

MAYFLIES OF HONG KONG WITH DESCRIPTIONS
OF TWO NEW SPECIES (EPHEMEROPTERA)*.

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In the present paper four species of mayflies from Hong Kong are described and illustrated. Among the four species two are hitherto undescribed and new to science. The material for this study was in the Entomological Collection of the Department of Biology, Hong Kong University from where it was sent to me for study.

The four species herewith described fall into the following classification.

Family Ephemeridae, subfamily Ephemerinae.

1. *Ephemerella pulcherrima* Eaton 1892

Family Heptageniidae, subfamily Heptageninae.

2. *Ecdyonurus herklotsi* n. sp.
3. *Heptagenia ngi* n. sp.
4. *Paegoniodes cupulata* Eaton 1871.

FAMILY EPHEMERIDAE, Subfamily Ephemerinae.

Ephemerella pulcherrima Eaton 1892.

Eaton, Trans. Ent. Soc. London. 1892. p. 185.

Ulmer, Archiv für Naturgeschichte. 1925. p. 86.

Length of body: ♀ imago 12 mm. ♀ Imago (In alcohol).

Form large. General coloration yellowish. *Head* brownish, one or two dark spots below eyes, vertex broad. Eyes small, black, round, widely separated. *Thorax* yellowish. Pronotum with two dark transverse short lines along anterior margin. Mesonotum light brownish above with four dark brown spots at four corners. *Legs* yellowish; fore legs with tibia brownish, distal end of femur, proximal end of tibia dark brown; hind coxa with four black spots. Wings hyaline.

Abdomen yellowish, third to the ninth tergites, each with a pair of crescent-shaped black linear stripes at the middle and another two black linear stripes near the lateral margins; third to the ninth sternites each with a pair of black linear stripes; second tergite with two small black spots near its lateral margins; second sternite with two similar small black spots close to its lateral margins. *Tails* yellowish, hairy, dark ring at joints, three in number.

This specimen was collected in deep water from Hong Kong on October 11, 1933.

This species was first described by Eaton in the year 1892 based upon specimens collected from Tenasserim Valley, New England. Ulmer recorded this species from Mahn tsi shan, Lo fau shan in 1925.

FAMILY HEPTAGENIIDAE, Subfamily Heptageninae.

Ecdyonurus herklotsi n. sp.

Length of body: Holotype ♂ imago 8 mm.

♂ Imago (In alcohol).

* Supported by a Class C grant from the China Foundation 1933-'35.

Form median. General coloration brownish. *Head* yellowish with carina and frontal margin brown. Vertex very narrow. Eyes large, contiguous and light grayish. Ocelli closely grouped together, dark brown at base. Median ocellus very small, lateral ocelli large and much elevated. Antennae light brownish, short.

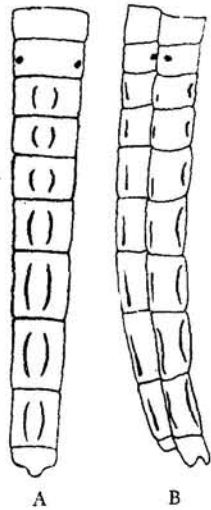


Figure 1.
Ephemera pulcherrima Eaton.
Coloration of abdomen.
A. Dorsal view.
B. Lateral view.



Figure 2.
Ecdyonurus herklotsi n. sp.
Legs.

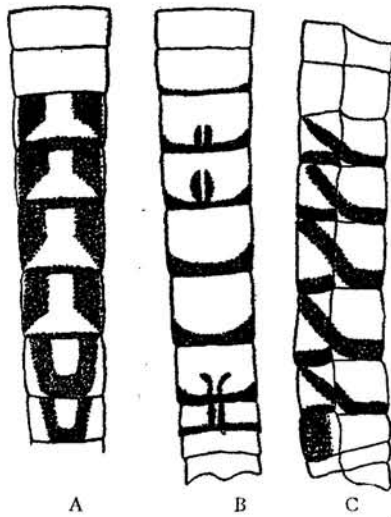


Fig. 3. *Ecdyonurus herklotsi* n. sp.
Coloration of abdomen.
A. Ventral view.
B. Dorsal view.
C. Lateral view.

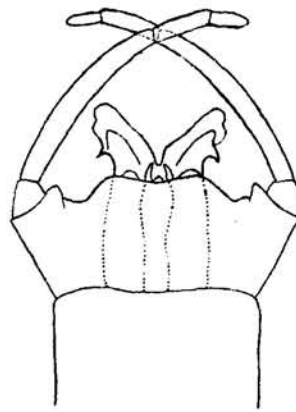


Fig. 4. *Ecdyonurus herklotsi* n. sp.
♂ genitalia ventral view.

Thorax light reddish brown. Legs: fore-legs brownish, long, tarsal formula 2.2—2.2—1.9—1.5—1. Mid and hind legs yellowish, tarsi brownish. Wings transparent with veins and costal margin brownish.

Abdomen light brownish with reddish brown transverse stripe along posterior margin of each tergite. Sternites with two slightly oblique reddish brown stripes. Detailed coloration shown in the accompanying diagrams. Posterior margin of last sternite truncate.

Tails two in number, dark brown in colour, 35 mm. in length. *Genitalia* with forceps brownish, four segmented. Pineal lobes brownish, closely fused together, caudal margin oblique, lateral margin with two notches, titillators small and short.

Holotype: one male from Pokfulum, Hong Kong. Collected on August 29, 1933. In Yin-chi Hsu's collection.

Heptagenia ngi n. sp.

Length of body: Holotype ♂ imago 6.5 mm.

♂ Imago (In alcohol).

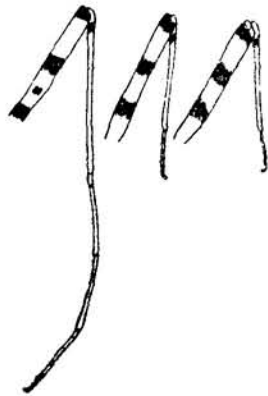


Fig. 5. *Heptagenia ngi* n. sp. Legs.

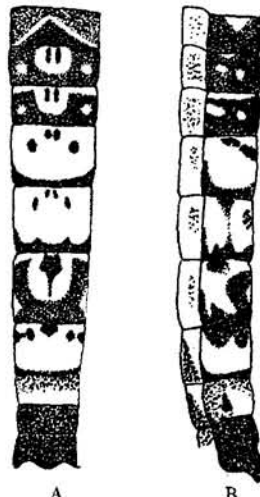


Fig. 6. *Heptagenia ngi* n. sp. Coloration of abdomen. A. Dorsal view. B. Lateral view.

Form small. General coloration dark brownish. *Head* with frontal margin chocolate, front brown with chocolate patches, vertex brown and triangular. Eyes light gray, round, large, and contiguous. Ocelli closely grouped together, much elevated, base chocolate, median ocellus $\frac{1}{2}$ as large as lateral ones. Antennae brown and short. *Thorax* reddish chocolate above, sides brown with reddish chocolate patches, mesosternum yellow, metasternum reddish chocolate.

Legs brown, femora with three dark brown bands, basal end of tibia dark brown. Fore tarsus slightly longer than tibia, tarsal formula 1-1-6.5-5-2. Wings transparent with brown patches, veins brown.

Abdomen brown above with dark brown colour patterns. Detailed colour pattern shown in the accompanying diagrams. Ventral surface uniformly brown. Posterior margin of last sternite with two notches. *Tails* two in number, yellowish in colour with brown bands at joints.

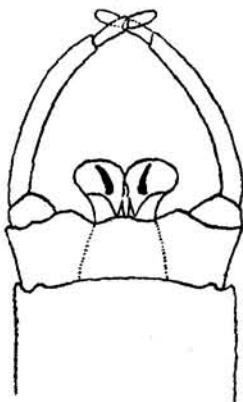


Fig. 7. *Heptagenia ngi* n. sp.
♂ genitalia ventral view.

Genitalia with forceps yellowish, four jointed. Pineal lobes light brownish, closely fused together, rounded and club-shaped apically, titillators small and short.

Holotype: one male imago from Shaukiwan, Hong Kong, on August 24, 1932. In Yin-chi Hsu's collection.

Paegoniodes cupulata Eaton 1871.

Eaton, *Heptagenia cupulata*, Trans. Ent. Soc. London 1871, p. 138.

Eaton, Rev. Monogr. 1885, p. 261, t. 23, f. 41, t. 24, f. 41.

Ulmer, Archiv. für Naturgeschichte, 1925, p. 107.

Hsu, *Paegoniodes fukienensis*, Peking Nat. Hist. Bull., VI, Part 2, p. 39.

Length of body: ♂ imago 12 mm., ♀ imago 12 mm.

♂ Imago (In alcohol).

Form median. General coloration brownish and reddish. *Head* yellowish, front triangular, median carina much elevated, vertex broad. Eyes comparatively small, round, dark, widely separated. Ocelli grouped together, not much elevated, median ocellus small, only half the size of the lateral ocelli. Antennae light brownish. *Thorax* brownish. Pronotum with two reddish brown patches in the middle. Posterior margin deeply notched at the middle. Mesonotum uniformly brownish. Mesopleura with a dark spot on each side in front of the base of the fore wing. Metanotum brownish with middle elevated portion dark reddish brown. Ventral surface light brownish.

Legs dull translucent rufo-lutescent almost rufous; fore leg with the distal projection of the tibia pitch-brown and the tarsus light brown-ochreous, tarsal formula 1-4-4-3-1.2. *Wings* vitreous; fore wing burnt-umber brown along

the costa from the base to the pterostigmatic space and yellowish-brown from thence to the apex in the marginal and submarginal areas; hind wing with outer marginal area tinted with raw-umber brown, costal marginal area vitreous.

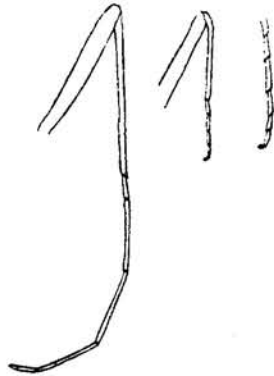


Fig. 8. *Paegoniodes cupulata* Eaton.
Legs.

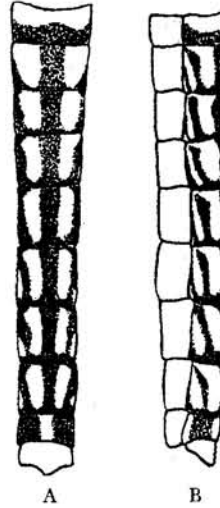


Fig. 9. *Paegoniodes cupulata* Eaton.
Coloration of abdomen.
A. Dorsal view.
B. Lateral view.

Abdomen light brown-ochreous above, with a median longitudinal streak; apical borders of the segments in each of the segments 2-8 on each side with a broad oblique lateral stripe from the hinder border to the spiracular line, and a fine abbreviated streak from the hinder angle of the dorsum along the same line, intense purple-madder-brown, or purple-black; ventral surface uniform in colour; roth sternite notched on hind margin between the genital appendages and distinctly separated from the projecting lateral parts on which the forceps are attached, the notch itself being convex.

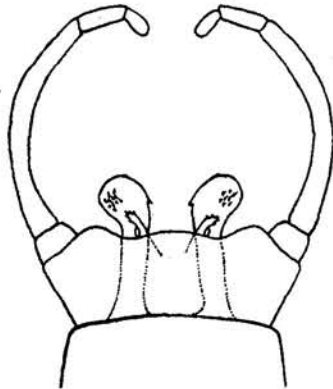


Fig. 10. *Paegoniodes cupulata* Eaton.
Male genitalia ventral view.

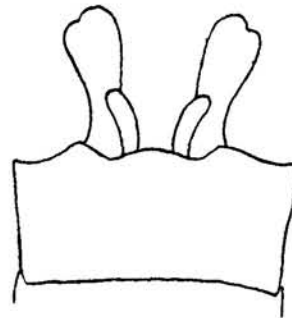


Fig. 11. *Paegoniodes cupulata* Eaton.
♂ genitalia second example.

Tails very long, three times longer than the body and light burnt-umber brown.

Genitalia with forceps four jointed, second joint three times longer than the two terminal joints together. Penis entirely cleft, the lobes being widely separated from each other, cylindrical, broadened into club-form at apex; club portion of pineal lobes armed with a patch of short spines on the proximo-lateral portion and a tooth at the middle of its inner margin; titillators strong and caudo-laterally projected, armed with five or six teeth at the distal end.

♀ Imago (In alcohol).

General coloration very similar to the male. Head light brownish. Eyes small, dark, very widely separated. Pronotum with two patches as in male. Mesopleura with a dark spot in front of the base of forewing as in male. Wings broader than in male. Abdominal coloration is similar to the male. Posterior margin of last sternite deeply notched at the middle.

One male and one female imago collected from Aberdeen, Hong Kong on February 11, 1932.

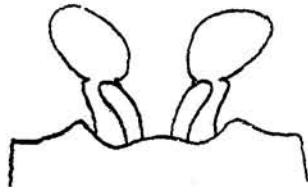


Fig. 12. *Paegoniodes cupulata* Eaton.
♂ genitalia third example.



Fig. 13. *Paegoniodes cupulata* Eaton.
♀ 9th and 10th sternite ventral view.

This species was recorded from Hong Kong by Eaton in "On Recent Ephemeridae or Mayflies." He first described this species from specimens collected in North China in "Trans. Ent. Soc. London" 1871.

This species has also been recorded from Hangchow, Chekiang; Ling Sioh, Sion, Fukien; and Canton, Kwangtung.

