SOME CHIRONOMIDAE (DIPTERA) FROM BARKUDA ISLAND, CHILKA LAKE.

By F. W. EDWARDS (*British Museum, Natural History*).

The following is a report upon a collection of Ceratopogonidae and Chironomidae made by the late Dr. N. Annandale at Barkuda Island, Chilka Lake, during the years 1922-24, and forwarded to me for determination. All the material (with the exception of *Atrichopogon flavellus*) was obtained at light. Concerning the circumstances of capture Dr. Annandale wrote on 4th May, 1923 :—

" All the specimens I have sent you from Barkuda were taken on a white-washed wall behind a table lamp on the verandah of my cottage. At this time of the year there is usually a strong breeze blowing from the lake in the evening. So long it is blowing, practically no insects come to light, but it is very curious when it stops how the whole place is filled immediately with buzzing of small Chironomids. As a rule one species predominates. You will be able to see which from the collection sent."

Among the large number of Indian Chironomidae described by Kieffer eight were recorded as having been found on the banks of the Chilka Lake, and in addition a considerable number of others had been taken at the neighbouring town of Puri, Orissa. The present collection includes examples of about 35 species, most of which have already been recorded by Kieffer from this region ; a few are indeterminable, and three are described below as new to science.

CERATOPOGONIDAE.

Forcipomyia albosignata (Kieff.), 1910.

Only one female specimen.

Forcipomyia annandalei, sp. nov.

♂. *Antennae* with scape dark brown, flagellar segments mostly pale yellowish, plume dark, paler apically ; segment 11 long, fully as long as 12 and 13 together, 12 and 14 about equal in length and over three times as long as broad, 13 slightly shorter, 14 with the usual terminal stylet. Palpi dark brown, segment 2 with large swelling beneath on basal third, apical two-thirds (or nearly) slender, 3 about twice as long as broad, 4 slightly thicker than 3 and nearly globular. *Thorax* (completely denuded in all three specimens) uniformly chestnut-brown above, including shoulders and scutellum ; pleurae mainly pale yellowish, but with a brownish area in middle. *Abdomen* almost white, tergites with lateral dark brown areas which leave both basal and apical margins pale and are scarcely visible dorsally ; hypopygium mainly whitish, but coxites dark

brown at base. Style somewhat sinuous, narrowed in about the apical half; harpes long and slender, tips drawn out into long fine threads. *Legs* pale yellowish, hind femora darkened towards tip; hind tibiae somewhat darkened above; tarsi (especially hind pair) somewhat darkened, but without definite rings and with last segment pale. First tarsal segment of all legs about two-thirds as long as second. No definite scales even on tarsi. *Wings* narrow, but with fairly well developed anal area, not very dark, with three darker patches on front margin, one (rather indefinite) before middle, one immediately beyond radial cells and one near the tip; a white area covering the whole of the second radial cell and most of the first; dark shades over the tips of *M1*, *M2* and *Cu 1*, and along the whole of *Cu 2*. Venation normal, costa not quite reaching middle. Halteres pale.

Length of body, 1·5 mm.; wing, 1·2 mm.

Cotypes, 3 ♂.

Although all three specimens are damaged, it seems worth while describing this species because the colouring is very distinctive. *F tristicta* Kieff., of the eastern Himalayas has a somewhat similar colouring, but differs in the tarsal proportions and in the position of the middle dark area on the front margin of the wing, which covers the radial cells.

Atrichopogon flavellus, Kieff., 1913.

In large swarm on leaves (F. H. Gravely).

Dasyhelea paivai (Kieff.), 1910.

1 ♂. This and the following species were originally described as *Culicoides*.

Dasyhelea? macrostoma (Kieff.), 1910.

1 ♀.

Culicoides oxystoma Kieff., 1910.

1 ♂, 1 ♀.

Culicoides peregrinus Kieff., 1910.

1 ♂. Kieffer only described the female; the male differs in having no macrotrichia on the wings, but the markings are similar in the two sexes and agree with the figure given by me (1922) of a female from the Malay Peninsula. Annandale (1915) noted that this species was very common at Chilka Lake.

Culicoides sp.

Indet. 1 ♂, 1 ♀. A very small species with nearly bare wings, rather closely resembling *C. pungens* de Meij., but with more clear spots on the wings.

Alluaudomyia xanthocoma Kieff., 1913.

2 ♂. Described originally as a species of *Culicoides*, this has already been transferred to *Alluaudomyia* by Kieffer. *A. xanthocoma* is a typical member of this widely-spread genus, which has as synonyms *Neoceratopogon* Malloch and *Thysanognathus* I. and M.

Stilobezzia lineata Kieff., 1913.

1 ♀. A remarkably distinct species, of which Kieffer has given an unusually full description; he, however, omitted to note one rather striking feature: the scutum is bluntly pointed in front and slightly produced over the head. In spite of this and some other peculiarities the species seems correctly referred to the genus *Stilobezzia*.

Mixohelea roseiventris (Kieff.), 1911.

1 ♀. Originally described as a *Palpomyia*, this species was placed by Kieffer (1917) in his new genus *Mixohelea*, which he distinguished from *Palpomyia* chiefly by the spinose fifth tarsal segment and long and unequal claws of the female. Later (1918) he described another genus *Xenohelea* which has the fifth tarsal segment of the female similar to that of *Mixohelea*, but the fourth cylindrical instead of cordiform. In the specimen before me the fourth tarsal segment is very short and though slightly emarginate at the tip, beneath could hardly be described as cordiform. I am therefore of the opinion that *Xenohelea* is not separable from *Mixohelea*; further, it seems very doubtful if the latter should be regarded as more than a subgenus of *Sphaeromias*. I suspect that an earlier name for *P. roseiventris* is *Bezzia rufiventris* Kieff., 1910; the descriptions agree except as regards the radial cross vein, which was presumably absent in the specimen Kieffer referred to *Bezzia*, but the type of *B. rufiventris* may have been an abnormal specimen lacking this vein; such specimens occasionally being found in other species of *Palpomyia*. A point not made clear by Kieffer is that the black spinules (*soies bulbeuses*) on the under side of the first two hind tarsal segments are in one row only; it is also worthy of note that each of the first two hind tarsal segments has a single short spine at the tip, as in the British *Sphaeromias fasciatus*.

Homohelea pictipes (Kieff.), 1910.

2 ♀. Originally described as a *Palpomyia*, this was transferred to *Homohelea* by Kieffer (1917); it differs however from the diagnosis of *Homohelea* and resembles *Sphaeromias* (=*Xylocrypta*) in the form of the claws, which are not simple but have each a basal barb on the inner side, the barb of one claw being larger than that of the other; also, the fourth tarsal segment is not distinctly cordiform. As in *Sphaeromias fasciatus* the ventral spinules are in two rows on the first hind tarsal segment, in one row on the second, but in *H. pictipes* neither of these segments has a spine at the tip. In view of these facts, and of the undoubtedly close relationship existing between *H. pictipes* and the new species described below, it would probably be best to regard *Homohelea* as at most a subgenus of *Sphaeromias*. An unusual feature in the venation of *H. pictipes* is that the median fork is very noticeably narrowed on the outer third

Homohelea barkudensis, sp. nov.

♀. Eyes narrowly separated. Antennae with basal segment dark; first eight flagellar segments light brownish, shortly oval; last five

segments darker, each over three times as long as broad. Palpi pale yellowish. *Thorax* dark, strongly pruinose with grey; scutum with three dark brownish stripes, median stripe divided on its posterior half, its branches slightly divergent. Scutellum light brownish. A small blunt tubercle on front margin of scutum in middle. *Abdomen* blackish, posterior margin of last few segments narrowly pale; distribution of impressed areas cannot be clearly made out owing to shrinkage. *Legs* with coxae, all femora and hind tibiae blackish, front and middle tibiae largely brownish, darker at ends; tarsi with first four segments pale yellowish, tips narrowly darkened, fifth segment black. All femora with about 4-6 spinules on apical half, some of the spinules however are rather weak, especially on middle femora. Fourth tarsal segment scarcely longer than broad, but not distinctly cordiform. Last tarsal segment with only two pairs of pointed spines ventrally, both near base; all claws equal and simple (without basal barbs), about threequarters as long as last tarsal segment. First hind tarsal segment with two rows of ventral spinules, second with one row, both these segments without apical spines. *Wings* slightly milky, all veins pale; costa reaching nearly to wing-tip (well beyond level of tip of *M2*); *Cu* only slightly extending beyond cross-vein; median fork somewhat narrowed on apical third. Halteres yellowish.

Length of body 2-2·5 mm.; wing, 2-2·5 mm.

Cotypes, 2 ♀.

This is evidently nearly related to a number of Indian species described by Kieffer, most of which however have 4-6 pairs of spinules on the last tarsal segment. *H. abjuncta* Kieff. (1913) has only two pairs of such spinules, but differs from the new species in its pale abdomen and in other respects. *H. barkudensis* is perhaps the undescribed species of *Palpomyia* noted by Annandale and Kemp as breeding in the Chilka Lake.[1]

Nilobezzia allotropica (Kieff.), 1913.

12 ♀. This species conforms to Kieffer's definition of the genus *Nilobezzia* in having the fourth tarsal segment almost cylindrical (definitely non-cordiform) and the fifth with rows of black "batonnets"; it differs in having no distinct spines (only a few bristly hairs) on the under side of the posterior femora, but need not be excluded from *Nilobezzia* on that account. The tarsal structure is much the same as in *Homohelea*; it seems evident that these two groups are very closely related and that *Nilobezzia* has much less affinity with the European species of *Bezzia*, which resemble the European *Palpomyia* in their simple fifth tarsal segment and small claws. There is no doubt that an exaggerated importance has been attached to the presence or absence of the radial cross-vein.

Nilobezzia lacteipennis (Kieff.), 1910, var.

8 ♀. This is closely allied to the last, and also seems referable to *Nilobezzia*.

[1] *Mem. Ind. Mus.* V., p. 187 (1915).

CHIRONOMIDAE.

TANYPODINAE.

Clinotanypus crux (Wied.).

1 ♂, 2 ♀. This seems to be a common and widely distributed Oriental species, and has several synonyms, amongst which may be mentioned *Procladius ornatissimus*, Kieff., 1910 (India) and *P. pictidorsum*, Kieff., 1924 (Java).

Clinotanypus ceylanicus Kieff., 1925.

1 ♀. This is probably a variety of *C. fumipennis* Kieff., 1910 (described as *Procladius*) with unicolorous mesonotum.

Procladius (Psilotanypus) vitripennis Edw., 1923.

1 ♀. This very distinct species has previously been recorded only from Java. The present specimen differs from the type in having only the tarsi slightly less extensively tipped with black.

Pentaneura (Isoplastus) ornatipes (Kieff.), 1910.

3 ♀.

Pentaneura (Isoplastus) pulchripes (Kieff.), 1910.

2 ♀. Kieffer (1923) has recorded this from Formosa and placed it as a variety of the European *P.* (*I.*) *monilis* (L.), which is indeed probably correct.

CHIRONOMINAE.

Chironomus (s. str.) **barbatitarsis** Kieff., 1911.

3 ♂, 1 ♀.

Chironomus (s. str.) **nigromarginatus** Kieff., 1911.

6 ♀.

Chironomus (s. str.) **calligaster** Kieff., 1911.

3 ♂.

Chironomus (s. str.) **lamprothorax** Kieff., 1911.

3 ♀. I suspect that this may be the ♀ of *Ch. calligaster*; it would certainly be unusual for the scutal stripes to be much darker in the ♀ than in the ♂, but such a condition occurs in the European *Ch. notatus* Mg., and *Ch. lamprothorax* may be another example of the same phenomenon. The species has been recorded by Kieffer (1923) from Formosa.

Chironomus (Limnochironomus) punctatipennis Kieff., 1910.

6 ♂. Kieffer does not mention the small dark spot on each side of the scutellum which is present in all the examples before me.

Chironomus albiforceps Kieff., 1910.

3 ♀. A very distinct species, of uncertain subgeneric position.

Chironomus (Glyptotendipes) melanostolus Kieff., 1910.

2 ♀. These specimens agree so well with the description that I have no doubt of their identity; Kieffer has omitted to notice the abdominal impressions, which are as well marked as in typical European species of the subgenus *Glyptotendipes*; the form of the pronotum is also typical. It is possible that the species is the same as *Ch. verrucosus* Kieff., 1911, the only Indian species recognized by Kieffer as belonging to *Glyptotendipes*, but the black knob of the halters in *Ch. melanostolus* appears to afford a good distinction.

Chironomus (? Kribiocharis) ? caunteri Kieff., 1913.

1 ♂. Kieffer described only the ♀ and referred the species to *Paratendipes*; the present specimen differs in some respects from the description, notably in the tarsal ratio, which is scarcely 1·5; the subgeneric characters seem to be those of *Kribiocharis*, Kieff.

Chironomus (Polypedilum) tripartitus Kieff., 1910.

4 ♂, 4 ♀. A very widely distributed species; the present specimens appear to agree with others in the British Museum from Egypt and Morocco. *Ch. pelostolum* Kieff., of Formosa is very similar and perhaps conspecific.

Chironomus (Polypedilum) scalaenulus, sp. nov.

Brownish; scutal stripes and postnotum darker, median scutal stripe somewhat less dark; antennae, scutellum, halteres and genitalia of both sexes yellowish; legs yellowish, four posterior femora somewhat darkened except towards base, front tibia somewhat darkened, posterior tibiae with a broad and indistinct dark ring in middle, all tarsi entirely pale. Last antennal segment in ♂ shorter than the remainder (ratio 0·8); antenna of ♀ 6-segmented, 3 and 4 with short necks, 5 without neck, as usual in this group. Hypopygium of ♂ with tergite not distinctly trilobed; style long and uniformly slender; lower basal appendage as usual with one long terminal hair. Front tibia short, only about half as long as femur, without spur; the single spur of each middle and hind tibia longer than the comb; front tarsus long, first segment over twice as long as tibia. Pulvilli rudimentary or absent. *Wings* with three not very conspicuous dark clouds; one filling base of cell *R5*; one in base of cell *Cu 1*, crossing vein *Cu 2* and reaching hind margin, and one in middle of anal cell; a slight greyish shade connects the first two; sometimes, especially in ♀, there is a slight darkening around tip of vein M. Costal fringe long; venation normal for the subgenus, base of cubital fork well beyond *r—m*.

Length of body, 1-1·3 mm. wing about 1·1 mm.

Cotypes, 10♂, 30♀ (all more or less damaged).

I have been unable to trace among the numerous species described by Kieffer one which resembles this at all closely, but in rega d to wing-markings and in many other respects, it is not unlike the European *C. scalaenus* Schrank; it differs most obviously in its smaller size and in having the cloud in cell *R5* in and not removed from the base, also in the unusually low antennal ratio. The atrophied pulvilli would perhaps place the species in Kieffer's genus *Kribiocharis*, but the remaining characters are those of *Polypedilum.*

Chironomus (Polypedilum) fasciatipennis, Kieff., 1910.

1 ♀. A rather peculiar feature of coloration, not noted by Kieffer, is that the second antennal segment is dark, the remainder pale.

Chironomus (Polypedilum) kempi Kieff.

2 ♂.

Chironomus (Polypedilum) annulatipes Kieff., 1910.

Large numbers of both sexes of this very distinct species were included in the collection; it is evidently the species referred to by Dr. Annandale as the most abundant.

Tanytarsus? pentatomus Kieff., 1913,

2 ♂.