

For Discharge at ordinary High Flood add to the measured Discharge:—

| width of portion in Feet.   | depth. | velocity. | cubic ft. per second. |
|---|--------|-----------|-----------------------|
| 688 x 13  | x 7    | =         | 62,608                |
| 1,374 x 13  | x 6    | =         | 107,172               |
| 600 x 13  | x 6    | =         | 46,800                |
| 155 x 13  | x 5    | =         | 10,075                |
| The measured Discharge, =   |        |           | 226,655               |
| Total Discharge at ordinary high floods, =  |        |           | 293,000               |
| From this subtract flood discharge of Tengapáni and Noa Dihing Rivers, .....                        |        |           | 53,000                |
| Flood discharge of Brahmaputra + Digáru rivers, ....  |        |           | 240,000               |
| Area of Flood section over measured section, .....  |        |           | 36,721 S. Ft.         |
| Add measured section, .....   |        |           | 16,396                |
| Area of Flood section, .....  |        |           | 53,017 S. Ft.         |
| Measured Discharge, .....   |        |           | 66,251                |
| Subtract volume of 3 ft. rise, .....  |        |           | 32,419                |
| Discharge of the Brahmaputra + Digáru + Noa Dihing + Tengapáni Rivers at their minimum level, ..... |        |           | 33,832                |
| The sectional area = 8,238 S. Ft. and mean velocity 4.1 ft. per second.                             |        |           |                       |
| Subtract Noa Dihing + Tengapáni, their minimum discharge, .....                                     |        |           | 3,000                 |
| 30,800 Cubic feet is the minimum Discharge of Brahmaputra + Digáru rivers.                          |        |           |                       |

October, 1878.

At time of measurement the river was 3 ft. above minimum level of the year, the increase in volume due to this rise is

|             |   |       |
|-------------|---|-------|
| 105 x 3 x 5 | = | 1,575 |
| 143 x 3 x 5 | = | 2,145 |
| 285 x 3 x 5 | = | 4,275 |
| 150 x 3 x 5 | = | 2,250 |
| 140 x 3 x 4 | = | 1,680 |
| 240 x 3 x 3 | = | 2,160 |
| 76 x 3 x 4  | = | 912   |
| 227 x 3 x 3 | = | 2,724 |
| 108 x 3 x 4 | = | 1,296 |
| 600 x 3 x 4 | = | 7,200 |

Add measured volumes of portions of section which are covered by the 3 ft. rise, }  
26,217

1,800

1,143

3,254

Total increase in volume, due to a 3 ft. rise above minimum level }  
32,419 cubic ft. per second.

The mean velocity of Flood = 5.5 ft. per second.

Myanmar (Burma)

III.—Hemiptera from Upper Tenasserim.—By W. L. DISTANT. Communicated by J. WOOD-MASON.

(Received 22nd Feb. 1879; read 5th March, 1879.)

(With Plate II.)

The following paper enumerates and describes the *Hemiptera* collected by Mr. Ossian Limborg in the district east of Moulmein, Tenasserim Provinces, and placed in my hands for determination by Mr. Wood-Mason, to whom the insects belong. So little has yet been done in enumerating the Hemipterous Faunas of the East, and this collection is so limited in extent, that it would be futile to attempt any elaborate scheme of tabulation in illustration of geographical affinities and distribution. The publication, however, of the details of such collections as this from a well specified neighbourhood will afford material for such work hereafter. Many of the species, as might be imagined, are common to Northern India, others range through the whole Eastern Archipelago as far as Celebes.

Heteroptera.

Fam. HOMOCERIDÆ.

Fam. PACHYCORIDÆ.

*Homocerus javanicus*, Dall.

✓ *Chrysocoris grandis*, Thunb.

*H. marginellus*, H. S.

✓ *C. porphyricolus*, Walk.

✓ *Hotea curculionides*, H. S.

Fam. ANISOCELIDÆ.

*Serinetha angur*, Fab.

Fam. HALYDIDÆ.

*S. abdominalis*, Fab.

✓ *Dalpada oculata*, Fab.

Fam. ALYDIDÆ.

✓ *D. varia*, Dall.

*Riptortus pedestris*, Fab.

Fam. PENTATOMIDÆ.

Fam. COREIDÆ.

✓ *Antestia anchora*, Thunb.

*Acanthocoris scabrator*, Fab.

✓ *Catacanthus incarnatus*, Drury.

✓ *Prionaca lata*, Dall.

✓ *Strachia crucigera*, Hahn.

Fam. PYRRHOCORIDÆ.

*Lohita grandis*, Gray.

✓ *Cyclopelta obscura*, St. F. and S.

*Iphita limbata*, Stål.

Fam. MICTIDÆ.

*Physopelta gutta*, Burm.

*Dalader acuticosta*, A. and S.

*Antilochus rufus*, Stål.

*Mictis tenebrosa*, Fab.

*A. coguebertii*, Fab.

*M. gallina*, Dall.

*Odontopus nigricornis*, Stål.

*Physomelus calcar*, Fab.

*Dindymus rubiginosus*, Fab.

*P. parvulus*, Dall.

*Dyodercus cingulatus*, Fab.

## Fam. REDUVIIDÆ.

*Euagoras plagiatus*, Burm.  
*Velinus malayus*, Stål.  
*Reduvius mendicous*, Stål, var.  
*Vesbius sanguinosus*, Stål.

## Fam. ARADIDÆ.

*Brachyrhynchus membranaceus*, Fab.

## Fam. ACANTHASEIDIDÆ.

*Tiarodes versicolor*, Lap.  
*Sminthus marginellus*, n. sp.  
*Velitra rubro-picta*, A. and S.

## Fam. GERRIDÆ.

*Ptilomera laticauda*, Hard.  
*Limnogonus*, sp. ?

## Fam. BELOSTOMIDÆ.

*Belostoma indica*, St. F. and S.

## Homoptera.

## Fam. CICADIDÆ.

*Platypleura nobilis*, Germ.  
*P. insignis*, n. sp.  
*Huchys sanguinea*, De Géer.  
*H. philæmata*, Fab.  
*H. thoracica*, n. sp.

## NOTES AND DESCRIPTIONS.

## ✓CHRYSOCORIS PORPHYRICOLUS, Walk.

*Call. porphyricola*, Walk., Cat. Het., Part. I, p. 29, (1867).

Walker describes this form as being allied to *C. stockerus*, Linn. On the contrary it is very closely allied to *C. purpureus*, Hope, if not even a variety of that species.

## SMINTHUS MARGINELLUS, n. sp. Pl. II, Fig. 1.

Sanguineous; head, elytra, lateral borders of sternum and abdomen beneath, and anal abdominal segment black. Antennæ obscure, testaceous; a sanguineous spot behind each eye and base of coriaceous portion of the elytra narrowly of the same colour.

Allied to *S. fuscipennis*, Stål, from which it differs by the very much more robustly developed eyes and the narrower space between them; the head is also slightly more elongated, and the sculpture of the posterior lobe

*Scieroptera splendidula*, Fab.

*Dundubia mannifera*, Linn.

*D. intemerata*, Walk.

*Pomponia tigroides*, Walk. var.

*P.* sp. ?

*Cryptotympana recta*, Walk.

## Fam. CERCOPIDÆ.

*Cosmoscarta tricolor*, St. F. and S. var.

*C. megamera*, Butl.

*C. masoni*, Dist.

## Fam. CENTROTIDÆ.

*Centrotypus assamensis*, Fairm.

## Fam. IASSIDÆ.

*Tettigonia ferruginea*, Fab.

## Fam. EURYBRACHYDIDÆ.

*Eurybrachys* (?) *punctifera*, Walk.

*Ancyra appendiculata*, White.

## Fam. RICANIIDÆ.

*Ricania guttigera*, Walk.

## Fam. FLATIDÆ.

*Cerynia maria*, White. var.

*tenella*, Walk.

of the pronotum is different. The colour of the head, extent of the basal coriaceous patch and the colour beneath also differentiates it.

Long. 18 mill.

## PLATYPLEURA INSIGNIS, n. sp. Pl. II, Fig. 2.

Body testaceous, thickly covered with griseous pubescence, Pronotum, mesonotum and metanotum not differing in structure and markings from *P. nobilis*, Germ., but more pubescent; pectus, abdomen above and below also resembling that species. Rostrum with the tip pitchy, reaching a little beyond posterior coxæ. Legs pale ochraceous, fore and intermediate tarsi with the base, apex, and claws pitchy.

Tegmina pale hyaline, with the veins, membrana costæ, area costalis, area radialis (excepting almost apical half) and a large basal patch transversely terminated from near the apex of the lower side of the area radialis and the inner border of tegmina at apex of the lower of the area ulnares, fulvous covered with griseous pubescence. The area radialis is transparent hyaline from about its middle (where it is darker in colour) to near the apex, which is narrowly fulvous and has a subconical fuscous spot on its outer border. A row of small spots on outer margin of the area apicales, situated one on each side of the veins, a submarginal waved row of larger spots situated in like manner, and an irregular series of similar sized spots situated on the bases of the area apicales and apices of the area ulnares, black. The veins in some places are greenish. Wings pale hyaline, with the veins fulvous and a large black basal patch.

♂. Long. ex. tegm. 15 mill.; exp. tegm. 45 mill.

Allied to *P. nobilis*, Germ., but tegmina and wings very distinct, the opaque portion being much less than in that species. The rostrum is shorter in length and the drums do not overlap each other so much as in *P. nobilis*.

## HUECHYS THORACICA, n. sp. Pl. II, Fig. 3.

Black, pilose; pile griseous. Face sanguineous with a large triangular sub-basal black spot, transversely strigose and with a deep, central longitudinal impression. Antennæ testaceous with the basal joint black; eyes testaceous, more or less streaked with black (black in a second specimen I have seen). Ocelli, a triangular patch at base of head, the apex of which is situated between the ocelli, a central longitudinal hour-glass shaped fascia extending through whole length of pronotum, abdomen and three large spots on mesonotum, two lateral and one central, sanguineous. Pectus sanguineous with some frontal black markings. Rostrum and legs, black pilose. Tegmina opaque ochreous brown. Wings pale fuliginous hyaline with the nervures dark fuscous.

The rostrum reaches the apex of the intermediate coxæ.

♀. Long. ex. tegm. 19 mill.; exp. tegm. 43 mill.

Two other unnamed specimens of this species are in the British Museum from Hindustan.

POMPONIA, sp. ?

Owing to the number of insects described under the Genus *Dundubia*, frequently only one sex being known, I have considered it better to avoid describing this form until the other and allied genera are structurally monographed.

CRYPTOTYMPANA RECTA, Walk. Pl. II, Fig. 4.

*Fidicina recta*, Walk. Cat. Hom. I, p. 79, 1850.

Walker's type is a ♀, and I have therefore figured the underside of a ♂ in the collection, which seems to belong to this species. It is much paler in colouration above, being more olivaceous than black, but to this I attach no importance, nor do I to its smaller size. All the other characters agree. The drums are olivaceous inwardly, broadly margined with black.

Long. ex. tegm. 32 mill.; exp. tegm. 95 mill.

\* COSMOSCARTA TRICOLOR, St. F. and Serv. Pl. II, Fig. 5.

*Cercopis tricolor*, St. F. and S. Enc. Méth. X, p. 604, 1827.

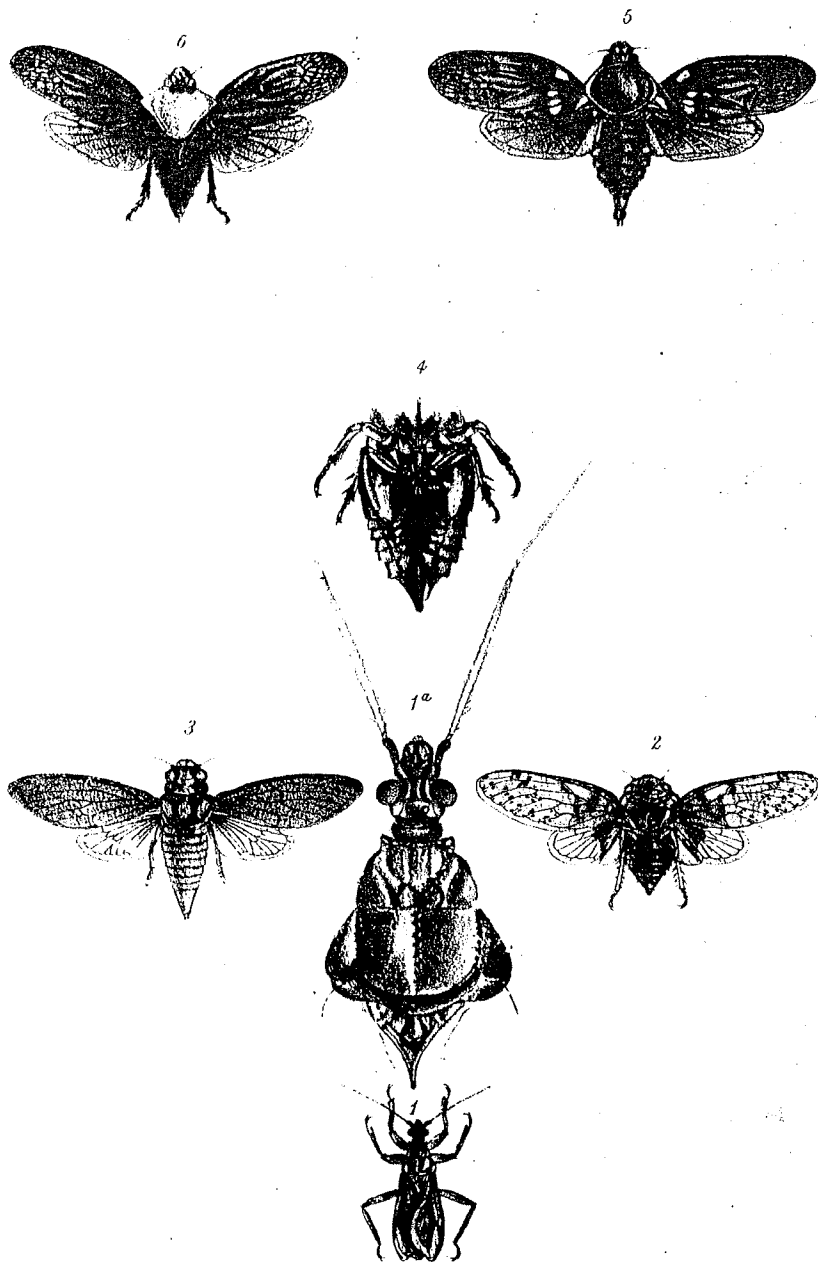
This only differs from the typical form in having the sub-basal fascia represented by a transverse waved series of four sanguineous spots; there is also a spot of the same colour at base. It is thus intermediate between *C. tricolor* and *C. basinotata*, Butl. with the last of which, before expanding the tegmina, I confused it. Butler's form differs also in the colouration of the abdomen. I have called this form a variety of *C. tricolor*, though the term "local race" would be more correct. The difference is certainly not "specific," using that definition in the ordinary sense.

COSMOSCARTA MASONI, Dist. Pl. II, Fig. 6.

*C. Masoni*, Distant, J. A. S. B., 1878, Vol. XLVII, Pt. 2, p. 194.

Pronotum stramineous, with a quadrate black spot on anterior margin; head luteous; tegmina, pectus, legs and abdomen shining black. Prosternum with lateral borders stramineous.

Face robustly tumid, transversely strigose, with a central impunctate longitudinal impression; eyes prominent, luteous; ocelli distinct, shining, situated at about an equal distance from each other as from eyes; basal portion of the head somewhat pitchy. Pronotum thickly and finely punctured, with the lateral margins dilated and strongly reflexed, the lateral angles produced prominently outwards, and the posterior margin rounded, the disc is prominently raised and convex, across the centre of which is a faint impunctate central longitudinal line. The frontal quadrate black patch contains a deep, angular, linear impression on each side behind the eyes, and two small rounded impressions on the posterior border.



Tegmina obscurely and finely punctured; wings dark fuscous with the nervures black. Hind tibiae with a small spine towards apex.

♀. Long. ex. tegm. 17 mill. Exp. tegm. 45 mill.

Greatest long. pronot.  $7\frac{1}{2}$  mill. Exp. lat. ang. pronot. 11 mill.

Habitat, Taoo, Tenasserim. Alt. 3—5000 ft.

EXPLANATION OF PLATE II.

- Fig. 1. *Sminthus marginellus*, Dist.  
 „ 2. *Platyploura insignis*, Dist.  
 „ 3. *Hueschys thoracica*, Dist.  
 „ 4. *Cryptotympana recta*, Walk.  
 „ 5. *Cosmoscarta tricolor*, St. F. and S. var.  
 „ 6. „ *masoni*, Dist.

IV.—*On the Diurnal Variation of Rainfall Frequency at Calcutta.*—By HENRY F. BLANFORD, F. G. S., F. Z. S., F. M. S.

(With Plate III.)

[The greater part of the following paper was written some months since in France, and laid before the Society at its meeting in November, 1878. In the original paper, the registers of only six years were discussed; but inasmuch as those for twenty years are available in the Meteorological Office, on my return to India, with the permission of the Council, I have withdrawn and recast the paper, including in the data the whole of the existing registers. As might have been anticipated, the inclusion of a period more than three times as long as that originally treated of, has had the result of clearing away some irregularities, and of bringing out more distinctly the true character of the variation; some of the minor features of which were but doubtfully indicated in the original restricted table; while the more prominent features have been confirmed and emphasised. With a view to their more ready appreciation, a plate has been added, which will enable the reader to compare the diurnal variation of rain frequency at different seasons, with the normal diurnal variations of pressure, temperature, relative humidity and vapour tension at Calcutta. H. F. B.]

The tables here summarised are based on the hourly observations recorded at the Surveyor General's Office from August 1856, to March 1877\*; during the greater part of the period on the autographic traces of an Osler's anemometer. The form of the reduction does not show the quantity of the rainfall, but only the fact of its occurrence at the several hours specified; in other words, its comparative frequency; and it is possible that the two kinds of variation may not strictly coincide. The traces in question have not yet been reduced for quantity, otherwise than for the total diurnal fall; but the laws of diurnal variation in point of frequency are so salient and decided, that it is hardly likely that any conclusions to which they may lead,

\* As published in the Society's Journal.