus.* iii, p. 83 (1877).

♂, ♀ ad.	Patani.	30th May and 18th and 19th June.	(Nos. 140, 198, 199)
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The Racket-tailed Magpie has the iris red and the bill and feet black.

‘Only met with in Patani, where it was not uncommon during May and June, generally frequenting the Cashew trees in search of cockchafer and big green Rutelid beetles (*Anomala viridis*). The species has not been previously recorded from the Malay Peninsula, and is apparently unknown on the west coast or further south than Patani.’

EULABETIDAE**5. Eulabes javanensis, (Osbeck)**

Mainatus javanensis, *Bonhote*, p. 66.

Gracula javanus (Cuv.), *Hartert*, p. 579.

♀ ad.	Ban Sai Kau, Nawngchik.	22nd May.	(No. 123)
♂, ♀ ad.	Biserat, Jalor.	June, July.	(Nos. 209, 210, 271)
♂ ad.	Mabek, Jalor.	27th July	(No. 325)

In the Malay Grackle the iris is brown, the wattles orange, paler at the base, the bill orange-lemon, yellow at tip, and the feet bright yellow.

‘The *Tiong gajah* or *Tiong mas*, as the Malays call this species, is very common in the Patani States, frequenting open forest and orchard-land, but it is not found in the coast-districts, and is much rarer on the western side of the Peninsula. It is a favourite cage-bird among the natives, and large sums are paid for clever talkers.’

6. *Calornis chalybeus*, (Horsf.)

Calornis chalybea, *Bonhote*, p. 66.

♂ ad.	Patani.	30th May.	(No. 144)
♂, ♀ ad. et ♀ imm.	Ban Sai Kau, Nawngchik.	April, May.	(Nos. 16, 107, 114)
♂, ♀ ad.	Biserat, Jalor.	5th and 16th July.	(Nos. 242, 283)
♂ imm.	Bidor, South Perak.	2nd and 3rd Feb.	(Nos. 607, 610, 612)

The Glossy Calornis has the iris carmine and the bill and feet black.

‘Common everywhere in open country, nesting in the Pinang palms, or occasionally at the top of dead trees. Malay name, *Perling*.’

7. *Aethiopsar fuscus*, (Wagl.)

Acridotheres fuscus, *Bonhote*, p. 66.

♂ ad.	Ban Sai Kau.	21st May.	(No. 121)
♀ juv.	Biserat, Jalor.	7th and 13th July.	(Nos. 253, 275)

The Jungle-Myna has the iris deep yellow (white, tinged with yellow in the young), the bill orange with the basal portion of the lower mandible black feet yellow, claws paler.

‘Very common in the rice-fields; nearly always in close attendance on the buffaloes and oxen, so much so that it is often difficult to shoot specimens. Malay name, *Burong gembala kerbau* (Buffalo-herd).’

DICRURIDAE

8. *Chaptia aenea*, (Vieill.)

Chaptia aenea, *Sharpe*, *Cat. B. Brit. Mus.* iii, p. 243 (1877).

♂, ♀ ad.	Telôm, Perak-Pahang border.	24th January.	(Nos. 581, 582)
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The Bronzed Drongo has the iris red and the bill and feet black.

‘Very common on the edge of high bamboo jungles in the hill country, perching on the extreme tips of the higher shoots. The species is probably semi-crepuscular in its habits, as it rarely appeared before 5 p.m., when it was

to be seen hawking insects (chiefly winged termites) and performing wonderful aerial summersaults. The note is a clear melodious whistle, twice repeated with a brief interval between. In Patani species of *Dicruridae* are known as *Anak damak* or *Hamba kèra* (Monkey's slave), while in South Perak and Selangor *Chawi-chawi* is the commoner name.'

9. *Bhringa remifer*, (Temm.)

Bhringa remifer, *Sharpe, P.Z.S.*, 1887, p. 434; *Bonhote*, p. 59; *Hartert*, p. 580.

♂, ♀ ad. Telôm, Perak-Pahang border. 3,500-4,000 feet. 19th and 20th January.

(Nos. 551, 556, 559)

Five examples from Perak differ constantly from the large series of *Bhringa* from North India, etc., in having the web on the terminal part of the lengthened outer tail-feathers much narrower, 0.5 inch or less in width. The racket-shaped end is greatly lengthened, and extends much further down the shaft, tapering off gradually towards the base, instead of terminating abruptly. Birds from Sumatra and Java appear to share this peculiarity, but the Museum series is very deficient in examples with complete tails. The name *Edolius remifer* was given by TEMMINCK to birds from Java and Sumatra, and should no doubt include the birds from Perak; the northern examples standing as *B. tectirostris*, HODGS.

'In habits similar to the preceding.'

10. *Dissemurus paradiseus* (Linn.)

Dissemurus paradiseus, *Bonhote*, p. 59.

Dissemurus paradiseus paradiseus, *Hartert*, pp. 579 and 580.

♂ ad.	Nawngchick.	28th November.	(No. 484)
♂, ♀ ad.	Biserat, Jalor.	14th July.	(Nos. 277, 286)
♀ ad. et imm.	Mabek, Jalor.	22nd and 23rd July.	(Nos. 302, 307, 308)
♀ imm.	K. Datoh, Tanjong Patani.	3rd October.	(No. 408)
♂, ♀ ad.	Sungkei, South Perak.	8th and 10th February.	(Nos. 620, 622, 645)
♂ ad.	Batang Padang, South Perak.	29th January.	(No. 604)

The Larger Racket-tailed Drongo has the iris chestnut or red and the bill and feet black.

'Widely distributed from the sea-coast to the thick central jungles, but not ascending the hills to any considerable elevation.'

ORIOLIDAE

11. *Oriolus consanguineus*, Wardlaw-Ramsay.

Oriolus consanguineus, *Sharpe, P.Z.S.*, 1887, p. 434; *Bonhote*, p. 59.

♂ ad. Telôm, Perak-Pahang border. 19th January (No. 548)

The Crimson-breasted Oriole has the iris chestnut and the bill and feet pale bluish-horn. Specimens from the Malay Peninsula appear to be somewhat larger than those from Sumatra, males from the former locality having the wing 5·4 inches, while those from the latter measure 5·1-5·2 inches. We may here remark that *O. vulneratus*, SHARPE, from BORNEO, appears to be indistinguishable from the present species, the supposed differences found in the gloss of the upper parts and the amount of red on the primary-coverts being apparently of no importance (cf. *Ibis*, 1887, p. 438).

‘This bird frequents dark and narrow gullies overgrown with the thickest vegetation, and is shy and retiring in its habits. Its lower limit is about three thousand feet, and it is by no means a rare bird to those acquainted with its habits.’

PLOCEIDAE

12. *Munia maja*, (Linn.)

Munia maja, *Bonhote*, p. 67.

♀ imm.	Patani.	30th May.	(No. 143)
♀ ad.	Ban Sai Kau.	20th December.	
♂ ad.	Biserat.	18th July.	(No. 288)

This White-headed Munia has the iris brown, the bill lead-blue, and the feet greyish-black.

‘Common on the rice-fields and on waste ground ; a favourite cage bird with Malays. Malay name, *Burong pipit* ; *Burong laki padi* (husband of the rice).’

13. *Munia acuticauda*, Hodgs.

Munia acuticauda, *Hartert*, p. 579.

♂ ad.	Ban Sai Kau, Nawngchik.	26th April.	(No. 10)
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HODGSON'S Munia has the iris rich sienna-brown, the bill bluish lead-colour, black along the culmen, and the feet greyish-black.

‘Not so common as the preceding species and found as a rule in low brush-wood overgrown with lalang grass.’

14. *Ploceus atrigula*, Hodgs.

Ploceus atrigula, *Bonhote*, p. 67.

Ploceus passerinus infortunatus, *Hartert*, p. 577.

♀ ad.	Ban Sai Kau.	24th May.	(No. 131)
♂ ad.	Biserat, Jalor.	1st July.	(No. 223)

These birds, with the wing 2·75 inch, belong to the slightly smaller race which has been named *P. passerinus infortunatus*, HARTERT.

In the birds from India the wing measures 2·9-3·0 inches. ♂ iris brown, bill black, a yellow bar across the base of the lower mandible, feet flesh colour. ♀ iris brown, bill yellowish-horn, feet pinkish.

‘Common in the environs of almost every village. The peculiar “abortive nests” or swings made by the male, and weighted with lumps of mud, are well known, and a source of wonder to the Malays, who are extraordinarily observant in matters zoological.’

15. *Chlorura*, sp.

♀. Telôm, Perak-Pahang border. 22nd January. (No. 570)

The adult female *Chlorura*, collected by Mr. ROBINSON at Telôm, is very closely allied to *C. intermedia*, HARTERT, from Lombock and Flores, having the same dark tawny rufous lores, but the chest and breast are somewhat paler, and in this respect the Malay bird closely resembles *C. borneensis*.

The iris is brown, the bill black, and the feet yellowish-brown.

‘Only one specimen of this bird was seen, creeping about among low bamboos, very much after the manner of a Titmouse.’

FRINGILLIDAE

16. *Emberiza aureola*, Pall.

Emberiza aureola, Sharpe, *Cat. B. Brit. Mus.* xii, p. 509 (1888).

ad. et imm. Nawngchik. November.

‘The Yellow-breasted Bunting was evidently on migration, at the commencement of the heavy rains.’

17. *Passer montanus*, Linn.

Passer montanus, Sharpe, *Cat. B. Brit. Mus.* xii, p. 301 (1888).

♀ ad. Ban Sai Kau. 14th September. (No. 386)

♀ ad. Anak Bukit. 25th April. (No. 9)

The Tree-Sparrow has the iris brown, the bill black, and the feet flesh-colour.

‘In towns and near the coast as common as the English sparrow at home, but rarely seen in up-country villages.’

MOTACILLIDAE

18. *Anthus rufulus*, Vieill.

Anthus rufulus, *Bonhote*, p. 66.

Anthus rufulus malayensis, *Eyton*, *Hartert*, p. 575.

♂, ♀ ad.	Kampong Jalor.	29th October, 5th November.	(Nos. 457, 469)
♀ ad.	Bayu, Jalor.	9th July.	(No. 261)
♀ ad.	Biserat, Jalor.	18th July.	(No. 287)

The specimens before us belong to the form of the Indian Pipit known as *A. malayensis*, *Eyton*, having the outer web of the penultimate tail-feathers black almost to the tip, edged externally with white.

‘Almost the most characteristic bird of open country and dry rice-fields. No. 287 was snared on its nest which was situated among long grass at the edge of a rice-field, and consisted of a flat circular pad some five inches in diameter, composed of dead grass and loose maize leaves, lined with a few horse-hairs, which must have been hard to come by as there were only three ponies in the country. The eggs were four in number, rather pointed, the ground colour dirty white, thickly covered with very fine dark sienna-brown mottlings, evenly distributed, and also with large purplish-black blotches more thickly congregated at the larger end. Malay name, *Apit-apit*.’

19. *Motacilla borealis*, (Sund.)

Motacilla borealis, *Sharpe*, *Cat. B. Brit. Mus.* x, p. 552 (1885).

♀ ad.	Patani Town.	20th April.	(No. 1)
♀ imm.	Nawngchik.	27th November.	(No. 481)
♂, ♀ ad.	Ban Sai Kau.	16th September.	(Nos. 389, 390)

The Grey-headed Wagtail has the iris black, the bill black, paler at the base, and the feet black, with the soles yellowish.

‘Common in open country from September to April.’

20. *Motacilla melanope*, Pall.

Motacilla melanope, *Sharpe*, *P.Z.S.*, 1887, p. 441.

Motacilla boarula melanope, *Hartert*, p. 575.

♀ ad.	Jeram Kawan, South Perak.	16th February.	(No. 677)
♂ ad. et imm.	Sungkei, South Perak.	7th February.	(Nos. 617, 652)

The Grey Wagtail has the iris dark brown, bill black, feet brownish-flesh.

NECTARINIIDAE

21. *Arachnothera modesta*, (Eyton.)

Arachnothera affinis modesta, *Hartert*, p. 574.

♀ ad. et imm. Bukit Besar, Nawngchik. 2,500 feet. May. (Nos. 30, 54, 364)
 ♂ ad. Jeram Kawan, South Perak. 15th February. (No. 669)

The Grey-breasted Spider-hunter has the iris hazel, the bill blackish, yellowish horn-colour below, and the feet flesh.

'The habits of all the species of Spider-hunters are very similar. On Bukit Besar, where they are very abundant, they chiefly frequented the wild banana and tall zingiberaceous plants that covered the clearing in which we were encamped. They run along the underside of these broad leaves with great rapidity, displaying a singular fearlessness. Their food in part at least consists of vegetable matter, and they are particularly fond of the purple seeds of a shrubby plant probably belonging to the *Sterculiaceae*.'

22. *Arachnothera robusta*, (Mull. and Schl.)

Arachnothera robusta, *Hartert*, p. 574.

♀ (♂) ad. Kulu Bidor, South Perak. 21st February. (No. 679)

The example of the Stout-billed Spider-hunter is certainly a female, and lacks the ornamental chest-plumes characteristic of the male.

Iris dark brown, bill and feet black.

23. *Arachnothera longirostris*, (Lath.)

Arachnothera longirostris, *Sharpe*, *P.Z.S.*, 1887, p. 441.

Arachnothera longirostra, *Hartert*, p. 574.

♀ ad. Ban Sai Kau. 3,000 feet. 23rd May.

In the Little Spider-hunter the iris is light brown, the bill black, greyish at the base of the lower mandible, and the feet black.

24. *Arachnothera chrysogenys*, (Temm.)

Arachnothera chrysogenys, *Gadow*, *Cat. B. Brit. Mus.* ix, p. 108 (1884).

♂, ♀ ad. Bukit Besar, Nawngchik. 2,500 feet. 3rd and 4th May. (Nos. 45, 52, 57)

The Yellow-eared Spider-hunter has the iris brown, the bill black, the gape and tomia yellow, and the feet yellowish-grey.

25. Arachnothera magna, Hodgs.

Arachnothera magna, *Sharpe, P.Z.S.*, 1887, p. 441.

♀ ad. Semangko Pass, Selangor-Pahang border. 2,700 feet. 16th May and November.

The Large Spider-hunter has the iris dark brown, the bill black, the tomia dull yellow, and the feet bright gamboge.

‘Very abundant on a flowering bamboo in company with *Aethopyga wrayi*.’

26. Arachnothera crassirostris, (Reichenb.)

Arachnothera crassirostris, *Bonhote*, p. 64.

♂ ad. Gedong, South Perak. 7th January. (No. 499)

The Thick-billed Spider-hunter has the iris hazel, the bill black, horn-coloured at base, and the feet flesh-coloured with the soles orange.

27. Anthothreptes hypogrammica, (S. Müll.)

Anthreptes hypogrammica, *Hartert*, p. 574.

♂ ad. Bukit Besar, Nawngchik. 2nd May. (No. 24)

The Blue-naped Sun-bird has the iris brown, the bill black, and the feet olive-brown, yellow on the soles.

‘It was met with on a flowering tree in the early morning.

‘Apparently a strictly jungle species and evidently rare, as only a single specimen was collected or even seen.’

28. Anthothreptes malaccensis, (Scop.)

Anthothreptes malaccensis, *Bonhote*, p. 65.

Anthreptes malaccensis, *Hartert*, p. 573.

♂ imm.	Patani.	19th June.	
♂, ♀ ad.	Ban Sai Kau.	25th May.	
♂ imm.	Jambu, Jhering.	5th and 6th June.	(Nos. 150, 158)
♂, ♀ ad.	Sungkei, South Perak.	7th and 9th February.	(Nos. 625, 634)

The Brown-throated Sun-bird was feeding on the inflorescence of the cocoa-nut palms.

The iris is chestnut or brown, the bill black in the male, with the tip and base of the lower mandible bluish in the female, the legs greenish, and the soles orange.

‘The commonest of the Sun-birds throughout the Peninsula, and found in every garden and native village, but not in jungle. In these localities it feeds, as noted above, on the cocoa-nut palms and on the flowers of Hibiscus, but among the Casuarinas on the sea coast it is often found in great numbers, and in this case is probably attracted by small insects found on the cones and in the crevices of the bark. Malay name, *Burong blacham*.’

29. *Aethopyga wrayi*, Sharpe

Aethopyga wrayi, *Sharpe, P.Z.S.*, 1887, p. 440, pl. xxxviii, fig. 2, 1888, p. 277; *Hartert*, p. 573.

♂ ad. Gunong Berumban, Perak. 5,000 feet. 28th January. (No. 602)

A male of WRAY'S Sun-bird.

‘Very common at times among low shrubs and bamboos at high elevations, but very difficult to secure uninjured, chiefly owing to its extraordinary tameness and curiosity.’

DICAEIDAE

30. *Prionochilus ignicapillus*, Eyton.

Prionochilus ignicapillus, *Sharpe, P.Z.S.*, 1888, p. 277.

♂ vix ad. Bukit Besar, Nawngchik. 2,500 feet. 10th May. (No. 87)

The Crimson-breasted Flower-pecker has the iris reddish-brown, the bill black, and the feet lead-colour. In the present instance the green-edged primaries characteristic of immaturity are still retained.

‘It frequents the tops of the high trees in flocks of five or six individuals.’

31. *Dicaeum cruentatum*, (Linn.)

Dicaeum cruentatum, *Bonhote*, p. 65.

♂ ad. Patani. 14th June and 10th October. (Nos. 187, 443)

♂ ad. Nawngchik. 27th November. (No. 480)

♂ ad. Gedong, South Perak. 8th January. (No. 505)

The Scarlet-backed Flower-pecker has the iris brown and the bill and feet black.

‘An open-country and coastal form; very abundant at Patani among the Cashews. Known *supra* to the Malays in old-folk tales; it is an important figure as the *Burong supra Patri* (Princess-bird).’

32. *Dicaeum trigonostigma*, (Scop.)

Dicaeum trigonostigma, *Bonhote*, p. 65; *Hartert*, p. 575.

♂ ad. Biserat, Jalor. 12th June. (No. 269)
 ♂, ♀ ad. Jeram Kawan, South Perak. 13th February. (Nos. 656, 660, 661)

The Orange-bellied Flower-pecker has the iris black, the bill black, and the feet lead-colour.

33. *Dicaeum ignipectus*, (Hodgs.)

Dicaeum ignipectus, *Sharpe*, *P.Z.S.*, 1887, p. 441; *Bonhote*, p. 65; *Hartert*, p. 575.

♂ (♀) ad. Telôm, Perak-Pahang border. 4,000 feet. 21st January. (No. 561)

The example of the Fire-breasted Flower-pecker, undoubtedly a male, resembles typical *D. ignipectus* in plumage, and has the flanks of quite the same colour, but the bill is strikingly longer and stronger.

The iris is dark brown, and the bill and feet lead-colour.

‘A high mountain form on the Malay Peninsula. I am inclined to think that there has been some mistake in the locality of the specimens recorded by Mr. BONHOTE (*loc. cit.*)’

ZOSTEROPIDAE**34. *Zosterops aureiventer*, Hume.**

Zosterops aureiventer, *Sharpe*, *P.Z.S.*, p. 441; *Hartert*, p. 575.

♀ ad. Bukit Besar, Nawngchik. 2nd September. (No. 373).

Hume’s White-eye has the iris brown, the bill lead-blue, black along the culmen and at the tip, and the feet lead-blue.

‘Only seen on one day, when it suddenly appeared in considerable numbers after a very stormy night.’

35. *Zosterops palpebrosa*, (Temm.)

Zosterops palpebrosa, *Sharpe*, *Cat. B. Brit. Mus.* ix, p. 165 (1884).

♂, ♀ ad. Tanjong Patani. 28th and 30th September. (Nos. 410, 411, 412)

The birds collected at Patani appear to be typical examples of the Indian White-eye (*Z. palpebrosa*), and are easily distinguished from the Chinese *Z. simplex*, SWINH.

The iris is greyish-hazel, the bill black, lead-coloured at the base, and the feet lead-coloured.

'Found only among the Casuarinas on Cape Patani, where they were very abundant, though none were present during May and June; equally common in similar situations in Selangor, nesting among the mangroves only a few inches above high-tide level.'

SITTIDAE

36. *Dendrophila azurea*, (Less.)

Sitta Azurea, Sharpe, *P.Z.S.*, 1887, p. 441; *Hartert*, p. 573.

Ad. Semangko Pass, Selangor-Pahang border. 4,000 feet. 9th May. (No. 1)

The Azure Nuthatch has the iris white, the orbital skin livid bluish-white, and the bill and feet livid bluish-horn.

'A mountain form: abundant in the above locality.'

37. *Dendrophila saturator*, Hartert

Sitta frontalis saturator, *Hartert*, p. 573.

♀ ad. et imm. Bukit Besar, Nawngchik. May and August. (Nos. 93, 94, 366)

I have provisionally employed Mr. HARTERT'S name for the violet-breasted form of the blue Nuthatch found in the Malay Peninsula, though I am by no means satisfied that it is really distinct from *D. oenochlamys* (*lilacea*) from the Philippines.

Mr. H. C. ROBINSON collected two adult females with the breast washed with violet, and a younger specimen in which these parts are greyish-rufous and entirely devoid of violet.

Iris brown or lemon-yellow, bill coral-red, feet brownish-black.

'Usually a jungle-species; one specimen, however, was shot in an orchard at Biserat, but was too much damaged to preserve.'

PARIDAE

38. *Melanochlora sultanea*, (Hodgs.)

Melanochlora sultanea, Sharpe, *P.Z.S.*, 1888, p. 277.

♂, ♀ ad. Bukit Besar, Nawngchik. 2,500 feet. February, May, and August. (Nos. 25, 28, 65, 66, 68, 360)

A male of the Sultan-bird has the iris dark brown, the bill black, and the feet greenish-grey.

'This bird was often noted in flocks of seven or eight individuals feeding along the edge of our clearing in Bukit Besar. In flight and actions it does not in the least resemble a Titmouse, but reminds one more of the Bulbuls.'

39. Parus atriceps, Horsf.

Parus atriceps, Oates, *Faun. Brit. Ind., Birds* i, p. 46 (1889).

Parus cinereus, Vieill., *Gadow., B. Brit. Mus.* viii, p. 16, (1883).

♂ ad. Patani. June, September. (Nos. 420, 422)

♂, ♀ ad. Jambu, Jhering. June. (Nos. 149, 160, 161)

The Indian Grey Titmouse has the iris brown or hazel, the bill black, and the feet greenish-grey or greenish-blue.

‘Another of the species which, in the Malay Peninsula, appears to be strictly confined to the belt of Casuarinas skirting the coast in certain districts.’

PRIONOPIDAE**40. Platylophus ardesiacus**, (Cab.)

Platylophus ardesiacus, Sharpe, *Cat. B. Brit. Mus.* iii, p. 317 (1877)

♂ ad. Sungkei, South Perak. 7th February. (No. 614)

The Jay-Shrike has the iris Indian red, and the bill and feet black.

The specimen is in freshly moulted plumage and has the upper parts very dark and the under parts washed with grey.

LANIIDAE**41. Lanius tigrinus**, Drap.

Lanius tigrinus, Grant, *Nov. Zool.* ix, p. 480 (1902); *Hartert*, p. 576.

♀ imm. Jeram Kawan, South Perak. 13th February. (No. 659)

The young of the Thick-billed Shrike has the iris hazel, the bill black, pinkish at the base, and the feet bluish-grey.

42. Lanius cristatus, Linn.

Lanius cristatus, Gadow., *Cat. B. Brit. Mus.* viii, p. 271 (1883); *Grant, Nov. Zool.* ix, p. 481 (1902)

♀ ad. et imm. Anak Bukit, Nawngchik. 24th April. (No. 7)

A female of the Brown Shrike has the iris black, the bill lead-colour, paler at the base and black at the tip, and the feet black.

SYLVIIDAE**43. Orthotomus atrigularis**, Temm.

Orthotomus atrigularis, Sharpe, *Cat. B. Brit. Mus.* vii, p. 220 (1883).

♀ ad. Cape Patani. 10th June. (No. 169)

♀ imm. Bukit Besar, Nawngchik. 10th May. (No. 83)

♀ ad. Gedong, South Perak. 8th January. (No. 504)

Two adult females of the Black-necked Tailor-bird have the iris brown or pale yellow, the upper mandible black, the lower yellowish-horn, and the feet yellowish-flesh.

‘A coastal and scrub-country form ; never apparently found in old jungle.’

44. *Phylloscopus borealis*, (Blas.)

Phylloscopus borealis, *Seebohm, Cat. B. Brit. Mus.* v, p. 40 (1881).

♂ imm. Patani. 2nd October. (No. 433)

The Arctic Willow-warbler has the iris hazel, the bill black above, yellowish beneath, and the feet yellowish-brown.

‘Evidently on migration, large flocks appearing on the breaking of the monsoon.’

TURDIDAE

45. *Turdus obscurus*, Gmel.

Merula obscurus, *Seebohm, Cat. B. Brit. Mus.* v. p. 273 (1881).

♂ ad. Telôm, Perak-Pahang border. 4,000 feet. 24th January. (No. 583)

The Dark Ouzel has the iris pale hazel, the bill black above, yellow below, and the feet pale yellow.

‘Only this individual was seen ; it was so busily engaged in wrestling with a large and hairy caterpillar that I had time to send for a twelve-bore gun, the only one available, extract most of the shot from the cartridge, and shoot the bird within a distance of about ten yards from the ladder of our hut on which I was sitting.’

46. *Geocichla davisoni*, Hume.

Geocichla davisoni, *Sharpe, in Seebohm's Monogr. Turdidoe*, i, p. 101, pl. xxi, (1898).

♂ ad. Telôm, Perak-Pahang border. 4,000 feet. 22nd January. (No. 659)

In DAVISON'S Ground-Thrush the iris is dark brown, the bill black, and the feet dull yellow.

‘Another specimen was secured by Mr. L. WRAY in the Larut Hills, also in the winter months.’

47. *Cittocincla tricolor*, (Vieill.)

Cittocincla macrurus tricolor, *Hartert*, p. 572.

♂ ad.	Bukit Besar, Nawngchik.	2,500 feet.	9th May.	(No. 74)
♀ (♂) ad.	Biserat, Jalor.		15th July.	(No. 285)
♀ (♂) ad.	Gedong, South Perak.		9th January.	(No. 510)

The three specimens of the Shama are all in fully adult male plumage ; of these two are no doubt incorrectly marked as female. The birds obtained at the two first named localities in Patani have long tails measuring respectively 7·0 and 7·3 inches, and the breast and underparts lighter chestnut. The third specimen from Perak has a shorter tail, measuring 6 inches, and the breast and underparts deeper chestnut. All intermediate stages are represented in the British Museum collection.

‘The Shama is found distributed throughout the Peninsula, but does not appear to ascend the hills much above three thousand feet, or to occur among the mangroves of the tidal estuaries. It mainly affects secondary jungle, but is often found in the middle of comparatively large towns. Malay name, *Murai rimba*, or *Murai batu*.’

48. *Copsychus musicus*, (Raffl.)

Copsychus musicus, *Sharpe*, *P.Z.S.*, 1888, p. 436.

Copsychus saularis musicus, *Hartert*, p. 571.

Copsychus saularis (Linn.), *Bonhote*, p. 63.

♂, ♀ ad.	Ban Sai Kau, Nawngchik.	May.	(Nos. 125, 126)
♀ ad.	Biserat, Jalor.	July.	(No. 265)
♂ ad.	Patani.	May, June.	(Nos. 142, 165)
♂ ad.	Sungkei, South Perak.	2nd February.	(No. 616)

The Magpie-Robin has the iris hazel or brown, and the bill and feet black.

‘Quite the commonest bird in the Peninsula in towns and villages, extending along the roads to an altitude of about three thousand feet, but never found in jungle.’

49. *Henicurus schistaceus*, Hodgs.

Henicurus schistaceus, *Hartert*, p. 570.

♂ ad.	Sempan, Selangor-Pahang border.	4,200 feet.	10th May.
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A male of the Slaty-backed Forktail in very worn plumage, has the iris black, bill black, and the feet yellowish flesh-colour.

‘Several pairs of this species were seen in the bed of a rocky stream. Their habits are very similar to those of the Wagtails; and the note, which is constantly uttered, is a very high-pitched whistle, almost a scream.’

TIMELIIDAE

50. *Mesia argenteauris*, Hodgs.

Mesia argenteauris, *Sharpe, P.Z.S.*, 1886, p. 352; 1888, p. 276; *Hartert*, p. 568.

♂, ♀ ad. Telôm, Perak-Pahang border. 4,000 feet. 26th, 27th January. (Nos. 500, 505, 563, 596)

The Silver-eared *Mesia* has the iris dark brown, the bill pale orange, and the feet wax-yellow.

‘Common above three thousand feet; usually found in pairs hunting for food among the dead branches of fallen trees.’

51. *Cutia cervinicrissa*, Sharpe.

Cutia cervinicrissa, *Sharpe, P.Z.S.*, 1888, p. 276.

♀ ad. Semangko Pass, Selangor-Pahang border. 4,000 feet.

A female of the Malayan *Cutia* agrees well with typical examples collected by Mr. L. Wray, and has the iris brown, the bill slate, and the feet chrome.

‘Common in the above locality in small flocks of five or six individuals, climbing among the branches of low trees and searching for insects very much in the manner of a Titmouse.’

52. *Herpornis xantholeuca*, Hodgs.

Herpornis xantholeuca, *Sharpe, P.Z.S.*, 1888, p. 275.

Erpornis xantholeuca, *Hartert*, p. 568.

♀ ad. Bukit Besar, Nawngchik. 24th August. (No. 342)

The White-bellied *Herpornis* has the iris brown, the bill fleshy-horn, and the feet pinkish-flesh.

53. *Siva sordidior*, Sharpe.

Siva sordida, *Sharpe (nec Hume), P.Z.S.*, 1887, p. 438.

Siva sordidior, *Sharpe, P.Z.S.*, 1888, p. 276.

♂, ♀ ad. Telôm, Perak-Pahang border. 4,000 feet. January. (Nos. 571, 589, 598)

The Perak *Siva* has the iris hazel, the bill pinkish-horn, and the feet brownish.

‘Found in pairs, associating with *Alcippe peracensis*.’

54. *Sibia simillima*, Salvad.

Sibia simillima, *Sharpe*, *P.Z.S.*, 1886, p. 352; 1888, p. 274; *Bonhote*, p. 63.
Sibia picoides simillima, *Hartert*, p. 567.

♂, ♀ ad. Telôm, Perak-Pahang border. 18th to 27th January.
 (Nos. 546, 549, 550, 591, 594)

The Long-tailed *Sibia* has the iris reddish- or hazel-brown, and the bill and feet black.

‘Very common at Telôm in flocks of four or five; contrary to the habits of most of the hill birds, it usually keeps fairly high up in the trees, and is one of the most conspicuous and easily obtained species.’

55. *Mixornis gularis*, (Raffl.)

Mixornis gularis, *Sharpe*, *P.Z.S.*, 1888, p. 275; *Bonhote*, p. 64; *Hartert*, p. 567.

♂ ad.	Bukit Besar, Nawngchik.	2,500 feet.	2nd September.	(No. 375)
♂ ad.	Ban Sai Kau.		22nd May.	
♂ ad.	Gedong, South Perak.		8th January.	(No. 503)
♂ ad.	Jeram Kawan, South Perak.		14th February.	(No. 666)

The Sumatran Yellow-breasted Babbler has the iris brown, the loreal-space lead-blue, the bill bluish lead-colour, the feet greenish-brown, and the toes yellow. The black shaft streaks on the feathers of the throat seem to be widest in examples from the southern parts of its range, being most strongly marked in birds from the southern part of the Malay Peninsula and Sumatra.

56. *Stachyridopsis chrysaea*, (Hodgs.)

Cyanoderma chrysaea, *Sharpe*, *P.Z.S.*, 1887, p. 440.
Stachyridopsis chrysaea assimilis, *Hartert*, p. 566.

♂, ♀ ad. Telôm, Perak-Pahang border. 3,500 feet. January. (Nos. 538, 552, 580)

The Golden-headed Babbler has the iris dark sienna, the bill dark lead-colour, paler on tomia and pinkish at the base of the lower mandible, and the feet flesh-colour, inclining to yellowish behind.

In spite of Mr. HARTERT's statement to the contrary (cf. *Nov. Zool.* ix, p. 566 (1902)), I think Dr. SHARPE was perfectly justified in referring the Perak bird, collected by Mr. L. WRAY, to this form rather than to *S. assimilis*. The three specimens now before us agree perfectly with other birds from Perak, and are in my opinion inseparable from typical *S. chrysaea*, differing from *S. assimilis* in the colour of the back and underparts which are much brighter yellow. The range of *S. assimilis* appears to be limited to northern

Tenasserim and Karenee. Should the Malaccan bird be regarded as distinct from *S. chrysaëa*, it must bear the name of *S. bocagei*, SALVAD., founded on examples from Sumatra (cf. *Ann. Mus. Civ. Gen.* (1) xiv, p. 223 (1879)).

‘Very abundant among the undergrowth, and so extraordinarily tame and inquisitive that it was difficult to get far enough away to shoot specimens without blowing them to pieces.’

57. *Stachyrhis maculata*, (Temm.)

Stachyrhis maculata, *Hartert*, p. 566.

♀ ad. Gedong, South Perak. 12th January. (No. 534)

58. *Stachyrhis davisoni*, Sharpe.

Stachyrhis nigriceps, *Sharpe (nec Hodgs.)*, *P.Z.S.*, 1887, p. 440, 1888, p. 275.

Stachyrhis davisoni, *Sharpe, Bull. B.O.C.* i, p. 7 (1892); *Hartert*, p. 566.

♂ ad. Semangko Pass, Selangor-Pahang border. November. (Butler Coll.)

A specimen of DAVISON'S Babbler agrees with others from the Malay Peninsula in having the breast paler in colour than in birds from Sumatra (*S. larvata*) and Borneo (*S. borneensis*). Whether these latter are really distinct from one another seems doubtful.

59. *Alcippe peracensis*, Sharpe.

Alcippe peracensis, *Sharpe, P.Z.S.*, 1887, p. 439; *Hartert*, p. 566.

♂, ♀ ad. Telôm, Perak-Pahang border. 3,500-4,000 feet. January.
(Nos. 547, 554, 560, 564, 568, 593, 600)

In the Perak Babbler the iris is reddish-brown, the bill horn-colour, yellow on the tomia, and the feet yellowish-flesh.

‘Very common on most of the hills of the main range from three thousand feet upwards.’

60. *Alcippe cinerea*, Blyth.

Alcippe cinerea, *Hartert*, p. 566.

♂, ♀ ad. Bukit Besar, Nawngchik. May. (Nos. 50, 81)

Mr. ROBINSON describes the soft parts of the Grey Babbler as follows :—

♂ Iris brown, bill lead-coloured, feet plumbeous, pinkish at the upper portion of the tarsus.

♀ Iris brown, bill blackish-brown, feet lead-green.

61. Malacopteron magnirostre, (Moore).

Malacopteron magnirostris, *Hartert*, p. 563.

♂ ad. Bukit Besar, Nawngchik. May and August. (Nos. 21, 350, 362)

The Brown-headed Tree-Babbler has the iris red, chestnut, or dark brown, and the bill and feet lead-colour.

62. Malacopteron cinereum, Eyton

Malacopteron cinereus, *Hartert*, p. 564.

♂ ad. Sungkei, South Perak. 11th February. (No. 654)

In this Tree-Babbler the iris is dark, the bill black, flesh-coloured at the base of the lower mandible, and the feet flesh-coloured.

63. Pellorneum subochraceum, Swinh.

Pellorneum subochraceum, *Hartert*, p. 562.

♀ ad. Biserat, Jalor. 3rd July. (No. 246)

♀ ad. Mabek, Jalor. 26th July. (No. 321)

The Burmese Spotted Babbler has the iris hazel, the upper mandible black, the lower yellowish, and the feet flesh.

‘Frequenting low bushes in dense secondary jungle, and very shy and hard to flush. The bird bears a curiously close, but of course purely superficial resemblance to *Anthus rufulus*, which it would be hard to explain in any theory of mimicry.’

64. Gampsorhynchus saturator, Sharpe

Gampsorhynchus saturator, *Sharpe*, *P.Z.S.*, 1888, p. 273.

Vix. ad. Semangko Pass, Selangor-Pahang border. November. (Butler Coll.)

Three nearly adult female examples of this Shrike-Babbler with the hinder part of the crown still mixed with brown feathers and with lateral traces of the band across the chest, characteristic of youth, shew signs of acquiring white shoulders, one or two white feathers being mixed among the brown plumage. It seems to us very doubtful if Dr. SHARPE'S *G. saturator* can be maintained as a distinct form, for though the type—a freshly-moulted bird in perfect plumage—is darker than specimens of *G. torquatus* in the British Museum collection, the birds before us do not appear separable.

‘I have recently obtained numerous specimens of this species in the locality indicated above. They frequented the sides of a steep gully clothed with dense bamboo, and appeared, morning and evening, in flocks of nine or

ten. The flight is hurried and never long sustained, and the note a rattling cry somewhat resembling that of the Kera monkey (*Macacus fascicularis*).

65. *Rhinocichla mitrata* (S. Müll.)

Rhinocichla mitrata, Sharpe, *P.Z.S.*, 1886, p. 352; 1888, p. 274; *Hartert*, p. 562.

♂ ad. Telôm, Perak-Pahang border. 3,500-4,000 feet. January. (Nos. 537, 579, 587)

Two adult males of the Chestnut-capped Babbling Thrush have the iris chestnut, the naked skin round eye white, the bill orange, and the feet chrome-yellow.

‘Almost the most abundant species of bird in the jungles of the main range above three thousand five hundred feet. Generally found in parties of two or three.’

66. *Melanocichla lugubris* (S. Müll.)

Melanocichla lugubris, Sharpe, *Cat. B. Brit. Mus.* vii, p. 451 (1883).

Melanocichla peninsularis, Sharpe, *P.Z.S.*, 1888, p. 274.

♂ ad. Semangko Pass, Selangor-Pahang border. May. 2,700 feet.

Bill rich orange, iris chestnut, bare skin on each side of the throat livid blue. *M. peninsularis* was founded by Dr. SHARPE on a somewhat worn specimen procured by Mr. L. WRAY on Gunong Batu Patch, in Perak, at an elevation of three thousand four hundred feet. A female bird in the TWEEDDALE collection got by CARL BOCK on Mount Sago, Sumatra, 3rd September, 1878, is indistinguishable from the type of *M. peninsularis*, and I am therefore of opinion that only one species, *M. lugubris*, really exists.

‘In habits somewhat similar to *Rhinocichla mitrata*, but more terrestrial. On the three occasions on which I have met with it, it has always been on the ground in flocks of from three to seven individuals.’

PYCNONOTIDAE

67. *Otocompsa emeria* (Linn.)

Otocompsa emeria, *Hartert*, p. 561.

♂ ad.	Patani.	May and June.	(Nos. 145, 190, 196)
♀ ad.	Ban Sai Kau, Nawngchik.	22nd May.	(No. 127)
♀ ad.	Biserat, Jalor.	5th July.	(No. 245)

This Red-whiskered Bulbul has the iris brownish-chestnut or dark hazel, bill and feet black.

‘Extremely common in open country on the east coast littoral, decidedly rare on the western side of the Peninsula.’

68. *Pycnonotus finlaysoni*, Strickl.

Pycnonotus finlaysoni (*sic*) *Bonhote*, p. 62.

Pycnonotus finlaysoni, *Hartert*, p. 560.

♀ ad. Mabek, Jalor. 23rd July. (Nos. 309, 310)

FINLAYSON'S Bulbul has the iris dark brown, the bill dark horn, and the feet plumbeous.

69. *Pycnonotus salvadorii*, Sharpe.

Pycnonotus salvadorii, *Hartert*, p. 561.

♀ ad. Gedong, South Perak. 12th January. (No. 532)

In SALVADORI'S Bulbul the iris is chestnut, the bill horn colour, whitish at the base, and the feet brownish-horn.

'Shot in dense bamboo-jungle.'

70. *Pycnonotus analis*, (Horsf.)

Pycnonotus goiavier analis, *Bonhote*, p. 62 ; *Hartert*, p. 560.

♂ ad. et ♀ imm.	Patani.	June, September, and October.	(Nos. 194, 414, 436)
♀ ad.	Biserat, Jalor.	15th July.	(No. 279)
♀ ad.	Gedong, South Perak.	9th January.	(No. 511)
♀ ad.	Sungkei, South Perak.	8th February.	(No. 630)

In the Yellow-vented Bulbul the iris is hazel, and the bill and feet black.

'This species and the Magpie-Robin (*Copsychus musicus*) are, perhaps, the commonest and most characteristic birds of the towns and villages throughout the Malay Peninsula. It is quarrelsome and pugnacious in its habits, and is almost invariably found in pairs. The note is a very unmusical crescendo chuckle terminating abruptly. Malay name, *Měřěbah*.'

71. *Pycnonotus robinsoni*, sp. nov.

This species is most nearly allied to *P. cinereifrons*, from Palawan, but differs in lacking the grey markings on the forehead, which is uniform olive-brown, much like the rest of the crown. From *P. plumosus* it is distinguished by having more distinct white shaft-streaks to the feathers of the cheeks and ear-coverts, the outer edges to the quills dull greenish, not olive-green, and the middle of the breast and belly pale yellowish-white. In possessing the two last characters the present species resembles *P. cinereifrons*.

♂ Total length, 7.0 inches ; wing, 3.35 ; tail, 3.4 ; tarsus, 0.85.

♀ " " 7.0 " " 3.2 " 3.3 " 0.85.

♂, ♀ ad. Tanjong, Patani. 30th September and 1st October. (Nos. 413, 424)

ROBINSON'S Bulbul has the iris brown, the bill brownish-horn, and the feet blackish-lead.

'As previously noted, the littoral belt of Casuarinas, occurring in certain parts of the Malay Peninsula, seems to support an avifauna not met with elsewhere. The present species flies in flocks of four or five, never stopping long in one tree.'

72. Pycnonotus simplex, Less.

Pycnonotus simplex, *Bonhote*, p. 62 ; *Hartert*, p. 560.

♂, ♀ ad.	Bukit Besar, Nawngchik.	2,500 feet.	3rd May and 30th August.	(Nos. 46 & 370)
♂ ad.	Jeram Kawan, South Perak.		14th February.	(No. 665)
♂ ad.	Gedong, South Perak.		9th January.	(No. 517)
♂ ad.	Sungkei, South Perak.		9th February.	(No. 633)

MOORE'S Olive Bulbul has the iris red, orange, white, or brown, the bill black, the base of the lower mandible slate-colour, and the feet reddish-brown.

73. Trachycomus ochrocephalus, (Gmel.)

Trachycomus ochrocephalus, *Sharpe*, *P.Z.S.*, 1888, p. 272 ; *Bonhote*, p. 62.

Ad.	Mabek, Jalor.	28th July.	(No. 326)
♂ ad.	Sungkei, South Perak.	7th February.	(No. 613)

The Yellow-crowned Bulbul has the iris yellow or hazel, and the bill and feet black.

The '*Burong-baran-baran*' of the Malays is one of the most beautiful songsters of the Peninsula and very local in its habitat, but common wherever it is found, frequenting thick brushwood by the edge of rivers above tidal limits.

74. Tricholestes criniger, (Blyth).

Tricholestes criniger, *Hartert*, p. 560.

♀ ad.	Gedong, South Perak.	9th January.	(No. 516)
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The Bristle-backed Bulbul has the iris hazel, the bill bluish-horn, and the feet yellowish-brown.

75. Criniger tephrogenys, (Jard. and Selb.)

Criniger tephrogenys, *Hartert*, p. 558.

♂, ♀ ad.	Bukit Besar, Nawngchik.	March, May, August.	(Nos. 24, 42, 55, 352)
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The Malayan White-throated Bulbul has the iris orange, hazel, or rich brown, the bill bluish lead-colour or black, whitish at base of the lower mandible, and the feet pink or pale yellow.

No examples were obtained of *C. ochraceus*, MOORE, a species which had till recently been overlooked and united with the above under the name *C. gutturalis*, till Dr. HARTERT pointed out the error.

‘Very common at certain places and seasons. In the Semangko Pass in May, 1902, it suddenly appeared in enormous numbers, being doubtless attracted by the swarming of a species of termite which was then taking place.’

76. *Micropus melanocephalus*, Gmel.

Micropus melanocephalus, Sharpe, *Cat. B. Brit. Mus.* vi, p. 65 (1881).

♂ ad. Sungkei, South Perak. 11th February. (No. 651)

A male of the Black-headed Bulbul, has the iris blue, and the bill and feet black.

77. *Pinarocichla euptilosa*, (J. and S.)

Pinarocichla euptilosa, Sharpe, *Cat. B. Brit. Mus.* vi, p. 62 (1881).

♂ ad. Gedong, South Perak. 9th January. (No. 508)

In the Crested Brown Bulbul the iris is red, and the bill and feet black.

‘Met with among low undergrowth in dense jungle, climbing about with restless and jerky movements, alternately raising and depressing its crest.’

78. *Iole olivacea*, Blyth.

Iole olivacea, Hartert, p. 558.

♂ ad. Gedong, South Perak. 11th January. (No. 526)

The Olive Bulbul has the iris chestnut, the bill brown, whitish at the base, and the feet brownish-horn.

79. *Iole peracensis*, Hartert and Butl.

Iole tickelli (Blyth), Sharpe, *P.Z.S.*, 1887, p. 436 ; Bonhote, p. 61.

Iole tickelli peracensis, Hartert and Butl., *Nov. Zool.* v, p. 506 (1898); Hartert, p. 558.

♂ ad. Telôm, Perak-Pahang border. 4,000 feet. 21st to 28th January. (Nos. 565, 599)

This subspecies of *I. tickelli*, which we may call the Perak Bulbul, appears to be well characterized. Three specimens in the national collection, as well as those mentioned above, have the crown darker and the ear-coverts brownish, and in these respects differ constantly from typical *I. tickelli*.

80. Hemixus cinereus, (Blyth.)

Hemixus cinerea, *Bonhote*, p. 61 ; *Hartert*, p. 557.

♂, ♀ ad. Bukit Besar, Nawngchik. 2,500 feet. April and August.
(Nos. 18, 344, 363, 368, 369)

In the Grey Bulbul the iris is chestnut and the bill and feet black.

‘Fairly common in the above locality, and also at Telôm.

‘In life the loose moustachial feathers are continually depressed and extended exactly as in the case of certain Australian Fly-catchers of the genus *Arses*.’

81. Hemixus malaccensis, Blyth.

Hemixus malaccensis, *Hartert*, p. 558.

♂, ♀ ad. Jeram Kawan, South Perak. 15th February. (Nos. 670, 671)

The Malayan Bulbul has the iris chestnut, the bill black, reddish at the base ; and the feet brownish.

82. Irena cyanea, Begbie.

Irena cyanea, *Hartert*, p. 557.

Irena puella, *Bonhote* (*nec. Lath.*), p. 62.

♂, ♀ ad. et. imm. Bukit Besar, Nawngchik. 2,500 feet. April, May, August, and September.
(Nos. 19, 23, 39, 44, 47, 62, 73, 101, 348, 355, 359, 376, 377, 378, 379)

A fine series of the Malayan Fairy Blue-bird was collected. It is represented in all stages of plumage, from the young in female dress to the fully adult.

‘Only met with in this one locality, where it was very abundant in parties of five or six, which, as a rule, included only one fully plumaged male, feeding on the fruit of a species of *Ficus*. The skin of this bird is extraordinarily tender, and it is almost as difficult to skin as the Trogons.’

83. Chloropsis cyanopogon, (Temm.)

Chloropsis cyanopogon, *Hartert*, p. 557.

♀ vix ad. Mabek, Jalor. 23rd July. (No. 322)

The Blue-whiskered *Chloropsis* is represented by a nearly adult female, with the blue streak partially developed on one side only.

‘Not uncommon, but difficult to see or shoot on account of the close assimilation between the colour of its plumage and the thick foliage which it seldom leaves. With other species of a general green colour it shares the Malay name of *Burong daun* (Leaf-bird).’

84. Chloropsis hardwickii, J. and S.

Chloropsis hardwickii, Sharpe, *Cat. Birds, Brit. Mus.* vi, p. 18 (1881).

♂ ad. Telöm, Perak-Pahang border. 4,000 feet. 21st January. (No. 562)

An adult male of the Orange-bellied Chloropsis, has the iris dark, bill black, and feet French-grey.

85. Chloropsis zosterops, Vig.

Chloropsis zosterops, Sharpe, *Cat. B. Brit. Mus.* vi, p. 24 (1881).

♂, ♀ ad. Bukit Besar, Nawngchik. 2,500 feet. May and August.
(Nos. 33, 51, 99, 356, 357, 371)

The Malachite-shouldered Chloropsis has the iris dark brown, the bill black, and the feet lead-grey.

‘We found this species, together with *Irena cyanea*, extraordinarily local in habit, occurring only in a small patch of jungle, on Bukit Besar, where a species of *Ficus* was fruiting in great abundance.’

86. Chloropsis icterocephala (Less.)

Chloropsis icterocephalus, Hartert, p. 557.

The Malayan Chloropsis is represented by several pairs. The iris is dark brown, the bill black, and the feet plumbeous-green.

87. Aethorhynchus lafresnayi, (Hartl.)

Aethorhynchus lafresnayi, Sharpe, *Cat. B. Brit. Mus.* vi, p. 14 (1881).

♂, ♀ ad. Bukit Besar, Nawngchik. 2,500 feet. May and September. (Nos. 90 and 381)

The Great Iora is a rare species in collections, and the specimens collected by Messrs. ANNANDALE and ROBINSON are a valuable addition to the National Collection. Iris brown, bill bluish-lead colour, feet yellowish.

‘Though local, this bird is not really uncommon in deep jungle on hills of moderate elevation throughout the Peninsula. It is, however, difficult to procure, as it keeps to the tops of the highest trees.’

88. Aegithina viridissima, (Bonap.)

Aegithina viridissima, Sharpe, *Cat. B. Brit. Mus.* vi, p. 6 (1881).

♀ (♂? Native Coll.) Gedong, South Perak. 8th January. (No. 506)

The example of the Green Iora is no doubt an adult female. The iris is white, the bill and feet pale lead-blue.

‘Shot in thick bamboo jungle.’

89. Aegithina tiphia (Linn.)

Aegithina tiphia, *Bonhote*, p. 61 ; *Hartert*, p. 557.

♀ ad. et ♂ imm.	Biserat, Jalor.	July and October.	(No. 450)
♀ ad. et ♂ imm.	Patani.	April and June.	(Nos. 177, 188)
♂ ad.	Sungkei, South Perak.	7th February.	(No. 623)

Two males of the Common Iora from Patani and Biserat, are rather dull-coloured birds, and doubtless immature. They show no traces of black on the crown. In a fully adult male procured at Sungkei in February the feathers of the top of the head and nape are very slightly edged with black, and the chest is deep, brilliant yellow.

‘Common in the neighbourhood of villages throughout the Peninsula.’

CAMPOPHAGIDAE**90. Graucalus sumatrensis**, (S. Müll.)

Graucalus sumatrensis, *Hartert*, p. 554.

♂ ad. Sungkei, South Perak. 8th February. (No. 628)

The Sumatran Cuckoo-Shrike has the iris whitish and the bill and feet black.

‘Apparently confined to the lowlands, where it seems to be rare. In the mountains its place is taken by *G. larutensis*, SHARPE, of which I have recently collected several specimens, and which seems to be a far more locally abundant species.’

91. Pericrocotus cinereus, Lafr.

Pericrocotus cinereus, *Sharpe, Cat. B. Brit. Mus.* iv, p. 83 (1879).

♂ imm. Sungkei, South Perak. 13th February. (No. 637)

The Ashy Minivet is represented by one immature male, with the iris hazel, and the bill and feet black.

92. Pericrocotus flammifer, Hume.

Pericrocotus flammifer, *Sharpe, Cat. B. Brit. Mus.* iv, p. 74 (1879).

♂ ad. Semangko Pass, East Selangor. November. (Butler Coll.)

MR. OATES’ key to the species of *Pericrocotus* (cf. *Faun. Brit. Ind.* i, p. 478 (1889)) is somewhat misleading, for when he speaks of the first two or more primary quills being entirely black, he evidently refers to the *outer webs* only. Thus the present species, DAVISON’S Scarlet Minivet, comes under the heading:—‘b³ First three primaries entirely black,’ but, as a matter of fact, the third quill has a well-marked red patch on the margin of the inner web.

93. *Pericrocotus montanus*, Salvad.

Pericrocotus montanus, *Hartert*, p. 554.

Pericrocotus wrayi, *Sharpe*, *P.Z.S.*, 1888, p. 269, pl. xv.

♂, ♀ ad. Telôm, Perak-Pahang border. 3,500-4,000 feet. (Nos. 539, 575, 596)

WRAY'S Scarlet Minivet has the iris brown and the bill and feet black.

94. *Pericrocotus croceus*, Sharpe.

Pericrocotus croceus, *Sharpe*, *P.Z.S.*, 1888, p. 269 ; *Bonhote*, p. 60 ; *Hartert*, p. 555.

♀ ad. Telôm, Perak-Pahang border. 3,500-4,000 feet. January. (Nos. 540, 576)

This species was described by Dr. SHARPE from a single male example procured by Mr. L. WRAY on Gunong Batu Puch. It appears to be a well-defined form, and not a mere colour-variety of *P. montanus* as Dr. SHARPE was inclined to believe. In March, 1898, Mr. A. L. BUTLER procured a female of this species on Gunong Ijas, (4,000 feet); it was at first identified by Dr. HARTERT as a female of *P. montanus*, but subsequently correctly determined as *P. croceus* and the distinctive differences were indicated. In 1899, the 'Skeat' Expedition procured an adult male at Gunong Inas, Perak, (4,000 feet). Two adult females in the present collection resemble the female of *P. montanus* in the coloration of the underparts, but the top of the head and back are dull glossy black, instead of dark grey, and the lower back and rump are clear orange-yellow, instead of dusky-yellow. They resemble the male type of *P. croceus* in all respects, but the chin is white and the throat yellow as in the female of *P. montanus*.

'The habits of the all species of Minivets in the Peninsula are very similar. Only *P. flammifer* is at all common below three thousand feet, the others being usually found in parties of three or four flying about the branches of lofty trees, but never staying long in one place. As a rule, the sexes seem to keep together, and males are very much commoner than females.'

MUSCICAPIDAE**95. *Culicicapa ceylonensis*, (Swains.)**

Culicicapa ceylonensis, *Sharpe*, *P.Z.S.*, 1888, p. 271 ; *Hartert*, p. 553.

♂ ad. Bukit Besar, Nawngchik. 2,500 feet. May, August, and September.

(Nos. 40, 351, 374)

The Grey-headed Fly-catcher has the iris hazel, bill black above, pinkish beneath, feet brown or pale gamboge, soles orange.

96. *Stoparola thalassinoides*, (Cab.)

Stoparola thalassinoides, *Sharpe, P.Z.S.*, 1888, p. 271.

Stoparola thalassoides (sic), *Hartert*, p. 553.

♂, ♀ ad. Semangko Pass, Selangor-Pahang border. November. (Butler Coll.)

The above male of the Sea-blue Fly-catcher and other specimens in the national collection are much less brilliant than one collected by Mr. L. WRAY at Larut, Perak. The latter skin is not dated, but appears to be freshly moulted, which no doubt accounts for its much brighter plumage.

97. *Philentoma velatum*, (Temm.)

Philentoma velatum, *Sharpe, P.Z.S.*, 1888, p. 271; *Hartert*, 553.

♀. Bukit Besar, Nawngchik. 2,500 feet. 5th May. (No. 64)

A female of the Maroon-breasted Fly-catcher has the iris reddish-brown and the bill and feet black.

98. *Philentoma pyrrhoptera*, (Temm.)

Philentoma pyrrhoptera (sic), *Hartert*, p. 553.

Philentoma pyrrhoptera, *Sharpe, P.Z.S.*, 1888, p. 271.

♂ ad. Bukit Besar, Nawngchik. 9th May. (No. 77)

An adult male of the Chestnut-winged Fly-catcher has the iris red, the bill pale lead-colour, and the feet black.

99. *Rhipidura javanica*, Sparrm.

Rhipidura javanica, *Bonhote*, p. 60.

♂, ♀ ad. et imm. Patani. June, September, and October. (Nos. 189, 419, and 432)

The Javan Fantail Fly-catcher has the iris pale hazel and the bill and feet black.

‘Very abundant on the east coast of the Peninsula, but not extending far inland; rarer but more generally distributed in Perak and Selangor, and found at greater distances from the coast. Known to the Malays as the *Murai gila*, or mad thrush, on account of its curious dancing movements.’

100. *Rhipidura albicollis* (Vieill.)

Rhipidura albicollis atrata, *Salvad.*, *Sharpe, P.Z.S.*, 1887, p. 435; *Hartert*, p. 552.

♀ ad. Telôm, Perak-Pahang border. 22nd January. (No. 573)

The large series of skins in the British Museum, ranging from India to the Malay Peninsula, clearly shews that the width of the white tips to the tail-feathers is an unimportant character, and that *R. atrata*, of SALVADORI, has no claim to specific rank. The iris is brown, the bill black, and the feet brownish-grey.

‘Not rare at Telôm, and in habits precisely resembling the foregoing species.’

101. *Terpsiphone incii*, Gould.

Terpsiphone incii, Sharpe, *Cat. B. Brit. Mus.* iv, p. 350 (1879).

♂ imm.	Ban Sai Kau, Nawngchik.	17th September.	(No. 395)
♂ juv.	Bukit Besar.	2,500 feet.	30th April. (No. 17)

An immature male of INCE'S Paradise Fly-catcher has the iris brown, the bill cobalt-blue, and the feet lead-colour; a still younger male in first plumage is similar, but the bill is lead-colour, tinged with pink.

102. *Terpsiphone affinis*, (Blyth.)

Terpsiphone affinis, Sharpe, *P.Z.S.*, 1888, p. 270; *Bonhote*, p. 60; *Hartert*, p. 553.

♂, ♀ ad. et imm.	Bukit Besar, Nawngchik.	2,500 feet.	May.
	(Nos. 58, 63, 64, 71, 86, 92, 95)		
♂ ad.	Gedong, South Pérak.		12th January.
	(No. 533)		

Adult males of the Burmese Paradise Fly-catcher have the iris chestnut-brown, the bill cobalt-blue, the inside of the mouth emerald-green, the wattle round the eye cobalt-blue, and the feet blue-grey.

The female has the bill dark horn, paler at the base.

‘This wonderful Fly-catcher, perhaps the most beautiful of all birds, was very abundant on Bukit Besar, though full-plumaged males in good condition were somewhat hard to procure, as they were very shy and restless. They are very proud of their plumage, and display it by perching across a bough, depressing and half-spreading the wings and raising and expanding the tail, a habit which is shared by the Shama and the Magpie-Robin.

‘A nest was found on Bukit Besar on the 7th May. It was built in the fork of a small sapling about eight feet from the ground, and externally has a deep crucible-shaped cup covered with moss, and internally a shallow oval cup lined with the fine black tendrils of a creeper.

‘Malay name, *Mirbau ekor gading* (Ivory-tailed Thrush).

‘The food consists largely of evil-smelling Bugs, such as *Acanthocoris scallier*.’ N.A.

103. Hypothymis azurea, (Bodd.)

Hypothymis azurea, *Hartert*, p. 552.

♂, ♀ ad. Bukit Besar, Nawngchik. May and August. (Nos. 82, 361)
♂ ad. Mabek, Jalor. July.

The Azure Fly-catcher has the iris red, the bill bright cobalt-blue, and the feet bluish-lead colour.

'A very uncommon bird in the East Coast States. The specimens obtained were all shot in high trees growing over streams.'

104. Poliomyias luteola (Pall.)

Poliomyias luteola, *Sharpe*, *Cat. B. Brit. Mus.* iv, p. 201 (1879).

♂ imm. Telôm, Perak-Pahang border. 22nd January. (No. 572)

The Rufous-breasted Fly-catcher appears to be a winter visitor to the Malay Peninsula. The iris is black, the bill horn-coloured, the gape yellow, and the feet black.

105. Niltava decipiens, Salvad.

Niltava grandis, *Sharpe*, *P.Z.S.*, 1886, p. 351; 1887, p. 436; 1888, p. 272.

Niltava grandis decipiens, *Hartert*, p. 551.

♀*. Telôm, Perak-Pahang border. 20th and 26th January. (Nos. 557, 592)
♂ juv. Gunong Berumban. 28th January. (No. 601)

The females of this form, as Mr. HARTERT has already remarked, are easily distinguished from the females of *N. grandis* by having the top of the head and nape strongly washed with purplish-blue, and by their smaller size, the wing measuring 3·7 inch in length in the present species, and 4·2 inch in *N. grandis*. The national collection contains a specimen of the adult male from Lolo, Sumatra (*Carl Bock*), TWEEDDALE collection, and a female obtained by Mr. L. WRAY at Batang-Padang, Perak. The latter is remarkable in having two of the outer tail-feathers on the right side blue.

106. Alseonax latirostris, (Raffl.)

Alseonax latirostris, *Sharpe*, *Cat. B. Brit. Mus.* iv, p. 127 (1879).

♀ ad. Telôm, Perak-Pahang border. 4,000 feet. 22nd January. (No. 567)
♀ ad. Gedong, South Perak. 12th January. (No. 530)

Two females of the Brown Fly-catcher have the iris hazel, the bill black, yellow at the base of lower mandible, and the feet brownish.

* One of the two birds collected at Telôm is marked as a male—no doubt a mistake has been made.

107. Hemichelidon ferruginea, Hodgs.

Hemichelidon ferruginea, *Hartert*, p. 549.

♂ ad. Telôm, Perak-Pahang border. 3,500 feet. 17th January. (No. 536)

A male of the Ferruginous Fly-catcher has the iris brown, the bill black, and the feet flesh-colour.

HIRUNDINIDAE**108. Hirundo badia**, (Cass.)

Hirundo badia, *Bonhote*, p. 66.

♀ ad. et. imm. Biserat, Jalor. 28th June and 13th July. (Nos. 213, 233, 274)

Two adult females with the tails deeply forked and measuring, respectively, 3·7 and 3·8 inches, have distinct black shafts to all the chestnut feathers of the underparts. In an immature female with the tail less deeply forked, measuring only 3·0 inches in length, and with the secondaries and greater wing-coverts narrowly margined at the tips with rufous, the black shaft streaks on the feathers of the underparts are *only indicated on some of the feathers of the chest*. This difference is important and does not appear to have been properly recorded.

The Malayan Chestnut Swallow has the iris hazel, the bill black, yellow at the gape, and the feet fleshy-brown.

'This species seems only to be found in the precipitous limestone hills, honeycombed with caves, which are so characteristic a feature of certain parts of the Malay Peninsula. Round these hills it is very abundant, nesting in the entrances of the caves and beneath overhanging ledges of the cliffs.'

109. Hirundo gutturalis, (Scop.)

Hirundo gutturalis, *Sharpe*, *P.Z.S.*, 1887, p. 442.

♀ imm. Patani Town. 30th September. (No. 415)

♂ imm. Nawngchik. 28th November. (Nos. 485, 486)

♀ imm. Anak Bukit. 24th April. (No. 8)

♂, ♀ ad. Kampong, Jalor. 4th November.

The six specimens of the Eastern Chimney-Swallow are most immature. Adults have the iris dark brown, and the bill and feet black.

PITTIDAE**110. Pitta cyanoptera**, Temm.

Pitta cyanoptera, *Bonhote*, p. 67.

♂ ad. Bukit Jalor. 28th October. (No. 456)

♀ ad. Kampong, Jalor. 3rd November. (No. 465)

The Lesser Blue-winged Pitta has the iris dark hazel, the bill black, and the feet flesh-colour.

‘Pittas are very local birds in the Malay Peninsula, and only this species was met with by us. It is, undoubtedly, a migrating bird in the Patani States, arriving at the commencement of the wet season. At Tanjong Patani, large numbers are annually caught in the ground-nets after landing in an exhausted condition. The specimens mentioned above were snared by little Malay boys in a swampy patch of jungle at the foot of a precipitous limestone hill.’

Malay name, *Burong lah*, or *Burong pachat*, (Leech-bird).

EURYLAEMIDAE

111. *Calyptomena viridis*, Raffl.

Calyptomena viridis, *Sharpe, P.Z.S.*, 1887, p. 432 ; *Bonhote*, p. 67 ; *Hartert*, p. 548.

♂, ♀ ad. Bukit Besar, Nawngchik. 9th May. (Nos. 69, 75)

The Green Broadbill has the iris black, the bill dull-green, yellow on the tomia and at the tip of the culmen, and the feet greenish.

‘Local ; usually in heavy jungle, but occasionally in secondary growths on the outskirts of villages.’

112. *Eurylaemus ochromelas*, Raffl.

Eurylaemus ochromelas, *Sharpe, P.Z.S.*, 1887, p. 432 ; *Bonhote*, p. 68.

♀ ad. Sungkei, South Perak. 10th February. (No. 641)

The Black and Yellow Broadbill has the iris whitish, the feet yellowish-flesh, and the bill pale blue, with the tomia black.

‘Shot on a banyan tree, in company with many other species of frugivorous birds.’

113. *Cymborhynchus macrorhynchus*, (Gmel.)

Cymborhynchus macrorhynchus, *Bonhote*, p. 68.

Cymborhynchus macrorhynchus lemniscatus (Raffl.), *Hartert*, p. 548.

♀ ad. Biserat, Jalor. 5th July. (No. 241)

♂ ad., imm. et juv. Mabek, Jalor. 22nd to 25th July. (Nos. 303, 304, 317, 318, 319)

♀, ♂ ad. Sungkei, South Perak. 7th and 8th February. (Nos. 615, 627)

♀ ad. Gedong, South Perak. 9th and 10th January. (Nos. 512, 515, 519)

The Black and Red Broadbill has the iris dark emerald-green, the bill blue, the base of the lower mandible chrome-yellow, and the feet bluish lead-colour.

A nest of this species known as the *Burong hujan-hujan* was found at Mabek, on July 22nd, in secondary jungle, suspended from the projecting limb of a small tree, about eight feet from the ground, and looking like a mass of debris left there by a flood. The nesting-chamber was formed in the upper portion of an elongate oval, about 270 mm. long, and 360 mm. in its greatest diameter, and was entered by a circular hole furnished with an eave. The materials were palm fibres, twigs, creepers and aerial roots with a few leaves, the inside was neatly lined with grass, and the eggs, which were three in number, were deposited on a bed of fresh, green leaves. In shape the eggs were slightly elongate ovals, the shell being rather dull, and of a pinky-white colour, thickly covered with dark terra-cotta-brown blotches fairly evenly distributed, though they form a rather thick zone towards the larger end of one egg. Dimensions: A, 26.5 × 19; B, 27 × 19.75; C, 27.5 × 19 mm.

114. *Corydon sumatranus*, Raffl.

Corydon sumatranus, *Sharpe, P.Z.S.*, 1888, p. 278; *Hartert*, p. 548.

♂ ad. Gedong, South Perak. 12th January. (No. 528)

The Dusky Broadbill has the iris brown, the orbital skin pink, the bill pink, lavender on the tomia and tip of the culmen, and the feet brownish.

A nest of this species was found at Sungkei Tali, Ulu Bentong, Pahang, on the 16th December, 1904. It is a very large pendant pyriform structure made of dead creepers, etc., somewhat loosely interwoven, the entrance low down on one side, and the lining and foundation formed of flat strips of palm-leaf. It was suspended from the end of a ratan thirty feet from the ground, and contained three highly incubated eggs. These are rather wide, blunt ovals. In all three the ground colour is pinkish-white, but the markings vary, one having the small yellowish-brown surface spots and pale lavender shell-marks evenly distributed all over the shell; in a second, the spots, though equally fine, are mostly concentrated towards the larger end of the shell, the smaller end being almost devoid of markings; while in the third the spots are larger, the majority being clustered round the larger end, and the remainder sparingly scattered over the rest of the shell. The measurements in all three are 1.2 × .95 inch.

FIGIDAE

115. *Sasia abnormis*, (Temm.)

Sasia abnormis, *Sharpe, P.Z.S.*, 1888, p. 279.

Sasia abnormis everetti, Hargitt, *Hartert*, p. 547.

♂ ad. Bukit Besar. 2,500 feet. 5th and 11th May. (No. 59)

The Malayan Piculet has the iris carmine, the skin round the eye pinkish-red, the upper mandible black, and the lower pale horn-colour or lemon-yellow, and the feet gamboge-yellow.

'The habits of this Piculet, as has also been noted by BUTLER in the case of *S. innominata*, differ considerably from those of the true Wood-peckers. Both my specimens were shot among the terminal twigs of small trees, and nearly invariably perched across the boughs, and not longitudinally.'

116. *Yungipicus canicapillus*, Blyth.

Yungipicus canicapillus, *Hartert*, p. 547.

♂, ♀ ad.	Patani.	1st June and 6th October.	(No. 146)
♂ ad.	Biserat, Jalor.	13th July.	(No. 275)
♂, ♀ ad.	Jambu, Jhering.	5th and 7th June.	(Nos. 147, 148, 163, 164)

The Burmese Pigmy-Woodpecker has the iris brown or hazel, the bill bluish horn-colour, the base of the lower mandible whitish, and the feet olive-green.

117. *Miglyptes tukki*, (Less.)

Miglyptes tukki, *Sharpe*, *P.Z.S.*, 1888, p. 279 ; *Bonhote*, p. 71.

Miglyptes tukki, *Hartert*, p. 547.

♂, ♀ ad.	Ban Sai Kau.	24th May.	(Nos. 129, 130)
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The Buff-necked Barred Woodpecker has the iris hazel, the upper mandible black, the lower bluish-horn, and the feet brownish-grey.

118. *Miglyptes grammithorax*, (Malh.)

Miglyptes grammithorax, *Sharpe*, *P.Z.S.*, 1887, p. 443 ; *Bonhote*, p. 71.

Miglyptes grammithorax, *Hartert*, p. 547.

♂ ad.	Kampong Mabek, Jalor.	22nd July.	(No. 298)
♀ ad.	Bukit Besar.	28th August.	(No. 358)

The Fulvous-rumped Barred Woodpecker has the iris hazel, the bill bluish-horn, and the feet greenish.

119. *Hemicercus sordidus*, Eyton.

Hemicercus concretus sordidus, *Hartert*, p. 547.

(♂) ♀ ad.	Gedong, South Perak.	10th January.	(No. 521)
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In the Grey and Buff Woodpecker the iris is brown, the bill bluish-horn, and the feet greenish lead-colour.

120. Chrysocolaptes validus, (Temm.)

Chrysocolaptes validus, *Bonhote*, p. 72.

♀ ad. Gedong, South Perak. 10th January. (No. 522)

The Orange-backed Woodpecker has the iris chocolate-brown, the bill yellowish-horn, and the feet greenish lead-colour.

121. Chrysocolaptes guttacristatus, (Tick.)

Chrysocolaptes guttacristatus, *Hargitt, Cat. B. Brit. Mus.* xviii, p. 448 (1890).

♀ ad. Biserat, Jalor. 29th June. (No. 211)

TICKELL'S Golden-backed Woodpecker has the iris chestnut, the bill bluish-horn, and the feet greenish lead-colour.

122. Tiga javanensis, (Ljung.)

Tiga javanensis, *Bonhote*, p. 72 ; *Hartert*, p. 547.

♂ ad.	Patani.	10th and 15th June.	(No. 195)
♂, ♀ ad.	Ban Sai Kau, Nawngchik.	24th May and 9th September.	(Nos. 132, 133, 384)
♂, ♀ ad.	Biserat, Jalor.	15th and 18th July.	(Nos. 278, 292)
♂ ad.	Jambu, Jhering.	5th June.	(No. 150)

The Golden-backed Three-toed Woodpecker has the iris chestnut, the bill bluish-horn, and the feet greenish-slate.

This species is eminently a denizen of cultivated lands, and I have hardly ever seen it outside the groves of cocoanut and Penang palms which surround every Malay village. It feeds mainly on ants, principally the tailor-ant (*Oecophylla smaragdina*), but I have observed it attack and swallow a small flying lizard (*Draco volans*).

123. Micropternus brachyurus, (Vieill.)

Micropternus brachyurus, *Sharpe, P.Z.S.*, 1888, p. 279 ; *Bonhote*, p. 72 ; *Hartert*, p. 547.

♀ ad.	Gedong, South Perak.	9th January.	(Nos. 509, 520)
♂ ad.	Biserat Jalor.	30th June.	(No. 220)
♂, ♀ ad.	Sungkei, South Perak.	7th February.	(Nos. 618, 626)

The Malay Rufous Woodpecker has the iris brown, the bill dull black, and the feet greenish-grey.

124. Micropternus phaeocephs, Blyth.

Micropternus phaeocephs, *Hargitt, Cat. B. Brit. Mus.* xviii, p. 393 (1890).

♀ ad. Biserat, Jalor. 30th June. (No. 219)

A female of the Northern Rufous Woodpecker has the iris dark hazel, the bill bluish-horn, and the feet greenish-grey.

This is probably the most southern limit of the species.

125. *Gauropicoides rafflesi*, (Vig.)

Gauropicoides rafflesi, *Hargitt, Cat. B. Brit. Mus.* xviii, p. 132 (1890).

♀ ad. Telôm, Perak-Pahang border. 18th January. (No. 544)

RAFFLES' Three-toed Woodpecker has the iris sienna, the bill bluish-horn colour, and the feet plumbeous-green.

'By no means common; the present specimen and one from Northern Pahang, now in the Selangor Museum, are the only specimens I have seen from any Peninsular locality north of the territory of Malacca.'

126. *Chrysophlegma wrayi*, Sharpe.

Chrysophlegma wrayi, *Sharpe, P.Z.S.*, 1888, p. 279; *Bonhote*, p. 71.

♀ ad. Telôm, Perak-Pahang border. 4,000 feet. 24th January. (No. 578)

WRAY'S Woodpecker has the iris bright chestnut-red, the bill bluish-lead colour, greener on the lower mandible, and the feet greenish-lead colour.

'Though rare in collections, this Woodpecker is very common throughout the mountain jungles of the main range of the Peninsula above about three thousand feet, generally flying in pairs, and when disturbed uttering a cry very similar to that of the English Green Woodpecker.'

127. *Chrysophlegma malaccense*, (Lath.)

Chrysophlegma malaccense, *Sharpe, P.Z.S.*, 1887, p. 442; *Bonhote*, p. 71.

Chrysophlegma miniatus malaccensis, *Hartert*, p. 546.

♂ ad. Patani. 19th June. (No. 200)

The Banded Red Woodpecker has the iris reddish-brown, the bill bluish-horn, paler at tip, and the feet greenish.

128. *Chrysophlegma humei*, Hargitt.

Chrysophlegma humei, *Hartert*, p. 546.

♀ ad. Bukit Besar, Nawngchik. 2,500 feet. August and September. (Nos. 345, 380)

The Checkered-throated Woodpecker has the iris chocolate, the upper mandible black, the lower bluish-horn, and the feet greenish-lead colour.

'Not common in any part of the Peninsula, keeping to the upper branches of tall forest trees, and hence rather difficult to obtain.'

129. Gecinus puniceus, (Horsf.)

Gecinus puniceus, *Sharpe, P.Z.S.*, 1888, p. 279.

Gecinus puniceus *observandus*, *Hartert, Nov. Zool.* iii, p. 542 (1896), and ix, p. 547 (1902).

♂ ad. Kampong, Jalor. 18th November. (No. 474)

The Crimson-winged Green Woodpecker has the iris red, the bill dull olive, pale yellow beneath, and the feet greenish-lead colour.

130. Gecinus viridanus, (Blyth)

Gecinus viridanus, *Hargitt, Cat. B. Brit. Mus.* xviii, p. 47 (1890).

♂ ad. Patani. 10th June. (No. 174)

♀ ad. Biserat, Jalor. 5th July. (No. 248)

The Burmese Scaly-bellied Green Woodpecker has the iris chestnut, the upper mandible black, greenish towards the base, and the lower mandible greenish-yellow with black tip.

'Common among the Casuarinas on the coast, but rare elsewhere; south of the latitude of Penang it appears to be replaced in similar situations by the allied *G. vittatus*.'

CAPITONIDAE**131. Psilopogon pyrolophus**, S. Mull.

Psilopogon pyrolophus, *Sharpe, P.Z.S.*, 1886, p. 352; 1887, p. 442; *Shelley, Cat. B. Brit. Mus.* xix, p. 98 (1891).

♂ ad. Telôm, Perak-Pahang border. 4,000 feet. 23rd and 25th January. (Nos. 574, 585)

In the Fire-tufted Barbet the iris is reddish-brown with an outer ring of whitish, the bill apple-green with a dark vertical band, and the feet greenish-lead colour.

132. Xantholaema haematocephala, Marshall.

Xantholaema haematocephala, *Bonhote*, p. 73.

♂ ad. Ban Sai Kau. 19th May. (No. 104)

♂ ad. et. ♀ imm. Biserat, Jalor. 30th June, 14th July. (Nos. 222, 276)

The Crimson-gorgeted Barbet or Coppersmith has the iris dark hazel, the orbital region crimson-lake, the bill black, and the feet bright coral-pink.

'Fairly abundant in Patani and the neighbouring States, but decidedly scarcer on the west coast. The note from which it derives its name is frequently heard at noon, when nearly all other birds are silent. Curiously enough its Malay appellation is *Tukang besi* (Blacksmith).'

133. Mesobucco duvauceli (Less.)

Mesobucco duvauceli, *Bonhote*, p. 73.

♀ imm. Bukit Besar, Nawngchik. 16th May. (No. 96)
 ♂ ad. Sungkei, South Perak. 11th February. (No. 650)

The Black-eared Barbet has the iris dark brown, the bill black, and the feet plumbeous.

134. Thereiceryx hodgsoni, (Bonap.)

Cyanops lineata (Vieill.); *Bonhote*, p. 73.

Thereiceryx lineatus hodgsoni, *Hartert*, p. 546.

♂ ad. Patani. 10th June. (No. 176)

HODGSON'S Barbet has the iris hazel, the bare orbital skin orange-yellow, the bill orange-brown, and the feet pale gamboge-yellow.

135. Cyanops mystacophanes, (Temm.)

Cyanops mystacophanes, *Bonhote*, p. 73.

♂, ♀ ad. et. imm. Bukit Besar, Nawngchik. 2,500 feet. March, May, August, and September.
 (Nos. 38, 41, 43, 53, 72, 84, 98, 349, 363, 372)

♂ ad. et. imm. Biserat, Jalor. 9th and 18th July.
 (Nos. 259, 270, 290)

The Gaudy Barbet has the iris brown, the bill black, and the feet greenish-yellow.

136. Cyanops henricii, (Temm.)

Cyanops henricii, *Bonhote*, p. 72.

♂ ad. Jeram Kawan, South Perak. 15th February. (No. 668)

In HENRICI'S Blue-throated Barbet the iris is brown, the bill black, and the feet plumbeous-green.

'The habits of all the Barbets are very similar, and what is said of one will equally apply to most of the others. With the exception of *Xantbolaema haematocephala* and *Mesobucco duvauceli* which are frequently found in orchards, and *Thereiceryx hodgsoni* which inhabits the coastal belt, they are usually inhabitants of old jungle, though, when certain trees, more especially figs, are in fruit, they may be found in the environs of villages. The peculiar clanking calls which are so characteristic a sound in Malay forests, are probably referable to Barbets, but it is difficult to say with certainty, as the birds invariably become silent when the tree in which they are feeding is approached. They are shy and retiring and exceedingly difficult to localize among the branches, notwithstanding their gaudy colours.'

137. Chotorhea chrysopogon, (Temm.)

Chotorhea chrysopogon, *Bonhote*, p. 72.

♂ imm.	Bukit Besar, Nawngchik.	2,500 feet.	28th August.	(No. 354)
♀ ad.	Sungkei, South Perak.		10th February.	(No. 647)

The Golden-bearded Barbet has the iris brown, the bill black, and the feet plumbeous-green.

138. Chotorhea versicolor, (Raffl.)

Megalaema versicolor, *Sharpe, P.Z.S.*, 1888, p. 280.

♂ ad.	Gedong, South Perak.	12th January.	(No. 529)
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The Beautiful Barbet has the iris black, the bill black, and the feet greenish.

CUCULIDAE**139. Rhopodytes tristis**, (Less.)

Rhopodytes tristis, *Bonhote*, p. 75 ; *Hartert*, p. 545.

♀ ad.	Ban Sai Kau.	20th May.	(No. 106)
♂ ad.	Biserat.	28th June and 17th October.	(Nos. 214, 449)
♂, ♀ ad.	Jambu.	6th and 12th June.	(Nos. 156, 182)

The Large Green-billed Malkoha has the iris hazel, the orbital skin lake-red, the bill pale sea-green, and the feet greenish-grey.

‘Very common among bamboos around villages, but rarely found in old jungle. Very weak in flight, and loth to use its wings unless hard pressed. In Perak and Selangor this species is only found in the hills, and the Patani river seems to be about its southern limit for low country. I have never seen it on the ground as mentioned by DAVISON. In Patani most Cuckoos of the group *Phoenicophainae* are called *Burong kéra*, probably from the chuckling note which somewhat resembles the sound made by the Kéra Monkey.’

140. Rhopodytes diardi, (Less.)

Rhopodytes diardi, *Bonhote*, p. 75 ; *Hartert*, p. 545.

♀ ad.	Biserat, Jalor.	7th July.	(No. 262)
♂ ad.	Mabek.	23rd and 28th July.	(Nos. 313, 329, 331)
♀ ad.	Sungkei, South Perak.	7th February.	(No. 624)
♀ ad.	Gedong, South Perak.	11th and 12th January.	(Nos. 525, 531)

DIARD'S Green-billed Malkoha has the iris white, the orbital skin red, the bill sea-green, and the feet lead-colour.

141. Urococcyx erythrognathus, (Hartl.)

Urococcyx erythrognathus, *Bonhote*, p. 76.

♀ ad.	Bukit Besar, Nawngchik.	25th August.	(No. 347)
♂ ad.	Ban Sai Kau.	16th September.	(No. 591)
♂ ad.	Kampong Bayu, Biserat.	8th July.	(No. 255)
♀ ad.	Kampong Mabek.	23rd July.	(No. 311)
♂, ♀ ad.	Gedong Batang, Perak.	9th January.	(Nos. 514, 523, 524)

The Greater Red-billed Malkoha has the iris orange or yellow, ocular space crimson, bill pale sea-green, basal half of the lower mandible crimson, and the feet lead-colour.

142. Rhinortha chlorophaea, (Raffl.)

Rhinortha chlorophaea, *Bonhote*, p. 75; *Hartert*, p. 545.

♂, ♀ *ad.	Biserat, Jalor.	June and July.	(Nos. 218, 268)
♀ ad.	Mabek, Jalor.	23rd July.	(No. 306)
♀ ad.	Sungkei, South Perak.	10th February.	(No. 638)

In RAFFLE'S Green-billed Malkoha the iris is dark hazel or yellowish, the orbital skin pale blue, the bill pale sea-green, and the feet bluish-horn.

‘Similar in habits to the preceding, but frequenting jungle also, where it climbs about the parasitic creepers depending from the trees, looking more like a squirrel than a bird.’

143. Zanclostomus javanicus, (Horsf.)

Zanclostomus javanicus, *Bonhote*, p. 75; *Hartert*, p. 545.

♀ ad.	Bukit Besar, Nawngchik.	9th May.	(No. 80)
♂ ad.	Biserat, Jalor.	9th July.	(No. 262)

In the Lesser Red-billed Malkoha the iris is dark hazel, the orbital skin-blue, the bill coral-red, and the feet plumbeous.

‘Usually in the hill-jungle.’

144. Centropus javanicus, (Dumont.)

Centropus javanicus, *Bonhote*, p. 75.

♂ imm.	Gedong, South Perak.	7th January.	(No. 498)
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The immature of the Lesser Coucal has the iris brown, the bill black, horn-coloured at the base, and the feet lead-colour.

* All the examples of this species are marked ‘♂’ but the sex of three has undoubtedly been wrongly determined.

145. Centropus sinensis, (Steph.)

Centropus sinensis, *Bonhote*, p. 74.

♀ ad.	Patani.	22nd June.	(No. 205)
♂ ad. et imm.	Ban Sai Kau.	20th May and 9th September.	(Nos. 115, 385)
♂ imm.	Biserat, Jalor.	10th July.	(No. 266)
♂ ad.	Sungkei, South Perak.	8th and 16th February.	(Nos. 631, 678)

The common Coucal or Crow-Pheasant has the iris red and the bill and feet black.

‘Both species of Crow-Pheasant inhabit the brushwood near villages, secondary jungle, and stretches of lalang grass. When disturbed they generally make use of their running powers, but if forced to take to flight resort to the nearest tree, which they ascend by a series of awkward hops from branch to branch.’

146. Eudynamis horonata, (Linn.)

Eudynamis horonata, *Bonhote*, p. 74.

♂, ♀ ad.	Nawngchik.	27th and 30th November.	(Nos. 487, 488)
♂ ad.	Ban Sai Kau.	22nd May.	(No. 124)
♂ ad. et juv.	Biserat, Jalor.	30th June and 9th August.	(No. 334)

The Indian Koel has the iris red, the bill greenish-horn, and the feet bluish or greenish-lead colour.

147. Chalcococcyx xanthorhynchus, (Horsf.)

Chalcococcyx xanthorhynchus, *Shelley, Cat. B. Brit. Mus.* xix, p. 289 (1891).

♀ imm.	Bukit Besar, Nawngchik.	11th May.	(No. 89)
♂ ad. et juv.	Biserat, Jalor.	18th July.	(Nos. 289, 291)

The Violet Cuckoo has the iris brown, the eyelid vermilion, the bill yellow, vermilion at base, and the feet black.

148. Chalcococcyx malayanus, (Raffl.)

Chalcococcyx malayanus, *Hartert*, p. 545.

♂ ad.	Patani.	13th June.	(No. 186)
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The Malayan Bronze Cuckoo has the iris reddish with a whitish line outside the pupil, the eye wattle vermilion, the bill black, and the feet greenish.

149. Cacomantis merulinus, (Scop.)

Cacomantis merulinus, *Bonhote*, p. 74 ; *Hartert*, p. 545.

♀ ad. et imm.	Bukit Besar, Nawngchik.	6th May and 28th November.	(Nos. 67, 483)
♀ juv.	Biserat, Jalor.	3rd July.	

The Rufous-billed Cuckoo has the iris red, the bill horn-colour, the gape yellowish, and the feet yellow.

150. *Surniculus lugubris*, (Horsf.)

Surniculus lugubris, *Hartert*, p. 544.

♂, ♀ ad.	Bukit Besar, Nawngchik.	12th May.	(Nos. 63, 91)
♀ ad.	Mabek, Jalor.	23rd July.	(No. 312)
♂ ad.	Sungkei, South Perak.	10th February.	(Nos. 643, 644)

The Drongo-Cuckoo has the iris dark brown, the bill black, and the feet dull lead-colour.

TROGONIDAE

151. *Pyrotrogon erythrocephalus*, (Gould.)

Harpactes erythrocephalus, *Sharpe*, *P.Z.S.*, 1888, p. 280.

♂ ad.	Telôm, Perak-Pahang border.	4,000 feet.	24th January.	(No. 577)
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In the Red-headed Trogon the iris is chestnut-red, the bill and the orbital skin purplish-cobalt, and the feet pinkish.

'Trogons of at least two species are very common at Telôm, but were very difficult to see, and still more difficult to convert into specimens, for, as has been remarked elsewhere, their skin is of the consistency of wet tissue paper. Malay name is *Burong kasumba* (Pink bird).'

152. *Pyrotrogon oreskios*, (Temm.)

Harpactes oreskios, *Sharpe*, *P.Z.S.*, 1888, p. 280.

Pyrotrogon oreskios, *Hartert*, p. 544.

♀ ad.	Bukit Besar, Nawngchik.	9th May and 27th August.	(Nos. 76 and 353)
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The Yellow-breasted Trogon has the iris brown, the bill blue, and the feet lead-colour.

153. *Pyrotrogon duvauceli*, (Temm.)

Harpactes duvauceli, *Sharpe*, *P.Z.S.*, 1886, p. 353 ; *Bonhote*, p. 70.

♂ imm. et. ♀ ad.	Bukit Besar, Nawngchik.	8th May and 24th August.	(Nos. 68, 341)
♂ ad.	Gedong, South Perak.	11th January.	(No. 527)

The Red-rumped Trogon has the iris dark brown, the orbital skin silvery-cobalt, the bill purplish-cobalt, black on the culmen, and the feet nearly black.

CYPSELIDAE

154. *Tachornis infumata*, (Scl.)

Tachornis infumata, *Hartert, Cat. B. Brit. Mus.* xvi, p. 467 (1892).

♀ ad. Ban Sai Kau. 20th May. (No. 113)

The Little Palm Swift has the iris reddish-brown, the bill black, with the lower mandible red, and the feet greenish.

‘It suddenly appeared in large flocks among the cocoa-nut palms at about six p.m. one evening, but was never met with again.’

CAPRIMULGIDAE

155. *Caprimulgus macrurus*, Horsf.

Caprimulgus macrurus, *Bonhote*, p. 68.

Caprimulgus macrourus, *Hartert*, p. 544.

♀ ad. Ban Sai Kau. 21st May. (No. 119)

♂ ad. Biserat, Jalor. 20th Oct. (No. 451)

HORSFIELD'S Night-jar has the iris hazel, the bill horn, and the feet pinkish flesh-colour.

‘Very common in open country throughout the Peninsula during every month of the year.’

156. *Caprimulgus jotaka*, Temm. and Schl.

Caprimulgus jotaka, *Hartert, Cat. B. Brit. Mus.* xvi, p. 552 (1892).

♀ ad. Telôm, Perak-Pahang border. 16th January. (No. 535)

The Jungle Night-jar is a winter visitor to the Malay Peninsula ; it has the iris brown, the bill horn, and the feet pinkish-brown.

‘I am inclined to think that this species is resident in the higher mountain-jungles of the Peninsula and not merely a migrant as is generally supposed. I have met with it in March, May, and September, but have never seen it otherwise than in deep jungle.’

BUCEROTIDAE

157. *Anthracoceros malabaricus*, (Gmel.)

Anthracoceros malabaricus, *Bonhote*, p. 70.

♂, ♀ ad. Mabek, Jalor. 22nd and 25th July. (Nos. 301-320)

♀ ad. Sungkei, South Perak. 10th February. (No. 636)

The male of the Malayan Pied-Hornbill has the iris chestnut, the orbital skin purplish-blue, and the bill ivory-white, with a nearly black patch on the casque. In the female the iris is chestnut-brown, the bare skin of the throat and

face silvery-white, livid blue round the eye, the bill pale ivory-yellow with a black and brown patch at the base of the lower mandible, and the feet black.

‘It frequents more open country than the Jungle-Hornbills, usually along the river-banks and is much less noisy. It is usually met with in parties of five or six, and the flight, though less laboured, is rarely sustained for as long as that of the larger species.’

158. *Dichoceros bicornis*, (Linn.)

Dichoceros bicornis, *Bonhote*, p. 70.

♂ (head only). Biserat, Jalor. July.

The Homrai Hornbill.

‘Three species of large Hornbills were not uncommon in the jungles round Bukit Besar, but I did not consider it worth while spending much time in hunting them.’

The species seen included *Rhinoplax vigil*, the Helmet Hornbill, and *Buceros rhinoceros*, the Rhinoceros Hornbill. The habits of all are very similar. They fly in flocks varying from six to as many as fifteen individuals, using their wings with slow measured strokes, the rush of air through the primaries making a noise which may perhaps be compared to the distant sound of a traction engine toiling up a hill. As soon as they alight on a tree, they give vent to a series of harsh discordant screams, but *Rhinoplax vigil* has, in addition, a sharp staccato note which has given rise to the Malay legend that the bird was once a man, who, becoming enraged with his mother-in-law started to chop through the posts supporting her house, and was thereupon turned into the bird, whose notes represent the blows of the axe.

‘Skulls of *Rhinoplax vigil* command a high price in the Peninsula, as much as five or ten dollars being asked and obtained for them. Rings made out of the dense frontal portion of the casque are reputed to act as talismans, turning green when dipped into a poisoned liquid.’

UPUPIDAE

159. *Upupa indica*, Reichenb.

Upupa indica, *Bonhote*, p. 68.

♀ ad. Patani. 10th June. (No. 173)

♂, ♀ ad. Nawngchik. 27th and 29th November. (Nos. 479, 491)

The Indian Hoopoe has the iris hazel or chestnut, the bill black, horn-coloured at the base, and feet brownish-black.

‘Exceedingly local in the Patani States, and always met with in open sandy country near the coast.’

MEROPIDAE

160. *Merops sumatranus*, Raffl.

Merops sumatrensis (*sic*), *Bonhote*, p. 69.

♂ ad.	Patani.	13th and 15th June.	(Nos. 183, 184)
♂ ad.	Biserat, Jalor.	2nd and 3rd July.	(Nos. 229, 230, 231, 343, 444)
♂, ♀ ad.	Sungkei, South Perak.	7th and 11th February.	

In the Sumatran Bee-eater the iris is red and the bill and feet black.

161. *Merops philippinus*, Linn.

Merops philippinus, *Sharpe, Cat. B. Brit. Mus.* xvii, p. 71 (1892).

♂, ♀ ad.	Patani.	13th and 15th June.	(Nos. 185, 192)
♀ ad.	Nawngchik.	29th and 30th November.	(Nos. 492, 495)

The Blue-tailed Bee-eater has the iris red and the bill and feet black.

‘This bird was breeding in great numbers in the banks of the Perak River, near the Siamese border, in the month of April.’ N.A.

162. *Melittophagus swinhoei*, (Hume)

Merops leschenaulti swinhoei, *Hartert*, p. 544.

♂ ad.	Patani.	15th June.	(No. 191)
♂ ad.	Nawngchik.	28th November.	(No. 481)

The Chestnut-headed Bee-eater has the iris red and the bill and feet black.

‘These three species of Bee-eaters, which are collectively known as *Berek-berek*, are common throughout the Peninsula in open country and round rice-fields. *Nyctiornis amicta*, on the other hand, the only other species of Malayan Bee-eater, is exclusively a high-forest bird, which on the east coast of the Peninsula does not seem to range as far north as Patani, though common in Selangor and Perak.’

CORACIIDAE

163. *Coracias affinis*, McClell.

Coracias affinis, *Sharpe, Cat. B. Brit. Mus.* xvii, p. 13 (1892).

♀ ad.	Nawngchik.	27th November.	(Nos. 477 and 478)
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The Burmese Roller has the iris dark hazel, the bill black, and the feet yellowish-green.

‘The birds were probably on migration, as this Roller was abundant in the Patani district in November and December, but not seen at any other time of the year.’ N.A.

164. Eurystomus orientalis, (Linn.)

Eurystomus orientalis, *Bonhote*, p. 68.

♂, ♀ ad.	Patani.	30th May.	(Nos. 138 and 139)
♂, ♀ ad.	Biserat, Jalor.	5th July and 16th October.	(Nos. 247, 447)
♂ ad.	Jambu, Jhering.	10th and 12th June.	(Nos. 166, 180, and 181)

The Non-migratory Broad-billed Roller has the iris brown, the bill vermilion, black at the tip, and the feet coral-red.

165. Eurystomus calonyx, Hodgs.

Eurystomus calonyx, *Sharpe, Cat. B. Brit. Mus.* xvii, p. 38 (1892).

♀ ad.	Patani.	2nd October.	(No. 430)
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The Migratory Broad-billed Roller has the iris hazel, the bill dark red, blackish at the tip, and the feet coral-red.

ALCEDINIDAE**166. Halcyon smyrnensis**, (Linn.)

Halcyon smyrnensis fusca (Bodd.), *Bonhote*, p. 69; *Hartert*, p. 543.

♂, ♀ ad.	Ban Sai Kau.	26th April, 19th May.	(Nos. 13, 111)
♂ imm.	Rhaman, near Biserat.	19th July.	(No. 296)

The White-breasted Kingfisher has the iris brown or chestnut, the bill dark coral-red, and the feet coral-red.

167. Halcyon pileatus, (Bodd.)

Halcyon pileatus, *Sharpe, Cat. B. Brit. Mus.* xvii, p. 229 (1892).

♀ imm.	Kampong Jalor.	29th October.	
♂ ad.	Jeram Kawan, South Perak.	16th February.	(Nos. 675, 676)

In the Black-capped Kingfisher the iris is dark brown, the bill dark vermilion, and the feet coral-red.

168. Halcyon coromandus, (Lath.)

Halcyon coromandus, *Sharpe, Cat. B. Brit. Mus.* xvii, p. 217 (1892).

♀ ad.	Patani.	3rd October.	(No. 439)
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The Ruddy Kingfisher has the iris dull brown, the bill vermilion, and the feet coral.

169. Halcyon humel, Sharpe.

Halcyon humel, *Bonhote*, p. 69 ; *Hartert*, p. 543.

♂ ad.	Patani.	21st June.	(No. 207)
♂ ad. et. imm.	Jambu, Jhering.	5th and 7th June.	(Nos. 152, 157, 159)
♀ ad. et. ♂ imm.	Nawngchik.	29th and 30th November.	(No. 496)

HUME's Kingfisher has the iris brown, the bill black, with the basal part of the lower mandible white, and the feet brownish-black.

170. Carcineutes pulchellus, (Horsf.)

Carcineutes pulchellus, *Sharpe, P.Z.S.*, 1886, p. 352.

♂ ad. Bukit Besar, Nawngchik. 2,500 feet. 11th May.

The Banded Kingfisher has the iris brown, the bill black, whitish at the tip and on the lower part of the under mandible, and the feet greenish-white.

171. Ceyx tridactyla, (Pall.)

Ceyx tridactyla, *Sharpe, Cat. B. Brit. Mus.* xvii, p. 174 (1892).

♀ ad. Bukit Besar, Nawngchik. 5th September. (No. 382)

The Indian Three-toed Kingfisher has the iris brown, the bill vermilion, and the feet pinkish-vermilion.

172. Alcedo meninting, Horsf.

Alcedo meninting, *Hartert*, p. 543.

♀ ad. Biserat, Jalor. 3rd August. (No. 330)

The Malayan Kingfisher has the iris dark brown, upper mandible black, the lower orange-red with a yellowish tinge towards the tip, and the feet bright coral-red.

173. Alcedo ispida, Linn.

Alcedo ispida, *Bonhote*, p. 69.

♀ ad. Jeram Kawan, South Perak. 14th February. (No. 677)

In the Common Kingfisher the iris is brown, the bill black above, coral beneath, and the feet coral.

174. Pelargopsis fraseri, Sharpe.

Pelargopsis fraseri, *Bonhote*, p. 69.

♂, ♀ ad.	Patani.	30th May and 10th October.	(Nos. 141, 444)
♂ ad.	Nawngchik.	29th November.	
♂ ad.	Ban Sai Kau.	20th May.	(No. 118)
♀ ad. et imm.	Biserat.	16th and 18th July.	(Nos. 281, 293)

The Malayan Stork-billed Kingfisher has the iris brown, the bill deep lake-red, the inside of the mouth rich orange, and the feet red.

PSITTACIDAE

175. *Loriculus galgulus*, (Linn.)

Loriculus galgulus, *Bonhote*, p. 76 ; *Hartert*, p. 542.

♂ imm. Biserat, Jalor. 12th and 16th July. (No. 272, 284)
 ♂ ad. Sungkei, South Perak. 9th February. (No. 635)

The Malayan Loriquet has the iris dark brown, the bill blackish, and the feet plumbeous-green.

176. *Psittinus malaccensis*, (Lath.)

Psittinus incertus (Shaw), *Bonhote*, p. 76.

Psittinus malaccensis, *Hartert*, p. 542.

♂, ♀ ad. Biserat, Jalor. 6th July and 15th October. (No. 252)

The Little Malayan Parrot has the iris red, the upper mandible red, the lower greenish, and the feet greenish.

BUBONIDAE

177. *Photodilus badius*, (Horsf.)

Photodilus badius, *Sharpe*, *Cat. B. Brit. Mus.* ii, p. 309 (1875).

♀. Jeram Kawan, South Perak. 13th February. (No. 658)

The Bay-Owl has the iris sooty-black, the bill pinkish-horn, and the feet whitish-horn.

‘Shot in deep jungle sitting on a dead branch with its body pressed close to the trunk of the tree.’

178. *Syrnium seloputo*, (Horsf.)

Syrnium sinense, *Sharpe*, *Cat. B. Brit. Mus.* ii, p. 261 (1875) ; *Bonhote*, p. 58.

Syrnium seloputo, *Blanford*, *Faun, Brit. India, Birds* iii, p. 278 (1895).

♂, ♀ ad. Ban Sai Kau. 18th September. (Nos. 397, 398)
 ♀ ad. Biserat, Jalor. 8th July. (No. 254)

The Malayan Wood-Owl has the iris yellow, the bill bluish-horn, paler at the base, and the feet grayish.

‘Common in orchards and gardens round the rice-fields.’

179. *Ninox scutulata*, (Raffl.)

Ninox scutulata, *Grant*, *Ibis*, 1896, p. 111.

♂ ad. Biserat, Jalor. 20th July. (No. 297)

The Brown Hawk-Owl has the iris chrome-yellow, the bill bluish-horn, the cere green, and the feet yellow.

180. Ketupa ketupa, (Kaup.)

Ketupa javensis (Less.), *Bonhote*, p. 58.

♀ ad. et. imm.	Ban Sai Kau.	25th May.	(Nos. 135, 136)
♀ ad.	Biserat, Jalor.	8th July.	(No. 257)
♂ imm.	Kampong, Jalor.	20th November.	(No. 475)

Adult examples of the Malayan Fish-Owl with the spotting on the upper-parts nearly obsolete have only three light buff bars on the middle tail-feathers, while in the more spotted immature birds there are five caudal bands. Iris orange, bill bluish-horn, feet dull yellow.

‘Very common in similar situations to *Syrnuim seloputo*, roosting during the day in the durian and mangosteen trees. The stomach of one bird which I examined contained a large rat and several small fish and crustaceans.

‘This Owl also feeds largely on the big aquatic Bug, *Amorgus indicus*.’ N.A.

PANDIONIDAE**181. Polioaëtus ichthyaëtus**, (Horsf.)

Polioaëtus ichthyaëtus, *Bonhote*, p. 58.

♂ ad. et. imm.	Tanjong Patani.	27th September and 6th October.	(Nos. 400, 440)
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The Grey-headed Fishing-Eagle has the iris pale yellow, the bill and cere lead-colour, darker on the culmen, and the feet yellowish-white.

‘Very abundant on the seaward face of Tanjong Patani, together with *Haliaëtus leucogaster* and *Haliastur intermedius*.’

FALCONIDAE**182. Microhierax fringillarius**, (Drap.)

Microhierax fringillarius, *Bonhote*, p. 58 ; *Hartert*, p. 541.

♂ ad.	Ban Sai Kau.	17th September.	(No. 394)
♀ imm.	Biserat, Jalor.	15th July.	(No. 280)
♂ imm.	Mabek, Jalor.	25th July.	(No. 316)
♀ ad.	Sungkei, South Perak.	8th February.	(No. 629)
♀ ad.	Gedong, South Perak.	8th January.	(No. 507)

The Black-legged Falconet has the iris yellow or dark hazel, and the bill and feet black.

‘The *Lang-belalang* or Grasshopper-hawk is widely spread throughout the Peninsula in suitable localities, frequenting by preference the edges of rice-fields and recently burnt jungle.

‘I have watched a pair sitting at the end of a blackened branch and darting out at the insects that flew past.’ N.A.

183. Haliastur intermedius, Gurney.

Haliastur indus, *Bonhote* (nec Bodd.), p. 58.

♀ ad. et. ♂, ♀ imm.	Patani.	22nd June and 2nd October.	(Nos. 203, 426-428)
♀ ad.	Ban Sai Kau.	7th and 18th September.	(Nos. 383, 396)
♀ ad.	Mabek, Jalor.	26th July.	(No. 323)
♀ imm.	Jambu, Jhering.	5th June.	(No. 153)

The Malayan Brahminy Kite has the iris yellow, the bill bluish-horn, yellowish towards the cere, and the feet dull yellow.

‘Very abundant on the coast, and occurring wherever there are large stretches of rice-land, but found much more sparingly towards the interior of the Peninsula.’

184. Spizaëtus alboniger, (Blyth)

Spizaëtus alboniger, *Sharpe, Cat. B. Brit. Mus.* i, p. 271 (1874).

♂ imm. Gedong, South Perak. 7th January. (No. 500)

The immature of BLYTH’S Hawk-Eagle has the iris whitish-yellow, the bill and cere lead-blue, and the feet chrome-yellow.

185. Spizaëtus limnaëtus, (Raffl.)

Spizaëtus limnaëtus, *Sharpe, P.Z.S.*, 1887, p. 433.

♀ ad. Kampong Jalor. 17th November. (No. 473)

The Changeable Hawk-Eagle has the iris brown, the bill lead-colour, and the feet cadmium-yellow.

186. Spilornis bacha, (Daud.)

Spilornis bacha, *Sharpe, P.Z.S.*, 1887, p. 433.

Spilornis cheela, *Bonhote* (nec Lath.), p. 57.

♂ ad. Ban Sai Kau. 19th May. (No. 102)

♀ ad. Biserat, Jalor. 26th July, 21st October. (No. 452)

These specimens belong to the larger, high-ground, darker form of Crested Serpent-Eagle, of which the typical examples are from Java.

187. Spilornis pallidus, Walden.

Spilornis bacha, *Hartert*, p. 541.

♂ ad. Gedong, South Perak. 9th January. (No. 513)

The above adult male represents the smaller and paler low-ground form, originally described from Borneo. It has the iris orange, the cere pale chrome-yellow, the bill bluish-horn, darker at the tip, and the feet dull yellow.

VULTURIDAE

188. *Pseudogyps bengalensis*, (Gmel.)

Pseudogyps bengalensis, *Sharpe, Cat. B. Brit. Mus.* i, p. 11 (1874).

♀ ad. Patani. 10th June.

Imm. Kampong Jalor. 2nd November. (No. 465)

The Indian White-backed Vulture has the iris black, the naked skin of the head yellowish-green, and the feet black.

189. *Otogyps calvus*, (Scop.)

Otogyps calvus, *Sharpe, Cat. B. Brit. Mus.* i, p. 14 (1874).

♂ ad. Biserat, Jalor. 6th August.

♂ ad. Kampong Jalor. 30th October. (No. 464)

The Black or Pondicherry Vulture has the iris creamy-yellow, the bare skin on the head and neck red mottled and dusky, the bill black, and the feet dull red.

PHALACROCORACIDAE

190. *Phalacrocorax carbo*, (Linn.)

Phalacrocorax carbo, *Hartert*, p. 540.

♂ ad. et ♀ juv. Patani. 16th August and 2nd October. (Nos. 336, 429)

In the common Cormorant the *adult male* has the iris dark emerald-green, the gular region bright chrome, the bill whitish-horn, and the feet black.

The young female has the iris greyish-green, the bill yellowish-horn, the bare skin cadmium-yellow, and the feet black.

ANATIDAE

191. *Dendrocygna javanica*, (Horsf.)

Dendrocygna javanica, *Bonhote*, p. 81.

Dendrocygna javanica, *Hartert*, p. 541.

♀ ad. Patani. 22nd June. (No. 206)

The Whistling Tree-Duck has the iris brown, the eyelids yellow, the bill dark greenish-horn, and the feet black.

CICONIIDAE

192. *Dissura episcopus*, (Bodd.)

Dissura episcopus, *Sharpe, Cat. B. Brit. Mus.* xxvi, p. 294 (1898).

♀ ad. Bayu, Jalor. 8th July. (No. 256)

♀ ad. Kampong Jalor. 30th October. (No. 461)

The White-necked Stork has the iris brown, the bill reddish, darker at the base, and the feet crimson-lake.

Dr. REICHENOW (cf. *Vogel Afr.* 1, p. 347 (1901)) has pointed out that African examples of this genus belong to a distinct species *D. microscelis* (G. R. GRAY), which had been regarded by most authors as synonymous with the present species. A third species, *D. stormi* (BLAS.), found in Borneo, has also been described as *D. mortoni*, GRANT.

ARDEIDAE

193. *Ardetta cinnamomea*, Gmel.

Ardetta cinnamomea, Sharpe, *Cat. B. Brit. Mus.* xxvi, p. 236 (1898).

♂ vix. ad. Patani River. 22nd April. (No. 6)

The Chestnut Bittern has the iris brownish-yellow, with a white ring round pupil, and the feet yellowish-green.

‘Snared by the natives among high reeds.’

194. *Bubulcus coromandus*, (Bodd.)

Bubulcus coromandus, Bonhote, p. 80.

♂, ♀ imm. Kampong, Jalor. 16th and 17th November. (Nos. 471, 472)

The Cattle-Egret has the iris yellowish-white, bill and feet chrome-yellow, and the feet black.

‘Very abundant on flooded rice-fields in the above locality, suddenly appearing with the bursting of the monsoon. Scarce and sporadic during the dry season from April to October. Malay name, *Bangau*.’

195. *Ardeola grayi*, (Sykes)

Ardeola grayi, Sharpe, *Cat. B. Brit. Mus.* xxvi, p. 207 (1898).

♀ imm. Nawngchik. 30th November.

The Pond-Heron has the iris chrome-yellow, and the feet greenish-yellow.

‘Consorting with *Bubulcus coromandus* on flooded meadows at the commencement of the wet season.’

196. *Butorides javanica*, (Horsf.)

Butorides javanica, Sharpe, *Cat. B. Brit. Mus.* xxvi, p. 177 (1898).

Imm. Patani River. 22nd April. (No. 5)

♀ imm. Jambu, Jhering. 6th June. (No. 162)

The Little Green Heron has the iris chrome-yellow, the bill black, with the lower mandible, except the tomia greenish-yellow, the loreal space chrome-yellow, the feet greenish in front, and yellowish behind.

‘Not uncommon among the mangroves of the tidal creeks, where it was very difficult to discern on account of its colours harmonizing so exactly with the surroundings. In its normal attitude of rest this bird stands with its bill pointing vertically upwards, making its whole outline as linear as possible.’

197. *Demiegretta sacra*, (Gmel.)

Demiegretta sacra, Sharpe, *Cat. B. Brit. Mus.* xxvi, p. 137 (1898).

♀ ad. (white form). Kampong Datoh. 3rd October. (No. 437)

The Eastern Reef-Heron has the iris whitish, the upper mandible and tip of lower black, the remainder yellowish-green, the lores yellowish-green, and the feet sage-green.

‘Procured on the mud among mangroves.’

198. *Garzetta garzetta*, (Linn.)

Garzetta garzetta, Sharpe, *Cat. B. Brit. Mus.* xxvi, p. 118 (1898).

♂, ♀ ad. Jambu, Jhering. 6th June. (Nos. 154, 155)

In the little Egret the iris is yellow, the lores greenish-yellow, the bill black, the base of the lower mandible bluish-white, the tarsi black, and the feet pale greenish-yellow.

‘From a flock of nine or ten, feeding on the mud-flats of the estuary at low tide.’

CHARADRIIDAE

199. *Gallinago stenura*, (Bonap.)

Gallinago stenura, Sharpe, *Cat. B. Brit. Mus.* xxiv, p. 619 (1896).

♀ ad. Ban Sai Kau. 18th September. (No. 392)

The Pin-tailed Snipe has the iris hazel, the bill blackish-brown, yellowish at the base, and the feet greenish-yellow.

‘Snipe arrived in the Patani States during the second week in September, and were extraordinarily abundant during the two succeeding months, large numbers of them being killed by flying against the recently erected telephone wires.’

200. *Tringa minuta*, (Leisl.)

Limonites minuta, *Sharpe, Cat. B. Brit. Mus.* xxiv, p. 538 (1896).

♂, ♀ ad. Tanjong Budi, Patani. September and October. (Nos. 406, 416, 435)

The Little Stint has the iris, bill, and feet blackish.

201. *Tringa platyrhyncha*, Temm.

Limicola platyrhyncha, *Sharpe, Cat. B. Brit. Mus.* xxiv, p. 612 (1896).

♀ ad. Kampong Budi. 29th September. (No. 418)

The Broad-billed Sandpiper has the iris dark brown, the bill black, yellowish at the base, and the feet greenish-brown.

202. *Tringa subarquata*, Gldenst.

Ancylochilus subarquatus, *Sharpe, Cat. B. Brit. Mus.*, xxiv, p. 586 (1896).

♀ ad. Patani River. 24th September. (No. 409)

The Curlew-Sandpiper has the iris, bill, and feet black.

203. *Terekia cinerea*, (Gldenst.)

Terekia cinerea, *Sharpe, Cat. B. Brit. Mus.* xxiv, p. 474 (1896).

♀ ad. Kampong Budi. 2nd October. (Nos. 429? and 434)

The Terek Sandpiper has the iris hazel, the bill black, yellow at the base, and the feet yellowish.

204. *Aegialitis dubia*, (Scop.)

Aegialitis dubia, *Sharpe, Cat. B. Brit. Mus.* xxiv, p. 263 (1896).

♀ ad. Kampong Jalor. 4th November. (No. 466)

The Little-ringed Plover has the iris dark, the bill black, yellow at the base, and the feet yellowish.

205. *Aegialitis mongolicus*, (Pall.)

Ochthodromus mongolus, *Sharpe, Cat. B. Brit. Mus.* xxiv, p. 223 (1896).

♂ imm. Patani. 2nd October. (No. 481)

♂, ♀ imm. Tanjong Budi. 22nd and 24th September. (Nos. 402, 408, 417)

Immature specimens of the Lesser Sand-Plover have the iris dark hazel and the bill and feet black.

206. *Charadrius dominicus*, Mll.

Charadrius dominicus, *Bonhote*, p. 79.

♀ imm. Tanjong Budi, Jhering. 23rd September. (No. 404)

♂ ad. Kampong Jalor. 5th November. (No. 470)

The Eastern Golden Plover has the iris dark hazel, the bill black, and the feet greenish-lead colour.

207. *Streptilas interpres*, (Linn.)

Arenaria interpres, *Sharpe, Cat. B. Brit. Mus.* xxiv, p. 92 (1896).

♂, ♀ imm. Tanjong Budi, Jhering. 22nd and 23rd September. (Nos. 401, 405)

The Turnstone has the iris dark brown, the bill black, reddish-brown at the base, and the feet yellowish-orange.

‘Shore-birds become abundant on the coasts of the Peninsula towards the end of August, rapidly increasing in numbers during September and October. In addition to the species enumerated above, Curlews and the Burmese Wattled Plover (*Sarcogrammus atrinuchalis*) were very abundant on Tanjong Patani during the first few days of October.’

LARIDAE

208. *Sterna sinensis*, Gmel.

Sterna sinensis, *Bonhote*, p. 80.

♂, ♀ ad. Tanjong Budi, Patani. 16th August. (No. 337, 338)

The White-shafted Little Tern has the iris dark brown, the bill chrome-yellow, tipped with greenish-black, and the feet chrome.

‘In addition to the above species, *Sterna bergii* and a gull resembling *L. ridibundus* in winter plumage were noted off Tanjong Patani.’

HELIORNITHIDAE

209. *Heliopais personata*, (Gray)

Heliopais personata, *Bonhote*, p. 79.

♂ ad. Jeram Kawan, South Perak. 13th February. (No. 662)

The Masked Finfoot has the iris chrome, the bill bright yellow, and the feet pale apple-green.

‘Rare as this species is in collections, it is by no means uncommon in suitable localities throughout the Peninsula. It frequents the upper reaches of rivers where the current is strong and the water is clear, and is very shy. When disturbed it only takes to flight with the greatest reluctance, and then for a very short time. Normally it escapes down stream, using its wings as paddles and with his head bent back, very much in the attitude of the Snake-bird, (*Plotus melanogaster*), which affects similar situations. If the opportunity is afforded it, it takes refuge beneath the overhanging banks.’

‘The Malay name is *Itek ayer* (Water-Duck).’ N.A.

RALLIDAE

210. *Gallicrex cinerea*, (Gmel.)

Gallicrex cinerea, *Bonhote*, p. 79.

A male of the Kora or Water-cock in the blackish summer-plumage bears no particulars.

'The *Ayam-ayam* or 'Hen' is very local in its distribution, but common wherever found. The present specimen was obtained near Patani.

211. *Amaurornis phoenicura*, (Forst.)

Amaurornis phoenicura, *Sharpe, Cat. B. Brit. Mus.* xxiii, p. 156 (1894).

♀ ad.	Patani.	22nd April.	(No. 4)
♂ imm.	Kampong Jalor.	23rd November.	(No. 476)
♂ ad.	Sungkei, South Perak.		(No. 647)

The White-breasted Water-Hen has the iris dark sienna-brown, the bill greenish-olive, the base of the upper mandible and frontal shield crimson, and the feet yellow with a gamboge tinge.

'Common along river-banks and in swamps throughout the Peninsula.'

212. *Amaurornis fuscus*, (Linn.)

Limnobaenus fuscus, *Sharpe, Cat. B. Brit. Mus.* xxiii, p. 146 (1894).

♂ ad. Patani. 22nd April. (No. 3)

The Ruddy Crake has the iris and eyelid crimson, the bill leaden-black, inclining to greenish, the feet brick-red, brighter above the tibio-tarsal joint, the claws and hinder aspect of tarsus darker.

'Snared by Malays among the reeds at the mouth of the Patani River.'

213. *Rallina superciliaris*, (Eyton)

Rallina superciliaris, *Sharpe, Cat. B. Brit. Mus.* xxiii, p. 76 (1894).

♂ ad. G. Berumban, Perak. 6,000 feet. 28th January. (No. 603)

'The Banded Crake was collected by Sakais.'

COLUMBIDAE

214. *Chalcophaps indica*, (Linn.)

Chalcophaps indica, *Bonhote*, p. 77 ; *Hartert*, p. 540.

♂, ♀ ad. Biserat. 2nd July. (Nos. 226, 227, 228)

The Bronzed-winged Dove has the iris dark hazel, the orbital skin dark lake, the bill vermilion, orange towards the tip, darker at the base, and the legs purplish-lake.

'Met with everywhere throughout low-country jungle, and trapped by means of a pigeon call. It is extensively used as food. Malay name, *Punai tana*.'

215. *Geopelia striata*, (Linn.)

Geopelia striata, *Salvad., Cat. B. Brit. Mus.* xxi, p. 458 (1893).

♂, ♀ ad.	Patani.	20th June.	(Nos. 204, 340)
♂, ♀ ad.	Ban Sai Kau.	16th and 17th September.	(Nos. 388, 393)

The Barred Ground-Dove has the iris brown, the bill lavender, and the feet lake-red.

'Found in similar situations to the preceding, but not so common.'

216. *Turtur tigrinus*, (Temm. and Knip.)

Turtur tigrinus, *Bonhote*, p. 77.

Turtur tigrina, *Hartert*, p. 540.

♂ ad.	Patani.	10th June.	
♀ ad.	Ban Sai Kau.	16th September.	(No. 387)
♂, ♀ ad.	Biserat, Jalor.	1st and 6th July.	(Nos. 224, 250, 251)
♂ imm.	Jambu, Jhering.	9th June.	(No. 178)

The Malay Spotted-Dove has the iris brown or orange, the bill black, and the feet coral-pink.

'Commonest near the coast in open sandy localities; one of the favourite cage birds of the Malays.'

217. *Osmotreron olax*, (Temm.)

Treron olax, *Bonhote*, p. 77; *Hartert*, p. 539.

♂ ad.	Jeram Kawan, South Perak.	13th February.	(No. 655)
♂ ad.	Bidor, South Perak.	3rd February.	(No. 611)
♂ ad.	Gedong, South Perak.	7th January.	(Nos. 501, 502)

The Little Malayan Green Pigeon has the outer ring of the iris terra-cotta-red, the inner white, the bill yellowish-green, and the feet bright coral-red.

'This species and *O. vernans* are common everywhere throughout the Peninsula, though their place is largely taken by *O. fulvicollis* in the mangroves on the coast.'

218. Osmotreron vernans, (Linn.)

Osmotreron vernans, *Bonhote*, p. 76.

♂, ♀ ad. Patani. 10th June. (Nos. 170, 171)

♂, ♀ ad. et ♂ imm. Biserat, Jalor. June, July, and October. (Nos. 215, 216,
217, 238, 239, 454)

In the Pink-necked Green Pigeon the iris is yellow, with an orange ring round the pupil, the bill bluish-horn, paler at the tip, and the feet deep lake-pink.

219. Treron nipalensis, (Hodgs.)

Treron nipalensis, *Salvad., Cat. B. Brit. Mus.* xxi, p. 34 (1893).

♂, ♀ ad. Sungkei, South Perak. 11th February. (Nos. 648, 649)

The Thick-billed Green Pigeon has the iris pale cream-colour, the bill pale yellow, the base of the lower mandible crimson, and the feet bright coral-red.

220. Butreron capellei, (Temm.)

Butreron capellei, *Bonhote*, p. 76 ; *Hartert*, p. 539.

♂ ad. Mabek, Jalor. 24th July. (No. 315)

The Large Thick-billed Green Pigeon has the iris yellowish-brown, the bill greenish-yellow, and the feet bright yellow.

‘Somewhat rare and shy, feeding on the tops of very high trees.’

TURNICIDAE**221. Turnix taigoor**, (Sykes)

Turnix taigoor, *Bonhote*, p. 78 ; *Hartert*, p. 539.

♀ ad. Ban Sai Kau. 26th April. (No. 13)

The Bustard-Quail has the iris red, and the bill and feet pale plumbeous.

‘Fighting quails are much kept by the Malays, more especially in the northern parts of the Peninsula. Both this and the Painted Quail (*Excalfactoria chinensis*) are common wherever there are wide stretches of *lalang* grass.’

PHASIANIDAE**222. Gallus gallus**, (Linn.)

Gallus gallus, *Bonhote*, p. 78.

♀ ad. Biserat, Jalor. 2nd July. (No. 232)

♂ ad. Sungkei, South Perak. 9th and 10th February. (Nos. 632, 640)

The Jungle-Fowl has the iris yellowish-brown, the wattles red, the bill pale horn colour, and the feet pale lead colour.

‘Everywhere abundant, and interbreeding with the domestic poultry.’

223. Polyplectron malaccensis, (Scop.)

Polyplectron bicalcaratum, *Grant, Cat. B. Brit. Mus.* xxii, p. 354, (1893);
Bonhote, p. 78.

Polyplectron malaccensis, *Hartert*, p. 538.

♂, ♀ ad. Lower Batang Padang, South Perak. 29th January. (Nos. 605, 608)

Dr. HARTERT is no doubt right in maintaining that *P. malaccensis* is the correct name for the Malayan Peacock-Pheasant.

‘ Usually inhabiting the densest jungle, and even more shy than the Argus. Malay name, *Kuang chermin* (Mirror Argus-Pheasant), alluding to the tail spots.’

224. Pavo muticus, Linn.

Pavo muticus, *Bonhote*, p. 78 ; *Hartert*, p. 538.

♂ ad. et imm. Mabek, Jalor. 22nd July. (Nos. 299, 300)

The Burmese Pea-fowl has the iris dark hazel, the anterior portion of the bare face lavender-blue, the hinder portion from the gape upwards pale chrome-yellow, the bill black, horn-coloured at the tip, and the feet black.

‘ Exceedingly rare on the western side of the Peninsula, but very abundant in Pahang and the more inland districts of the Patani States, and frequenting low jungle near rivers. Malay name, *Merak* (probably onomatopoeic).’

225. Argusianus argus, Linn.

Argusianus argus, *Bonhote*, p. 78 ; *Hartert*, p. 538.

♂ ad. Rhaman. 19th July. (No. 295)

The Argus has the iris greenish-hazel, the naked skin of the head blue, the bill whitish-horn, and the feet pale coral-pink.

‘ Common throughout the Peninsula in old jungle, but apparently does not frequent the swampy tracts near the coast. It is especially fond of the ridges of the hills, where spaces cleared by the cocks as “ showing-off ” grounds are often to be met with. The natives told me that this peculiarity was taken advantage of by them in trapping the males, who are very particular in removing any dead leaves or twigs from their grounds. A strip of bamboo sharpened on the lower edge is firmly pegged down in the form of a hoop in the centre of the space, and the bird in its efforts to remove it places its head beneath the sharpened edge and so decapitates itself. I give the story for what it is worth. By the Sakai the Argus-Pheasant is not unfrequently tamed, and hens may often be seen among their domestic poultry. The Malay name is *Burong kuang*.’

REPORT ON THE CRUSTACEA

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THE collection is small and, though supplying representatives of many of the great groups of Crustacea, presents in consequence few points of interest. One new and characteristic species of *Potamon* is described, and attention may be drawn to the curious association of the young of *Neptunus pelagicus* with a *Rhizostoma*.

1. *Doclea gracillipes*, StimpsonAlcock, *Journ. As. Soc. Bengal*, vol. lxiv, pt. 2, p. 229 (1895).

1 ♂, 4 ♀'s. Patani Bay.

2. *Naxia hystrix*, Miers*Chall. Brachyura*, p. 61 (1886).

Patani Bay.

The tips of the rostrum in this female example are broken off, but I have little doubt that my identification is correct. The spines generally are somewhat less sharp than in the typical form.

3. *Hyastenus planasius*, Ad. and WhiteAlcock, *J.A.S.B.*, vol. lxiv, pt. 2, p. 212 (1895).

1 small ♂. 1½ miles E.S.E. of Cape Patani. 10 fath.

‘Hard clayey mud, with many dead shells.’

4. *Neptunus pelagicus*, Linn.Alcock, *J.A.S.B.*, vol. lxxviii, pt. 2, p. 34 (1899).

1 ♀. Patani Bay.

Much damaged.

1 ♂. Jambu River.

‘From ventral surface of large Rhizostomous medusa.’

Several young. Estuary of Jambu River.

‘From ventral surface of various medusae.’

I am not aware that the association of this species with medusæ has been previously noted, and the discovery is of interest. Seeing to what a large size *N. pelagicus* grows the association can only be temporary, and it would be interesting to know if it is only accidental in these cases, or, as is more probable, a regular phenomenon bound up with some particular purpose.

5. Neptunus sanguinolentus, Herbst.

Alcock, *J.A.S.B.*, vol. lxxviii, pt. 2, p. 33 (1899).

1 ♀. Patani Bay.

6. Charybdis (Goniosoma) callianassa, Herbst.

Alcock, *J.A.S.B.*, vol. lxxviii, pt. 2, p. 57 (1899).

1 ♂. Patani Bay.

7. Thalamita danae var. **stimpsoni**, A.M.E.

Alcock, *J.A.S.B.*, vol. lxxviii, pt. 2, p. 79 (1899).

1 young ♂. 1½ mile E.S.E. of Cape Patani. 10 fath.

‘Clayey mud with much shelly debris.’

8. Myomenippe granulosa, A. M. Edw.

de Man, *Mergui Crust.*, pl. ii, fig. 1, p. 40 (1888).

Patani Bay.

One ♂, with a small *Balanus concavus* on the carapace.

9. Scylla serrata, Forskal.

Haswell, *Cat. Austr. Crust.*, p. 79 (1882).

Patani Bay.

One large male.

10. Potamon (Potamon) pealianum, Wood-Mason

J.A.S.B., vol. xl, pt. 14, fig. 7, p. 204 (1871).

Bukit Besar. 2,500 feet.

Three adult males and three adult females.

Three young males and two young females.

‘From small jungle stream.’

The spines and rugosities are generally less marked in these specimens than in the type. In the young examples the short hairs on the carapace are sufficiently dense to appear almost as a pubescence, and the joints of the legs are banded dark on a lighter background.

11. Potamon (Paratelphusa) improvisum, Lanch. (Fig. 1)

Proc. Zool. Soc., pl. 33, fig. 2, p. 546 (1901)

Mabek, Hulu Jalor.

In the above paper I described this species from a single female specimen. In this collection there are one large male, three small males, and one small female; and on comparing the large male with the description of the type specimen I note the following differences:—The left hand of the male is much larger than the right, with the hand much swollen, two-thirds as high as long, and with the fingers gaping and hardly crossing at the tips. The first epibranchial tooth (*i.e.*, the one behind the extra-orbital tooth) is blunt and conical, not sharp and conical; this, however, may be only an individual difference. The external, *i.e.*, lateral portions of the post-frontal crest are just a little more wavy than they appear in the figure (*l.c.*, pl. 33, fig. 2). The branchial regions are markedly excavate. The abdomen may be thus described: The third segment extends proximally between the bases of the legs, and distally becomes only very slightly narrower; the fourth segment narrows rapidly, its border being somewhat concave; the fifth segment narrows slightly, while the sixth again slightly expands; and the seventh, at first becoming narrower, then runs with parallel sides to its rounded termination.

12. Potamon (Paratelphusa) sex-punctatum, sp. nov. (Fig. 2)

1 ♀. Sai Kau, Nawngchik.

From rice-field.

1 ♀. Cape Patani.

Freshwater pool.

In this species there are three epibranchial teeth behind the extra-orbital, the carapace is very convex and marked on the gastric region with six large punctae arranged roughly in a semicircle, and the meropodites of the legs are armed with a sub-distal spine.

Of the lateral teeth the extra-orbital is blunt, the other three sharp; all of them flattened conical, the second slightly smaller than the rest. The carapace is about one-sixth broader than it is long (43 : 36 mm. and 42 : 34 mm.), covered with distinct and distant punctae, six of which are very large and arranged as in Fig. 2A. The post-frontal crest is distinct and interrupted at a level just inside that of the internal angle of the eye; the median piece inside this level is only very slightly oblique in a backward direction as it passes outwards, while outside this level the direction of the crest becomes more oblique

up to the level of the tips of the eyes, from which point it curves roughly in the arc of a circle with forwardly directed convexity, to join almost, but not quite, the anterior border of the last epibranchial tooth. From the point where the crest takes on a forward direction a distinct groove or suture runs down the steep anterior surface of the crest as far as the base of the extra-orbital tooth. The front is salient, in the one specimen with its anterior edge straight or even very slightly convex, in the other excavate in the middle line so as to give rise to two shallow lateral lobes; laterally it curves away gradually into the supraorbital border which is thick, and especially so at a point just behind the base of the eye-stalks. None of these ridges—whether teeth, crest, front, or supra-orbital border—are denticulated; a faint rugosity may be detected here and there with the lens, but generally speaking they are quite smooth. The sub-orbital border, however, is distinctly denticulated.

The impressed line on the ischium of the third maxillipedes lies close to, and practically parallel with, the inner border; the outer surface of the meri is distinctly excavate. The chelipedes do not present any particularly characteristic features; the merus is armed with a conical spine near the distal end of its upper border, and the carpus has the usual spine on its inner and upper border, this spine being strong and sharp without any subsidiary spinules at its base.

13. *Sesarma taeniolatum*, White. (Fig. 3)

Alcock, *J.A.S.B.*, vol. lxix, pt. 2, p. 419 (1900).

Four large males. Patani Bay.

The musical ridges form exceedingly prominent short ridges tipped with tubercles.

14. *Sesarma maculata*, de Man.

Weber's, *Zool. Ergebn*, p. 347, pl. 21, fig. 19.

Lanchester, *P.Z.S.*, p. 550, 1901.

A small ♂. Bukit Besar. 2,500 feet.

'From sweep-net among low vegetation near jungle stream.'

A small ♀. Same mountain. 3,500 feet.

'Among bamboo beds at top of hill some distance from water.'

The second epibranchial tooth is absent in the ♀ on the right side, and only represented on the left by a small tubercular prominence. In the ♂ it is present on both sides as a distinct tubercle.

On the base of the movable finger there are only two to three indistinct teeth.

15. Ocypode ceratophthalma, Pallas

Alcock, *J.A.S.B.*, vol. lxx, pt. 2, p. 345, 1900.

5 ♂'s and 1 ♀. Patani.

'Live in burrows at high-tide mark.'

16. Uca annulipes, Latr.

Alcock, *J.A.S.B.*, vol. lxxix, pt. 2, p. 353 (1900).

13 ♂'s. Cape Patani.

17. Matuta victor, Fabr.

Alcock, *J.A.S.B.*, vol. lxxv, pt. 2, p. 160 (1896).

2 adult ♂'s, 1 young ♂, 3 adult ♀'s. Patani Bay.

Undoubtedly *M. victor*, but the front is not broader than, but exactly the width of, the orbit in every one.

18. Dorippe facchino, Herbst.

Alcock, *J.A.S.B.*, vol. lxxv, pt. 2, p. 278 (1896).

1 ♂ with anemone, and gastropod operculum interposed, 3 ♂'s. Patani Bay.

'All the specimens had, when taken, a gastropod operculum, with an anemone attached, on their backs. In one case the anemone and the operculum were removed from the living crab, which was placed in a jar of sea-water in which there were several small Rhizostomous medusae. It immediately seized hold of one of these by means of its two posterior legs and, despite the medusa's violent pulsations, held it firmly. An anemone on an operculum from another crab was then placed in the jar. The first crab immediately let go the medusa and took hold of the operculum which fitted closely to its back. All the anemones seen on crabs of the species were identical in form and coloration, and similar ones were not seen in any other position.'—N.A.

19. Diogenes planimanus, Henderson

Trans. Zool. Soc. (2), vol. v, p. 416, pl. 39, fig. 5 (1893).

One large and one small specimen. Cape Patani.

In the larger specimen the granules are smaller and flatter in the middle of the palm where the greatest depression occurs, in the smaller they are of equal size; in both they appear of a pearly nature under the lens.

20. Diogenes mixtus, Lanchester.

Proc. Zool. Soc., p. 367, pl. 39, fig. 2 (1902).

Patani Bay.

Four specimens, and one larger with two anemones on the shell.

The most constant, and at the same time the most distinctive, features of this species are the following :—

The length of the inner lobe of the antennal acicle.

The number of granules in the two rows on the carpus.

The extension of the row of granules on the lower finger up to the carpal joint.

The number of granules on the fingers varies here from 27-30, and on the inner row of the palm they reach 12-14. The external row on the palm is always terminated at the finger-joint by two spinous granules placed each in the same transverse line and a little out of the line of those behind ; of these I have only included one in my enumeration. On the lower outer surface of the palm the spiniform granules tend to disappear.

21. Clibanarius infraspinatus, Hilgendorf

de Man, *Mergui Crust.*, p. 237 (1888).

Two specimens. Patani Bay.

22. Coenobita compressus, M. Edw.

Ortmann, *Zool. Jahrb. Syst.* v, p. 318 (1892).

1 ♂. Patani Bay.

The granulation on the last two points of the third left leg is confined to the proximal quarter of the penultimate joint.

23. Palaemon sundaicus, Heller

Ortmann, *Zool. Jahrb. Syst.* v, p. 719 (1891).

Kuala Mabek, Jalor.

Ten specimens. All small, except one which measures 57 mm. including the rostrum, and which is precisely similar to the smaller specimens except for a certain amount of pubescence on the carpus, the hand, and especially the fingers.

24. Alpheus brevirostris, Olivier

de Man, *Mergui Crust.*, p. 261 (1888).

One specimen. Patani Bay.

25. Squilla raphidea, Fabr.

Miers, *Ann. Mag. Nat. Hist.* (5) v, p. 27 (1880).

Patani Bay.

Two males, in one of which the left dactylus of the raptorial limbs carries nine spines instead of eight.

26. Squilla nepa, Latr.

Miers, t.c., p. 25.

One female. Patani Bay.

‘Very shallow water; sand.’

27. Alima emarginata, Claus. (Fig. 4)

Abh. d. kön. Ges. Wiss. Göttingen, Bd. vi, p. 42, fig. 33, 1871.

Off Cape Patani.

Caught while dredging on a sandy bottom at four fathoms, but probably really obtained from the surface.

A single specimen of 20 mm. The arrangement of teeth on the edges of the carapace is as follows:—Seven spines on and behind the antero-lateral angle, slightly decreasing in size backwards, then a gap, then three up to and on the postero-lateral angle, and one a little way along the under surface of the large lateral spine.

28. Balanus amphitrite var. **communis**, Darwin †

Balanidae, p. 240 (1854).

Patani Bay.

A few specimens, of which the shells only are present. It is far from satisfactory to try and identify Balanids from single specimens or from such as lack the opercular valves and the soft parts, especially since we have such variable species existing as the present and *B. tintinnabulum*. The present specimens cannot belong to the latter species, however, since their radii are not porose, and I think it highly probable that I am right in referring them to the equally common *B. amphitrite*.

29. Balanus concavus, Brown

Balanidae, p. 225 (1854).

Patani Bay.

One specimen on an oyster shell, and another small one from the carapace of *Myomenippe granulosa*. I have satisfied myself of the identity of

this form by a careful examination of the valves and the soft parts, and in so far as there are differences (admittedly slight) between this and the last species, those differences are present here.

30. *Ligia exotica*, Roux.

Budde-Lund, *Isop. Terr.*, p. 266 (1885).

Four small specimens. Jambu River.

‘From mud of mangrove swamp. Malay name, *Gutu prahu* (boat-louse).’

On the Malay name of this animal Mr. ANNANDALE writes me as follows:—

‘This wood-louse is called “*Gutu prahu*” in the Patani dialect, “*Kutu prahu*” in more correct Malay. At Patani it is also called “*Hibu prahu*,” *i.e.*, boat parasite (*lit.* boat mother); but I think that it shares these names with a large earwig which is commonly found on the seashore just above high-tide mark.’

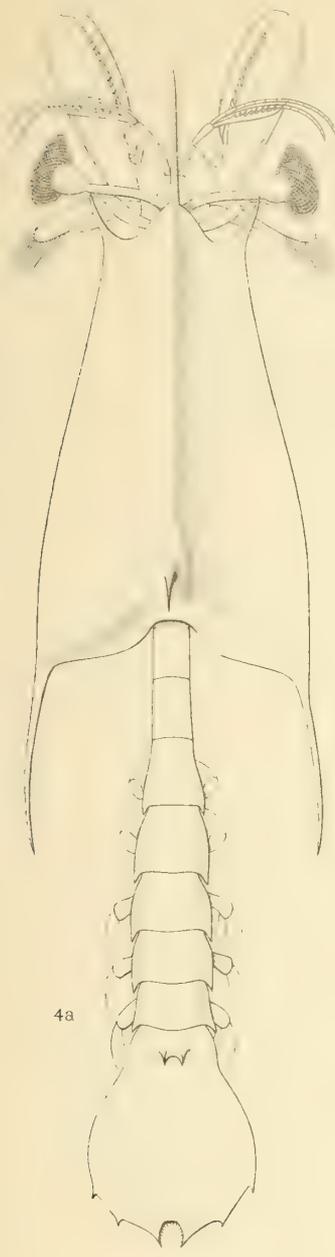
31. *Rocinela mundana*, Lancheater

Proc. Zool. Soc., p. 378, pl. xxxv, fig. 9 (1902).

An ovigerous female. Ban Sai Kau.

‘From the mouth of a Silurid fish, from pool in rice-fields.’

In my previous description I have said that the anterior legs are unarmed, but this statement is probably wrong as, in this specimen, I find that they are armed. The spines, however, are very small and few in number and only visible under the high power of the microscope. On the tarsi I find two, side by side, subdistally and one subproximally, and three subdistally on the femora; all very short and thick. The apex of the telson is also a little more rounded in this specimen. As my figure shows, the whole body is marked with rather irregular dull-brown pigment areas, giving it a somewhat spotted appearance. The type was also procured in freshwater, from the gills of a skate.



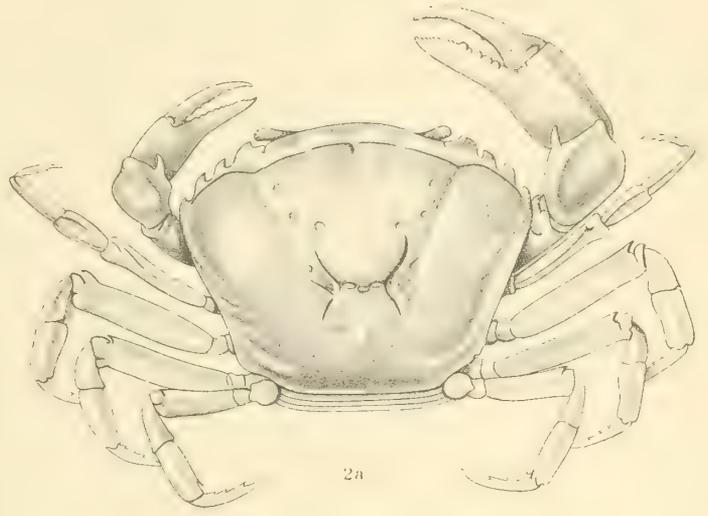
4a



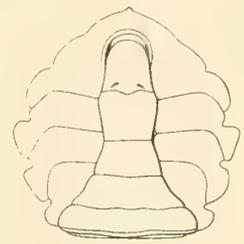
2b



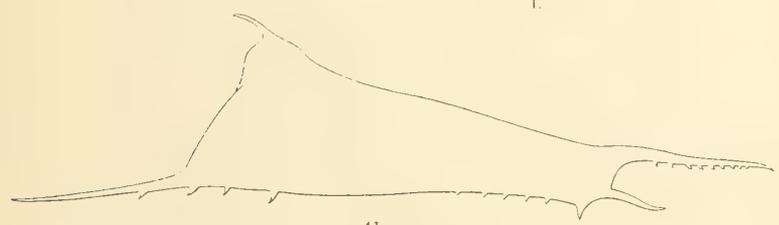
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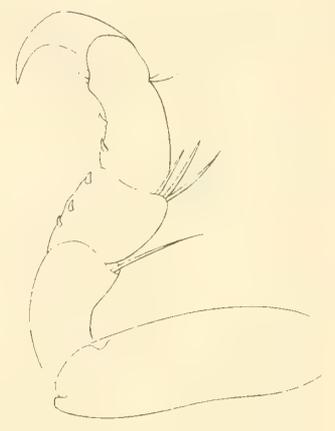
2a



1.



4b.



5.

E Wilson, Cambridge

- 1. Potamon improvisum.
- 2. Sesarma taeniolatum.
- 3. Potamon sex-punctatum.
- 4. Alima emarginata.
- 5. Rocinela mundana.

REPORT ON THE PHYTOPHAGOUS BEETLES

BY
MARTIN JACOBY, F.E.S.

INTRODUCTORY NOTE

THE small number of specimens in our collection, considering the number of species represented, prevents any inference being drawn as to the distribution of the Phytophagous Beetles of the Malay Peninsula. As regards their bionomics also, what we can add amounts to little. One point may be noted—the resemblance between many of the species of the peculiar Dipterous family *Celyphidae* and the small, globular, iridescent blue or purple Phytophaga so abundant in Malaya, belonging to a great number of species but closely similar to one another save in the eyes of a specialist. These little beetles and flies have much in common as regards movements and habits; but the flies are by far the scarcer. Both shun a bright light or great heat, retiring under the shelter of foliage at mid-day, but emerging to run about on the surface of leaves whenever the air is cool after rain and in the early morning and late afternoon; both have the same rapid, rather jerky gait; both take to flight with surprising ease, apparently without muscular effort, on the slightest disturbance. The flies may readily be distinguished from the beetle, on examination, by their tongues, which are constantly being applied, seemingly with a sucking action, to the surface of the leaves; but a casual glance rarely suffices to tell which is which. Some Malayo-Siamese Celyphids, however, have not the deep hues and brilliant iridescence of their more numerous congeners; they, too, are like Phytophaga in shape and movements, but seldom resemble any one species or genus in detail.

It is doubtful whether this is a case of true mimicry, not rather one of adaptive resemblance. Between the *Celyphidae* and many of the Hemipterous family *Pentatomidae* a similar, but not so close, a superficial likeness exists, and in this instance, though the resemblance is less striking to the human eye, the structural convergence is much greater, both fly and bug possessing a false carapace beneath which the functional wings can be concealed and protected. The carapace thus performs the same function as the elytra of a beetle. In both elytra and carapace there is a common production of dark pigment combined with peculiarities of form, which produce iridescence or metallic lustre more or less conspicuously in different instances.

NELSON ANNANDALE

INDIAN MUSEUM, CALCUTTA

April 12, 1905

REPORT ON THE COLEOPTERA PHYTOPHAGA

BY MARTIN JACOBY, F.E.S.

PROFESSOR POULTON has placed in my hands for examination a small collection of Phytophagous Coleoptera obtained by Messrs. ANNANDALE and ROBINSON in the Siamese-Malay States and Perak. Besides a good many species formerly described from the Malay Peninsula or the neighbouring islands, a certain number seem to be new. Of these I have given descriptions in an appendix to this volume, as well as of one or two other species from Borneo in my collection. All the species obtained by the gentlemen named above, except in the case of unique types, are now in the Oxford Museum collection, with duplicates in my own. The types will be presented to the British Museum. The following is a list of the species obtained, with the exception of those of which I am not able to give the names for want of more specimens :—

SAGRINAE

1. *Sagra peteli*, Lac.

1. Biserat, Jalor. October 24th, 1901. (Nat. coll.)

CRIOCERINAE

2. *Lema cyanea*, Fabr.

2. Bidor, South Perak. February 20th, 1902.

3. *Lema coromandeliana*, Lac.

1. Bidor, South Perak. February 20th, 1902.

4. *Lema striatopunctata*, Lac.

1. Bukit Besar, Nawngchik. May 19th, 1901.

‘The hardness of the elytra of this species is noted.’

5. *Oriocerus impressa*, Fabr.

2. Biserat, Jalor. July, 1901.
1. Bukit Besar, Nawngchik. 2,500 feet. July 14th, 1901.

*FASCICULI MALAYENSES***6. *Crioceris semipunctata*, Fabr.**

2. Biserat, Jalor. June 7th, 1901.

7. *Crioceris 4-pustulata*, Lac.

1. Biserat, Jalor. July 7th, 1901.

‘Flying in bright sunshine.’

1. Gedong, South Perak. January 9th, 1902.

CLYTHRINAE**8. *Tituboea laportei*, Baly**

5. Biserat, Jalor. October 14th to 21st, 1901.

‘Among shrubs and brushwood and on flowers, early morning and afternoon.’

9. *Aspidolopha buquetti*, Lac.

2. Mabek, Jalor. July 22nd to 27th, 1901.
2. Biserat, Jalor. May 30th to June 19th, 1901.
1. Patani Town. October 8th, 1901.

‘Among low shrubs, flying at mid-day.’

CRYPTOCEPHALINAE**10. *Melixanthus bimaculicollis*, Jac.**

2. Mabek, Jalor. June 23rd, 1901.

‘In jungle, morning.’

11. *Melixanthus siamensis*, Jac. (sp. nov.)

1. Biserat, Jalor. October 20th, 1901.

12. *Cryptocephalus birmanicus*, Jac.

2. Mabek, Jalor. June 23rd to 24th.

EUMOLPINAE**13. *Aoria bowringi*, Baly**

2. Bukit Besar, Nawngchik. May, 1901.
1. Ban Sai Kau, Nawngchik. April, 1901.
1. Jeram Kawan, South Perak. February 13th, 1902.

‘This species, especially when on the wing, resembles a common Coccinellid very closely. Like most of the Malayan Lady-birds it takes to flight readily.’

14. Nodostoma aenipenne, Motsch.

2. Biserat, Jalor. October 20th to 23rd, 1901.
 1. Jeram Kawan, South Perak. February 13th, 1902.

15. Nodostoma frontale, Baly

1. Gedong, South Perak. January 7th, 1902.

16, 17. Nodostoma, spp.

2. Telôm, Perak-Pahang boundary. 4,000 feet. January 19th to 22nd, 1902.

18. Cleorina aulica, Lefèv.

1. Biserat, Jalor. October 24th, 1901.

19. Cleorina metallica, Lefèv.

2. Bukit Jalor, Jalor. October 31st, 1901.
 1. Biserat, Jalor. July 4th, 1901.

20. Colasposoma mutabile, Baly

1. Gedong, South Perak. January, 1902.

21. Colaspoides laportei, Baly

3. Mabek, Jalor. July 22nd to 26th, 1901.
 2. Bukit Besar, Nawngchik. 2,500 feet. May, 1901.
 1. Biserat, Jalor. July 4th, 1901.
 1. Bidor, South Perak. February 3rd, 1902.
 1. Sungkei, South Perak. February 10th, 1902.
 1. Jeram Kawan, South Perak. February 12th, 1902.

22. Colaspoides siamensis, Jac. (sp. nov.)

1. Biserat, Jalor. June 4th, 1901.

23. Colospoides annandalei, Jac. (sp. nov.)

1. Bukit Besar, Nawngchik. 3,000 to 3,500 feet. May 5th, 1901.

24. Corynodes nitidus, Fabr.

1. Mabek, Jalor. July 10th, 1901.

25. Corynodes mouhoti, Baly

5. Ban Sai Kau, Nawngchik. May 20th to 21st, 1901.
 2. Biserat, Jalor. July 4th to 12th, 1901.
 1. Patani. August 8th, 1901.

*FASCICULI MALAYENSES***26. *Corynodes gibbifrons*, Lefèv.**

2. Ban Sai Kau, Nawngchik. May 26th, 1901.
 19. Biserat, Jalor. June, July, 1901.

'Among low bushes on sandy soil.'

CHRYSOMELINAE**27. *Agasta formosa*, Hope**

1. Bukit Besar, Nawngchik. 2,500 feet. April, 1901.

HALTICINAE**28. *Sphaerometopa nigricollis*, Jac.**

2. Bukit Besar, Nawngchik. 2,500 feet. April, May, 1901.

29. *Sebaethe bipustulata*, Jac.

1. Bukit Besar, Nawngchik. 3,000 feet. April 29th, 1901.
 1. Telôm, Perak-Pahang boundary. 4,000 feet. January 19th, 1902.

30. *Sebaethe sumatrana*, Jac.**31. *Sabaethe lusca*, Fabr.**

1. Telôm, Perak-Pahang boundary. 4,000 feet. January 19th, 1902.

32. *Euphitrea wallacei*, Baly

1. Gedong, South Perak. January 7th, 1902.

33. *Acrocrypta fraterna*, Jac.

4. Bukit Besar, Nawngchik. 2,500 feet. April to September, 1901.

34. *Acrocrypta dimidiata*, Baly

1. Bukit Besar, Nawngchik. 2,500 feet. May 1st, 1901.

35. *Hyphasis fulvicornis*, Jac. (sp. nov.)

1. Mabek, Jalor. July 24th, 1901.

'On wing at dusk among low shrubs at edge of jungle.'

36. *Podontia 14-punctata*, Lac.

1. Biserat, Jalor. October 23rd, 1901.

37. Podontia affinis, Grönd.

1. Bukit Besar, Nawngchik. 2,500 feet. May 5th, 1901.
1. Biserat, Jalor. July 14th, 1901.

38. Haltica, sp.

4. Kampong Jalor, Jalor. November 20th, 1901.

'In large numbers on the leaf of a *Caladium* growing in water. They were seen to feed on the pupa of a small moth which was wrapped up in a leaf.'

39. Simaethea laportei, Baly

1. Jeram Kawan, South Perak. February 12th, 1902.

40. Sphaeroderma parvula, Jac.

1. Bukit Besar, Nawngchik. 2,500 feet. May 5th, 1901.

41. Sphaeroderma, sp.

1. Biserat, Jalor. July 9th, 1901.

42. Notomela apicipennis, Jac. (sp. nov.)

3. Patani. April 24th, 1901.

43. Irisotra gemella, Erichs.

2. Biserat, Jalor. June to November, 1901.

'This species is noted as bearing a close resemblance to a small Dipteron of the family Celyphidae (see Introductory Note).'

GALERUCINAE**44. Oides pectoralis**, Clark

11. Bukit Besar, Nawngchik. 2,500 feet. May, September, 1901.
1. Gedong, South Perak. January 8th, 1902.

45. Aulacophora rosea, Fabr.

4. Bukit Besar, Nawngchik. 2,500 to 3,500 feet. May, August, 1901.

46. Aulacophora coffeae, Hormst.

1. Telôm, Perak-Pahang boundary. 4,000 feet. January 25th, 1902.

47. Aulacophora palliata, Fabr.

1. Sungkei, South Perak. February 10th, 1902.

FASCICULI MALAYENSES

48. Aulacophora denticornis, Fabr.

1. Gedong, South Perak. January 10th, 1902.

49. Aulacophora intermedia, Jac.

1. Biserat, Jalor. July 11th, 1901.
1. Patani. October 10th, 1901.

50. Aulacophora lewisi, Baly

2. Biserat, Jalor. July 4th, 1901.

51. Aulacophora foveicollis, Küst.

1. Biserat, Jalor. October 15th, 1901.

52, 53. Aulacophora, spp.

1. Biserat, Jalor. October 24th, 1901.
1. Gedong, South Perak. January 8th, 1902.

54. Pseudocophora buquetti, Guer.

17. Bukit Besar, Nawngchik. 2,500 feet. April, May, August, 1901.

55. Pseudocophora sumatrana, Jac.

5. Bukit Besar, Nawngchik. 2,500 feet. May, August, 1901.

56. Pseudocophora basalis, Jac.

1. Bukit Besar, Nawngchik. August 2nd, 1901.

57. Haplosomoides plicata, Alld.

2. Bukit Besar, Nawngchik. 2,500 feet. April 29th, 30th, 1901.

58. Haplosoma abdominalis, Jac.

1. Bukit Besar, Nawngchik. 2,500 feet. April 28th, 1901.
1. Mabek, Jalor. July 23rd, 1901.

59. Sastroides crassipalpis, Jac.

1. Bukit Besar, Nawngchik. 2,500 feet. May 11th, 1901.

60. Caritheca 4-pustulata, Baly

4. Bukit Besar, Nawngchik. 2,500 feet. May, August, 1901.
1. Telôm, Perak-Pahang boundary. 4,000 feet. January 18th, 1902.

61. *Antipha abdominalis*, Jac.

1. Gedong, South Perak. January 7th, 1902.

62. *Antipha fulvofrontalis*, Jac., var.

1. Bukit Besar, Nawngchik. 2,300 feet. May 7th, 1901.

63. *Antipha*, sp.

1. Bukit Besar, Nawngchik. 2,500 to 3,500 feet. April 29th, 1901.

64. *Antipha nigra*, Alld.

1. Bukit Besar, Nawngchik. 2,500 feet. May 5th, 1901.

65. *Malacosoma flaviventre*, Motsch.

1. Patani. April 18th, 1901.
4. Biserat, Jalor. October, 1901.

66. *Japhinella nigripennis*, Jac.

1. Bukit Besar, Nawngchik. 2,500 feet. April 28th, 1901.
1. Biserat, Jalor. July 9th, 1901.

67. *Mimastra annandalei*, Jac. (sp. nov.)

1. Bukit Besar, Nawngchik. 2,500 feet. May 7th, 1901.
1. Ban Sai Kau, Nawngchik. May, 1901.

68. *Mimastra sumatrensis*, Jac.

- Semangko Pass, Selangor-Pahang boundary. 3,500 feet. May 11th, 1902.

69. *Macrimea fuscolineata*, Jac.

1. Bukit Besar, Nawngchik. 2,500 feet. April 30th, 1901.
1. Kuala Mabek, Jalor. July 24th, 1901.

70. *Cerophysa siamensis*, Jac. (sp. nov.)

1. Biserat, Jalor. October, 1901.

71. *Cerophysa sumatrensis*, Jac.

1. Telôm, Perak-Pahang boundary. 4,000 feet. January 18th, 1902.

72. *Cerophysa*, sp.

1. Biserat, Jalor. October 18th, 1901.

87. Sumatrasia unicolor, Jac.

1. Telôm, Perak-Pahang boundary. 3,500 feet. January 25th, 1902.

88. Batusia pallidicornis, Baly

1. Semangko Pass, Selangor-Pahang boundary. 3,000 feet. May 15th, 1902.

89. Ozomena nigricollis, Jac.

3. Bukit Besar, Nawngchik. 2,500 feet. May to September, 1901.
1. Kuala Mabek, Jalor. July, 1901.
2. Gedong, South Perak. January 7th, 1902.

90. Ozomena impressa, Fabr.

1. Gedong, South Perak. January 7th, 1902.

91. Apophyllia pallipes, Jac.

2. Bukit Besar, Nawngchik. 2,500 feet. April 28th, 1901.
1. Biserat, Jalor. July 15th, 1901.

LIST OF SPECIES IDENTIFIED

Sagrinae*Sagra peteli*, Lac.**Criocerinae***Lema cyanea*, Fabr.,, *coromandeliana*, Lac.,, *striatopunctata*, Lac.*Crioceris impressa*, Fab.,, *semipunctata*, Fab.,, *4-pustulata*, Lac.**Clythrinae***Tituboea laportei*, Baly*Aspidolopha bugueti*, Lac.**Cryptocephalinae***Melixanthus bimaculicollis*, Jac.,, *siamensis*, sp. nov.*Cryptocephalus birmanicus*, Jac.**Eumolpinae***Aoria bowringi*, Baly*Nodostoma aeneipenne*, Motsch.,, *frontale*, Baly*Cleorina aulica*, Lefèv.,, *metallica*, Lefèv.*Colasposoma mutabile*, Baly*Colaspoides laportei*, Baly,, *siamensis*, sp. nov.,, *annandalei*, sp. nov.*Corynodes nitidus*, Fab.,, *mouhoti*, Baly,, *gibbifrons*, Lefèv.**Chrysomelinae***Agasta formosa*, Hope.**Halticinae***Sphaerometopa nigricollis*, Jac.*Sebaethe bipustulata*, Jac.,, *sumatrana*, Jac.,, *lusca*, Fab.*Euphitrea wallacei*, Baly*Acrocrypta fraterna*, Jac.,, *dimidiata*, Baly*Hyphasis fulvicornis*, sp. nov.*Podontia 14-punctata*, Lac.,, *affinis*, Grönd.*Simaethea laportei*, Baly*Sphaeroderma parvula*, Jac.*Notomela apicipennis*, sp. nov.*Irisotra gemella*, Erichs**Galerucinae***Oides pectoralis*, Clark*Aulacophora rosea*, Fab.,, *coffae*, Normst.,, *palliatata*, Fab.,, *denticornis*, Fab.,, *intermedia*, Jac.,, *lewisi*, Baly,, *foveicollis*, Küst.*Pseudocophora bugueti*, Guer.,, *sumatrana*, Jac.,, *basalis*, Jac.*Haplosomoides plicata*, Alld.*Haplosoma abdominalis*, Jac.*Sastroides crassipalpis*, Jac.*Carithea 4-pustulata*, Baly*Antipha abdominalis*, Jac.,, *fulvofrontalis*, Jac.,, *nigra*, Alld.*Malacosoma flaviventre*, Motsch.*Japhinella nigripennis*, Jac.*Mimastra annandalei*, sp. nov.,, *sumatrensis*, Jac.*Macrima fuscolineata*, Jac.*Cerophysa siamensis*, sp. nov.*Aenidea laeta*, Baly*Termyloides basalis*, Jac.*Cerophysa sumatrensis*, Jac.*Monolepta basalis*, Jac.,, *signata*, Oliv.,, *rufispennis*, Jac.,, *rubricollis*, sp. nov.*Haplosonyx albicornis*, Wied.,, *batuensis*, Jac.,, *robinsoni*, sp. nov.*Ochralea nigripes*, Oliv.*Sumatrasia unicolor*, Jac.*Batusia pallidicornis*, Baly*Ozomena nigricollis*, Jac.,, *impressa*, Fab.*Apophyllia pallipes*, Jac.

DESCRIPTIONS OF NEW MALAYAN AND ONE
BORNEAN SPECIES OF PHYTOPHAGOUS
COLEOPTERA

BY
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‘IN the absence of Mr. ROBINSON and myself in Selangor and Calcutta, respectively, Professor POULTON has kindly superintended the publication of these diagnoses. Mr. JACOBY’s full paper on the Phytophaga collected will be published later, with the collectors’ field notes.’—N.A., INDIAN MUSEUM, CALCUTTA.

Melixanthus siamensis, sp. nov.

Black, thorax impunctate, elytra finely punctate-striate, black, a sinuate transverse band at the base, and a round spot near the apex, bright flavous.

Var. Abdomen partly fulvous.

Length, $2\frac{1}{2}$ mm.

Short and broad, the head rather strongly and closely punctured, antennae black, with the apical six joints strongly dilated, the lower three joints flavous, thorax strongly convex, widened at the middle, black, very shining, the lateral margins feebly rounded, posterior angles acute, produced, medial lobe biemarginate, with a short transverse depression, the surface impunctate, scutellum black, trigonate, elytra very finely punctate-striate, the punctures nearly absent below the middle, the interstices, with a row of still finer punctures here and there, the black ground colour divided by a bright yellow transverse band at the base, which does not extend to the suture, and is strongly constricted at the middle, another round yellow spot of rather large size is placed near the apex, under side and legs black, abdomen (in one specimen) as well as the pygidium fulvous; prosternum about as long as broad, widened posteriorly, the basal margin straight.

Habitat. Biserat, Jalor, Siamese Malay States.

Separated by the black thorax, and the design of the elytra from its congeners.

Colaspoides annandalei, sp. nov.

Fulvous, the apical joints of the antennae, the breast and the legs black, thorax strongly punctured, elytra closely punctate-striate, not depressed below the base, abdomen fulvous.

Length, $5-5\frac{1}{2}$ mm.

Head extremely finely and sparingly punctured, clypeus not separated from the face, except at the sides, transverse, sparingly punctured at the base, antennae fulvous, the terminal six joints black, widened, thorax strongly transverse, the sides feebly rounded, the surface strongly but not closely punctured, except at the sides, where the punctuation is stronger than at the disc, and more closely placed, elytra not wider at the base than the thorax, rather strongly punctured in closely approached rows, below and the legs black, the femora unarmed, abdomen fulvous.

Habitat. Bukit Besar. 3,000 to 3,500 feet. Jungle. 5th May, 1901.

Of this species, well-distinguished by its colouration from other Eastern *Colaspoides*, two apparently female specimens were obtained.

***Colaspoides siamensis*, sp. nov.**

Cupreous or greenish, the antennae and legs fulvous, under side nearly black, thorax sub-remotely punctured on the disc, elytra deeply and closely punctate-striate at the inner disc, the sides coarsely punctured and the interstices strongly confluent rugose, femora unarmed.

Length, 4-4½ mm.

Head impunctate at the vertex, the middle with a fovea, epistome subquadrate, separated from the face by lateral grooves, supra-ocular sulci distinct, clypeus with some distinct punctures, its anterior margin nearly straight, labrum fulvous, antennae long and slender, fulvous, the terminal three joints piceous, third and two following joints equal, thorax not more than twice as broad as long, narrowed anteriorly, the sides feebly rounded, the disc rather strongly and subremotely punctured, the sides more closely so, scutellum impunctate, broad, elytra not depressed below the base, strongly punctured in semiregular rows at the inner disc, the sides much more coarsely so and the interstices at the same place strongly transversely and confluent convex, below bluish-black, the last abdominal segment fulvous at the apex.

Habitat. Biserat, Jalor. Jungle. 4th July, 1901.

There are a good many Eastern species of *Colaspoides* known which seem closely allied to the present insect, this may however be separated by the colour of the antennae and legs, in connexion with the unarmed femora, the strongly punctured thorax and its shape and the nearly black under side; the two specimens before me seem to represent the male sex.

***Hyphasis fulvicornis*, sp. nov.**

Flavous or fulvous, thorax impunctate, sides strongly rounded, elytra extremely minutely punctured, widened at the middle.

Length, 5 mm.

Head impunctate, frontal elevations broad, strongly raised, carina acute, elongate, antennae extending to the middle of the elytra, fulvous, the basal joint elongate, thickened, third joint slightly shorter than the fourth, terminal joints elongate, thorax strongly transverse, more than twice as broad as long, the lateral margins strongly rounded, sides narrowly flattened and reflexed, the surface impunctate, with a slight depression in front of the scutellum; elytra widened towards the middle, microscopically punctured, metatarsus of the posterior legs as long as the following two joints, claws strongly swollen.

Habitat. K. Mabek, Jalor (Robinson and Annandale), also Perak (my collection.)

Closely allied to several other Eastern species, but differing principally in the entirely fulvous antennae, from *H. indica*, Baly, in the much smaller size and colour of the elytra, from *H. unicolor*, Jac., in the rounded shape of the sides of the thorax and the absence of any punctuation of the latter. *H. femoralis*, Jac., has distinctly punctured elytra.

Notomela apicipennis, sp. nov.

Subquadrately ovate, fulvous, the apical joints of the antennae black, thorax transverse, finely punctured, elytra regularly punctate-striate, metallic blue, the apex fulvous.

Length, 4 mm.

Head fulvous, impunctate, obliquely grooved in front of the eyes, frontal elevations absent, clypeus broad, antennae widely separated, extending beyond the base of the elytra, the lower five joints fulvous, the rest black, third joint slightly longer than the fourth, this and the following joints nearly equal, thorax more than twice as broad as long, the sides rounded, anterior angles thickened, scarcely produced, the surface transversely convex, finely punctured, median lobe broad, feebly produced, scutellum small, fulvous, elytra convex, regularly and finely punctate-striate, the interstices very minutely punctured, shoulders somewhat prominent, the last row of punctures deeper than the others, extreme apex fulvous, the rest of the surface metallic blue, under side and legs fulvous, prosternum very narrow, mesosternum short and transverse, its base emarginate to receive the apex of the metasternum, posterior femora strongly incrassate, their tibiae widened and sulcate at the apex only, armed with a spur like the intermediate ones, metatarsus as long as the following two joints together, claws appendiculate, anterior coxal cavities closed.

Habitat. On 23rd April Mr. Annandale and Mr. Robinson were at Patani Town, on the 26th at Ban Sai Kau. Three specimens bear the date 24th April, 1901.

This genus has been described by me from an African species (*Proc. Zool. Soc.*, 1900) with which the Siamese insect agrees so closely that I cannot well separate it generically; the only difference may be found in the shape of the mesosternum which, in the present species, is of much more transverse and short shape than in its African congener, in which the apex of this part is rather strongly bilobed, on that account the insect may, perhaps, claim the rank of a generic separation if other species so structured should turn up. In general appearance *Notomela* resembles a species of *Chrysomela*, notably the the Australian genus *Calomela* (Australica).

Taphinella nigripennis, Jac.

The specimens contained in this collection differ from the type, originally described from Burmah (*Ann. Mus. Genss*, 1889), in having black tibiae and tarsi, but this is the only difference of any importance I can find. *Taphinella* is distinguished by the very short second and third joint of the antennae, and the following five or six strongly dilated joints in the male; the thorax is transverse, of equal width, the tibiae are unarmed, the claws appendiculate, and the anterior coxal cavities are closed.

Cerophysa siamensis, sp. nov.

Fulvous, antennae and tarsi black, thorax deeply transversely sulcate, elytra obscure flavous, the sutural and lateral margins narrowly piceous.

Length, 4 mm.

Narrow and elongate, the head impunctate, fulvous, very shining, frontal elevations feebly raised, rather broad, antennae black, the basal joint fulvous, second one shorter than the third, the fourth and following joints subquadrately widened, short, thorax subquadrate, scarcely broader than long, the sides feebly rounded at the middle, the disc deeply transversely sulcate, the sulcus not extending to the sides, impunctate, fulvous, scutellum triangular, fulvous, elytra wider at the base than the thorax, scarcely perceptibly and sparingly punctured, obscure flavous, the sutural and lateral margins obscure piceous, the apex sometimes of the same colour, below and the legs obscure fulvous, the apex of the tibiae and the tarsi blackish.

Habitat. Biserat, Jalor, Siamese Native States.

A small species of which two, apparently female specimens, are before me; the insect is allied to *C. nigricornis*, Jac., from India, but is much smaller, and differs in the colouration of the elytra and legs; the male has probably one or other of the joints of the antennae enlarged.

Haplosonyx batuensis, Jac.

The two specimens contained in this collection differ from the type in having flavous antennae with the exception of the first three joints which are black, the amount of purplish colour at the basal portion of the elytra is also rather larger, but there are no other differences whatever between the two forms which are evidently subject to a good deal of variation in regard to colours. Another closely allied species found in Borneo, of which I give the description here, is contained in my collection.

Haplosonyx shelfordi, sp. nov.

Black, the antennae, apex of the tibiae and the tarsi flavous, thorax rather remotely punctured, deeply transversely sulcate, elytra fulvous, the basal portion black, finely and very closely punctured, abdomen fulvous.

Length, 9 mm.

Head black, impunctate, labrum and palpi flavous, the penultimate joint of the latter strongly inflated, antennae flavous, the second and third joint very short, the fourth very elongate, thorax more than twice as broad as long, the sides straight, the surface deeply transversely sulcate, rather strongly but not very closely punctured, scutellum pointed, black, the extreme apex flavous, elytra very closely and finely punctured, the basal third in shape of a transverse band black, the rest dark fulvous, the breast and legs black, the apex of the tibiae and the tarsi as well as the abdomen flavous.

Habitat. Borneo (Shelford).

Almost similarly coloured to *H. batuensis* but much larger, the elytral punctuation much finer, the colour of the antennae and legs different.

Haplosonyx robinsoni, sp. nov.

Broad and robust, pale flavous, the legs partly or entirely black, thorax with a few fine punctures, transversely sulcate at the sides, elytra with indistinct and widely-placed rows of larger punctures, the interstices closely and more finely punctured.

Var. The antennae with the fourth and fifth and the apical two joints more or less blackish.

Length, 11-13 mm.

Head entirely impunctate, with a short longitudinal groove above the antennae, clypeus convex, triangular, apex of the mandibles black, antennae not extending to the middle of the elytra, the second and third joint short, subequal, the fourth longer than the fifth joint, thorax twice and a half broader than long, the sides subangulately widened before the middle, posterior angles produced outwards, the surface with a few minute punctures at the basal portion, deeply transversely sulcate at each side, scutellum pointed, triangular, elytra with a short, rather shallow depression below the base, with double rows of distinctly placed larger punctures, the interstices everywhere closely and finely punctured, legs black, the under part of the femora often flavous.

Habitat. Bukit Besar, Nawngchik. 2,500 feet, and Tor.

Allied to *H. fraternus* (Duviv.) from Java, but with flavous not black under side, the antennae shorter and more robust, the scutellum flavous, and the elytral punctuation quite different; ten specimens were obtained.

Mimastra annandalei, sp. nov.

Head, antennae, and thorax flavous, clytra metallic dark green, closely punctured and finely rugose, the breast, abdomen, and the tibiae and tarsi black, femora flavous.

Length, 8 mm.

Head impunctate, flavous, clypeus broad, trigonate, impunctate, antennae extending to the end of the elytra, flavous, the terminal two joints more or less fuscous, third joint one-half shorter than the fourth, second joint short, thorax one-half broader than long, subquadrate, the sides straight, the surface transversely sulcate, impunctate, flavous, scutellum flavous, elytra very closely punctured and finely rugose, upper portion of the breast and the femora (their apex excepted) flavous, rest of the under side black.

Habitat. Bukit Besar, Nawngchick, and Ban Sai Kau. 2,500 feet.

Closely allied to *M. rugosa*, Jac., from Java, but with flavous antennae and black breast, also of rather shorter and broader shape.

Monolepta rubricollis, sp. nov.

Flavous, lower joints of the antennae black, head and thorax rufous, the latter transversely impressed, elytra minutely punctured.

Length, 4 mm.

Head impunctate, rufous, deeply transversely grooved between the eyes, the latter very large, clypeus wedge-shaped, labrum flavous, antennae very slender, nearly extending to the apex of the elytra, black, the ninth and tenth joint more or less flavous, the third joint twice as long as the second one, thorax one-half broader than long, the sides straight, the posterior margin rounded, the surface with a rather deep transverse depression at each side, impunctate, rufous, very shining, scutellum flavous, elytra nearly parallel and sub-cylindrical, very finely and closely punctured, flavous, their epipleurae indistinct below the middle, below and the legs flavous, the latter very slender, the metatarsus of the posterior legs very elongate.

Habitat. Telom, South Perak. 4,000 feet. Two specimens.

This *Monolepta* is of rather slender shape, and may be known by the red colour of the head and thorax

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