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XIV.—Diptera Nematocera from the Mountains of Borneo. By F. W. EDWARDS.

(With two Plates.)

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This report is based on two collections made in Sarawak by Dr. E. Mjöberg and sent by him to the British Museum for determination. The first was made on Mts. Murud and Dulit in the latter part of 1922, and received in London in the summer of 1923; the second, from Mts. Poi and Penrissen, was received in April 1924. It appeared desirable to combine the reports on the two collections, in order to give us as good an idea as possible in one paper of the Nematocerous fauna of the island. Thanks to the generosity of the Sarawak Museum the types of all the new species have been retained, as well as examples of some other species which were not previously represented in the British Museum collections. Duplicates, when available, have been returned to the Sarawak Museum.

The collection consisted mainly of Tipulidae, of which there were no less than 89 species represented among just under 200 specimens; of these it has been found necessary to describe 51 as new. Some of the supposed new species may perhaps be found later on to be identical with forms described recently by Alexander from Japan or Formosa, but in the great majority of cases this is unlikely. The result is indeed hardly surprising, considering the little that was previously known about the Crane-fly fauna of Borneo, and the strong tendency of members of this family to develop local and endemic species, especially in mountainous regions.

So far as I have been able to discover, the following list includes all the Crane-flies hitherto recorded from Borneo, as well as a few unrecorded species which are represented in the British Museum.

1. <i>Elephantomyia argenteocincta</i> Walk.	9. <i>Eriocera ornata</i> End.
2. <i>Orimarga borneensis</i> Brun.	10. " <i>pyrrhocroma</i> Walk.
3. <i>Trentepohlia (Mongoma) pennipes</i> O. S.	11. " <i>rubescens</i> Walk.
4. <i>Eriocera borneana</i> Edw.	12. " <i>verticalis</i> Wied.
5. " <i>combinata</i> Walk. (<i>diluta</i> Walk.).	13. <i>Ctenacroscolis pilosulus</i> v. d. W.
6. " <i>infixa</i> Walk.	14. " <i>umbrinus</i> Wied.
7. " <i>lunata</i> Westw.	15. <i>Pipula cinctipes</i> de Mejl.
8. " <i>lunigera</i> Walk. (<i>optabilis</i> Walk.)	16. " <i>magnicornis</i> End.
	17. " <i>pedata</i> Wied.
	18. " <i>punctifrons</i> Rond.

Only 7 of these 18 species are represented in the present collections so that the total number of Craneflies now known from Borneo is 100. This of course can only be a small fraction of the number which occurs.

The four Mycetophilidae described here are, I believe, the first members of this family to be recorded from the island.

In regard to the Culicidae, Mr. J. C. Moulton has published (in 13th Report Sarawak Museum, 1925, pp. 46-48) a list of the 92 species known from Borneo. The present collection contained only three species, but it was a surprise to discover that all of these were additions to the Bornean list, two being apparently undescribed.

MYCETOPHILIDAE.

MACROCERA BIFASCIATA sp. n. (Plate 9, fig. 1.)

♂. *Head* brownish ochreous, ocellar spot black, face pale yellow. *Antennae* ochreous, appearing darkened on the apical half owing to the denser pubescence. First flagellar segment about three times as long as the scape, second and third rather shorter, fourth equal to the first, last without long bristly hair. *Palpi* yellow. *Neck* white. *Thorax* uniformly shining black, bristles black. *Abdomen* yellowish with black apical bands on each of tergites 1-5, that on tergite 2 the broadest; segments 6-9 all blackish. *Claspers* with the usual two teeth. *Legs* with the coxae shining black, trochanters and fore and mid femora and tibia ochreous; tarsi dark; hind femora and tibiae blackish brown except at the base and tip. *Wings* as figured. No macrotrichia. *Halteres* black.

Length of body 8 mm.; wing 5 mm.; antennae 12 mm.
Mt. Penrisen, 4500 feet—1 ♂.

There is a damaged female of this species in the British Museum from Siam (Talun, 18th January, 1920. H. C. Robinson and N. Annandale).

PLATYURA PENRISSENSIS sp. n. (Plate 10, fig. 23.)

♂. *Head* dark brown, ocelli enclosed in a black spot, the middle one small. *Antennae* with the scape ochreous, flagellum black, the segments cylindrical and about twice as long as broad. *Palpi* ochreous, the first two segments brownish. *Thorax* brownish ochreous, without markings; mesonotum with short black bristles, very dense over the wing-roots; pleurotergites bare; postnotum not prominent, but with a few small bristles at its tip. *Abdomen* mostly ochreous, the segments with trident-like apical bands, due to black pigment showing through the integument (the bands might not be visible in a dry specimen). *Hypopygium* as figured. *Legs* light ochreous, tibiae and tarsi darker, the fine setae arranged in very regular rows; first segment of front tarsi quite one-third longer than the tibiae. *Wings* with a slight yellowish tinge; a brown band just before the tip, extending from R_2 into cell M_1 , and a very distinct brown shade over the tip of Cu_1 . Third costal division about two-thirds as long as the fourth; costa reaching half-way from R_2 to the tip of M_1 , A_1 nearly if not quite reaching the margin (wing slightly damaged in this position). *Halteres* white.

Length of body 5.5 mm.; wing 4 mm.

Mt. Penrisen, 4500 feet—1 ♂.

This is apparently nearer to *P. flaviventris* Brun. than to any other described Oriental species, differing in the longer front tarsi, etc.

LYGISTORRHINA CINCTICORNIS sp. n. (Plate 9, fig. 2.)

♂. *Head* black. Ocelli distinct and placed on a rather prominent tubercle, middle one small. *Eyes* large, in contact with the lateral ocelli. *Front* not sunken as it is in the American species. *Antennae* yellow, except segments 5-6 and 10-15, which are blackish; flagellar segments as long as broad, except the last (16th), which is nearly three times as long. *Proboscis* ochreous. *Thorax* brownish ochreous, pleurae with dark brown markings. *Abdomen* dark brown, segments 2-8 each with a narrow basal ring, hypopygium yellowish. *Legs* with the coxae dark brown, the front pair ochreous at the base;

trochanters brownish; femora ochreous, narrowly dark at the base, the hind pair with the apical half black; tibia ochreous, the hind with the tips broadly black; front and middle tarsi brownish, hind tarsi black; first segment of front tarsi nearly twice as long as the tibia. *Wings* yellowish-tinged, with a brown pattern as shown in the figure. Halteres yellow.

Length of body 7.5 mm.; wing 4 mm.; proboscis 2.5 mm.

Mt. Murud, 7000 feet, October—1 ♂.

No very near ally of this species has been described, but a rather similar West African form is represented in the British Museum collection. *L. asiatica* White (Ceylon) is a much smaller species with unmarked wings.

EXECHIA PALLIDULA sp. n. (Plate 10, fig. 24, 25.)

Head brownish ochreous, face pale ochreous. Antennae uniformly brownish ochreous, palpi lighter. *Thorax* uniformly brownish ochreous. Scutellum with two strong black bristles and two smaller ones between them. *Abdomen* with the first tergite dark brown, its posterior border pale ochreous; tergites 2-4 in the ♂ entirely ochreous; in the ♀ tergite 2 ochreous with a dark brown median stripe which is widened in the middle and at the tip, tergite 3 ochreous, tergite 4 blackish, tergite 5 ochreous, with the hind margin dark; tergites 6-7 in the ♂ dark brown, in the ♀ blackish. Hypopygium as figured; ovinositor constructed almost exactly as in *E. pallida* Stan. *Legs* ochreous, tarsi darkened; tibial spines black, rather long. *Wings* with a slight yellowish tinge; *Rs* very slightly curved down at the tip; *r-m* about three times as long as the median fork; tips of *M*, and *M*, not reaching the wing-margin; fork of *Cu* well beyond the base of *Rs*; *Ax* long and straight, almost reaching the margin. Halteres whitish, base of knob darkened.

Length of body 4.5 mm.; wing 4 mm.

Mt. Murud foot, October—1 ♂ 1 ♀ in copula.

This is very closely allied to the European *E. pallida* Stan., even the hypopygial structure being very similar. There appear, however, to be several nearly allied Oriental species of this group; such are *E. basilinea* Brun. and *E. flava* White. The best distinction between these species is perhaps to be found in the shape of the large eighth sternite of the male.

EXECHIA sp. inc.

Mt. Dulit, 3000 feet—1 ♂.

BIBIONIDAE.

DILOPHUS RUBIDUS sp. n.

♂. *Head* black. *Antennae* black, except for the second segment, which is ochreous. Flagellum apparently with eight segments only, first as long as broad, next three broader than long but distinctly separated and forming a sort of club. *Thorax* with the pronotum, scutum and scutellum uniformly red, postnotum and pleurae rather dark brown. Anterior pronotal comb with two groups of four teeth, posterior comb with two teeth at each side, one placed in front of the other, and between these a row of six smaller teeth. *Abdomen* brownish red, darker at the tip. *Legs* with the coxae and trochanters orange, front femora reddish, darker at base and tip, posterior femora dark brown, lighter at the base, tibiae and tarsi black. Proximal comb of front tibiae with three spines in a transverse row, and a fourth more distally placed on the outer side. *Wings* brownish, darker towards costa, stigma a little darker still; all veins about equally dark. Basal section of *Rs* very short, barely a third as long as *r-m*; median fork with a short stalk; *m-cu* almost vertical, not outwardly oblique as in the European species. Halteres black.

Length of body 4 mm.; wing 4 mm.

Mt. Murud, 7000 feet, October—1 ♀.

The allied *D. nigristigma* de Meil. differs in the dark scutellum and the more numerous teeth in the posterior pronotal comb, also in the brighter red posterior femora.

CHIRONOMIDAE.

CULICOIDES GYMNOPTERUS sp. n. (Plate 9, fig. 3; Plate 10, fig. 26.)

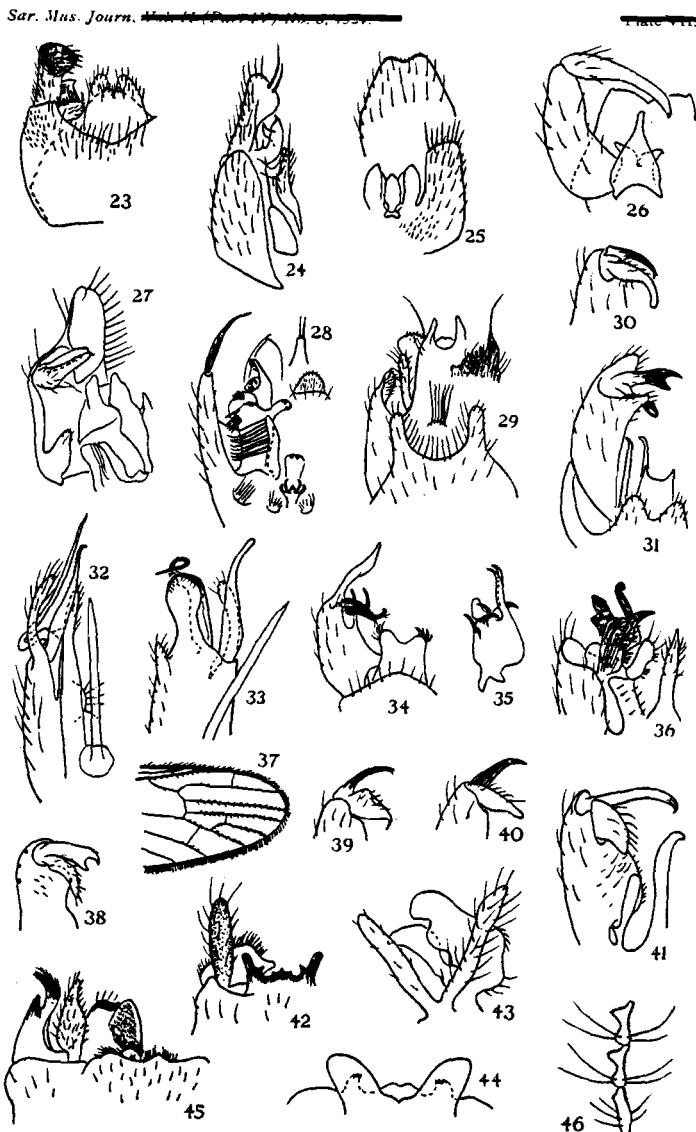
♀. *Head* black, antennae and palpi dark brown; eyes just touching. Last five flagellar segments about three-quarters as long as the first eight; first flagellar segment shortly oval, next 7 flask-shaped, but very little enlarged at the base, gradually becoming more elongate. Palpi slender, the antepenultimate segment scarcely enlarged on the inner side. *Thorax* mostly yellowish above; mesonotum dark brown in front; scutellum narrowly dark brown at the sides, postnotum similarly coloured at the sides and apex. Two scutellar bristles, close together. Pleurae largely dark, *Abdomen* dark

- Fig. 7. *Limnobia citrofocalis* sp. n. ♂.
 8. *Styringomyia transversae* sp. n. ♀.
 9. *Transepokila venustipennis* sp. n. ♀.
 10. *Leotria bipunctata* sp. n. ♂.
 11. *Limnophila* (*Dicranophragma*) *fenestrata* sp. n. ♀.
 12. " " *maculithorax* sp. n. ♀.
 13. " " *pallidithorax* sp. n. ♂.
 14. " (*Poecilostola*) *guttularis* sp. n. ♂.
 15. " " *murudensis* sp. n. ♂.
 16. " (*Ephelia*) *dulitensis* sp. n. ♂.
 17. " " *granulata* sp. n. ♂.
 18. " (*Troglophila*) *monticola* sp. n. ♂.
 19. *Eriocera murudensis* sp. n. ♂.
 20. *Mitopesa mjobergi* sp. n. ♂.
 21. *Dolichopesa cuneata* sp. n. ♂.
 22. *Nesopesa perpulchra* sp. n. ♂.

Explanation of Plate 10.

Details of male hypopygia, etc.

- Fig. 23. *Platyura pennsylvanensis* sp. n. ♂ hypopygium from beneath.
 24. *Eaechia pallidula* sp. n. ♂ hypopygium from above.
 25. *Eaechia pallidula* sp. n. ♂ hypopygium from below, also tip of eight sternite.
 26. *Calicoidea gymnopterus* sp. n. ♂ hypopygium from beneath.
 27. *Limnobia microlabis* sp. n. ♂ hypopygium from beneath.
 28. *Styringomyia borneana* sp. n. ♂ hypopygium from beneath; tips of ninth tergite and sternite shown separately.
 29. *Styringomyia borneana* sp. n. tip of ♀ abdomen from beneath; anal carous shown separately.
 30. *Halius fasciventris* sp. n. ♂ claspers.
 31. *Erioptera cacuminis* sp. n. ♂ hypopygium from above.
 32. *Molophilus albiceps* sp. n. ♂ hypopygium from beneath.
 33. *Molophilus murudensis* sp. n. ♂ hypopygium, half side view.
 34. *Gonomyia* (a. str.) *symmetrica* sp. n. ♂ hypopygium from above.
 35. *Gonomyia symmetrica* aedeagus, half side view.
 36. *Gonomyia* (*Progomeryia*) *brunneosoma* sp. n. ♂ hypopygium from above.
 37. *Rhabdomastix flavidula* sp. n. ♂ tip of wing.
 38. *Limnophila* (*Ephelia*) *granulata* sp. n. ♂ claspers.
 39. *Limnophila* (*Dicranophragma*) *pallidithorax* sp. n. ♂ claspers.
 40. *Limnophila* (*Poecilostola*) *guttularis* sp. n. ♂ claspers.
 41. *Limnophila* (*Poecilostola*) *murudensis* sp. n. ♂ hypopygium from above.
 42. *Dolichopesa cuneata* sp. n. ♂ hypopygium from above.
 43. *Mitopesa mjobergi* sp. n. ♂ claspers from side.
 44. *Mitopesa mjobergi* sp. n. ♂ ninth tergite.
 45. *Tipula albiprivata* sp. n. ♂ hypopygium from above.
 46. *Tipula sulcica* Walker, basal segments of antennal flagellum.





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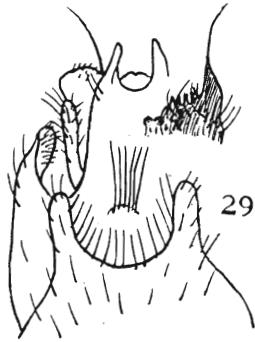
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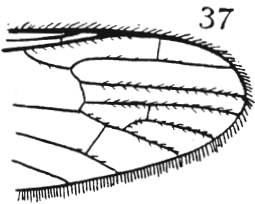
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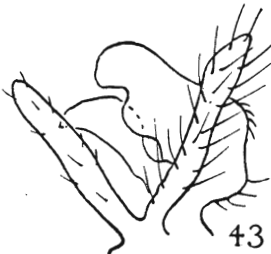
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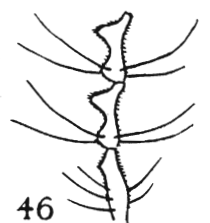
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DIPTERA NEMATOCERA.