

NOTES ON NORTH AMERICAN EPHEMEROPTERA WITH
DESCRIPTIONS OF NEW SPECIES, II.*

BY J. MCDUNNOUGH,
Ottawa, Ont.
BAETINAE

Leptophlebia adoptiva n. sp.

Male. Head and thorax shiny black with slight brown shading on the pleural sutures. Abdomen dorsally deep black-brown with the anterior portion of segments 4-7 faintly pale, hyaline, and with traces of a broken dark supraspiracular band; ventrally scarcely paler with similar hyaline areas and traces of small black spots in the postero-lateral corners of the middle segments. Legs deep brown. Setae dirty white ringed with dark brown. Wings hyaline with pale brown longitudinal veins; the crossveins pale, except in the costo-apical region. Length of body 7 mm.; of wings 7 mm.

Female. Rather uniformly deep brown, the head considerably tinged with ruddy. Legs deep amber-brown. The excavation of the anal plate is about half the length of the plate, rather broad and well-rounded at the bottom. Wings as in male.

Holotype.—♂, Kazubazua, Que., May 21, (G. H. Fisk); No. 2984 in the Canadian National Collection, Ottawa.

Allotype.—♀, same data.

Paratypes.—2♂, 10♀, same locality and data, collected by Messrs. Brown, Fisk and Adams.

The male genitalia (fig. 4) are closest to those of *mollis* Eaton, from which the species can at once be distinguished by the dark-colored male abdomen; in superficial appearance it resembles *ontario* McD.

Ephemerella flavilinea McD.

The species was described (1926, Can. Ent., lviii, 188) from a single male from Waterton Lakes, Alta. At Rocky Creek in the vicinity of Bozeman, Mont. I took a small series of *Ephemerella* females on August 10th, ovipositing at sundown; these specimens appear to belong to this species as they show the same ruddy-brown abdomen with distinct yellow lateral flange and the pale wing venation, the veins being only faintly tinged with brownish and the crossveins entirely pale. The head, anterior to the ocelli, is ochreous, tinged with ruddy brown between the black antennae; the vertex of the head, behind the ocelli is largely deep wine color with slight ochreous shading; the thorax is olive brown with tinges of ruddy laterally and posteriorly and the pleura are variably shaded with ruddy. In the legs the femora are more tinged with blackish than in my type male which is possibly rather teneral; the coxae, however, are pale yellowish and show a ruddy spot and the bases of the legs are tinged with ruddy.

*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

In Yellowstone Park in the latter part of July I found numbers of subimagos emerging in the late afternoon from the Firehole river and from these I secured one adult male and seven or eight females. According to male genitalia these specimens also belong to *flavilinea* but they are considerably larger and much duller in color, the wine-red shading being obscured by olive-brown; however, they show the ruddy coxal spot in the females and the pale venation, this latter being the easiest character to use in separating from the very similar *coloradensis* which in certain specimens also shows ruddy tinges. This latter species matures apparently nearly a month later than *flavilinea* as I reared a long series from subimagos taken at Waterton Lakes in the last week of August and found plenty of full grown nymphs in all the park streams, as well as at Banff early in September. Mature nymphs from the Firehole river, Yellowstone Park which superficially greatly resemble *coloradensis* nymphs may be those of *flavilinea* but they have as yet not been sufficiently studied for me to comment on them. I offer figures of the male genitalia of both *flavilinea* (fig. 3) and *coloradensis* (fig. 2) and would call attention to the second joint of the forceps which shows distinctive specific characters.

***Ephemerella tibialis* McD.**

A long series of both sexes was secured by me at Banff, Alta. during the first week of September; they were swarming and mating at sundown around the bridge across the Spray river at its junction with the Bow; nymphs were also taken and will be described in another paper. This species extends into Montana as I secured two females and numerous nymphs in the vicinity of Bozeman about the middle of August. I give a much enlarged figure of the male genitalia (fig. 1).

***Ephemerella deficiens* Morg.**

Ephemerella deficiens Morgan, 1911, Ann. Ent. Soc. Am., vi, 111.

Ephemerella atrescens McDunnough, 1925, Can. Ent., lvi, 43; id. 1925, Trans. Roy. Soc. Can., Sec. 5, 212.

In describing *atrescens* as distinct from *deficiens* Morg. I was misled by the statement that the sternum of *deficiens* showed "a broad transverse band of yellow behind the first pair of legs." At Covey Hill, Mr. G. S. Walley secured nymphal material which agreed excellently with the description of this stage of *deficiens* and these Covey Hill nymphs were pretty definitely associated with the adult to which I had applied the name *atrescens*. An examination of further material in alcohol brought to light the fact that the "broad transverse band of yellow" was merely the thinly chitinized and pale intersegmental membrane between the pro- and mesosterna, this being invisible in the dried specimens from which my description of *atrescens* had been drawn up. The synonymy will therefore stand as indicated above.

***Ephemerella heterocaudata* n. sp.**

Male. Eyes (dried) dark reddish brown. Thorax deep olive-brown, the pronotum shaded largely with black; mesonotum with the median and lateral sutures marked with black; anterior to the wing base is a yellowish patch, containing a black line which descends down to the coxa of the foreleg; mesosternum largely black-brown with olive-brown shading around the bases of the legs. Abdomen dorsally olive-brown with broad black bands on the anterior half of the first four segments, these bands on the posterior segments becoming reduced

to large semicircular dorsal patches; a series of lateral black patches, distinct on the rear segments but becoming fused with the dorsal bands on the anterior segments so that these segments appear largely black. Ventrally pale olive with a irregular, black, medio-ventral band and similar lateral ones, cut by the pale intersegmental incisions. Setae smoky, the median one being over twice as long as the lateral ones. Forceps smoky, with short third joint; penes fused to form a narrow upcurved rod. Legs deep olive, the fore femur and tibia tinged with blackish; fore tarsus and tibia about equal in length and both distinctly longer than the femur. Wings hyaline with slightly smoky veins and pale crossveins. Length of body 6.5 mm.; of wings 7 mm.

Female. Similar in maculation to the male but paler in color of thorax; head light ochreous, with three blackish dots behind the ocelli and a median black patch with two lateral dots on the vertex.

Holotype.—♂, Upper Geyser Basin, Yellowstone Park, Wyo., (bred from subimago), July 29, (J. McDunnough); No. 2993 in the Canadian National Collection, Ottawa.

Allotype.—♀, Upper Gallatin Canyon, Mont., July 20, (J. McDunnough).

The full-grown nymph, which I took in the Firehole river, Yellowstone Park, is dark brownish with the same black abdominal markings as in the adult and with a double row of strong black dorsal tubercles on segments 2-9, longest and most widely separated from each other on the gill-bearing segments and minutely spined and white-tipped. Gills on segments 3-7, blackish and slightly overlapping. Setae blackish-brown, the median one nearly three times the length of the outer ones; the posterior margin of each segment with a whorl of weak spines.

A more detailed description of this nymph will be published in another paper dealing with the early stages of a number of species belonging to this genus.

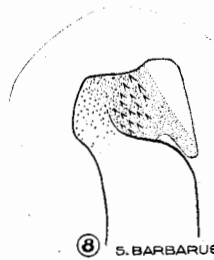
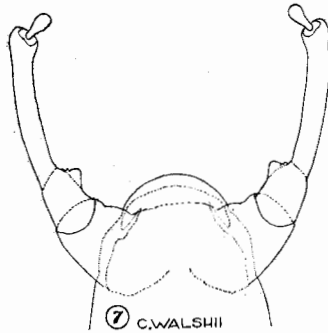
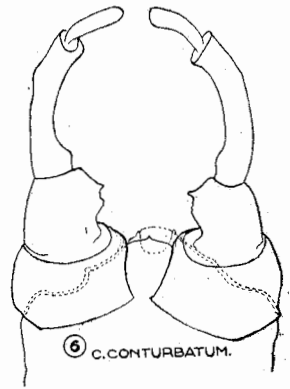
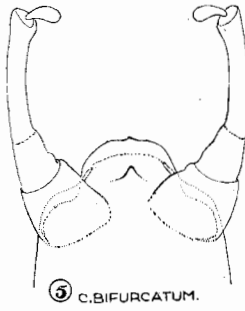
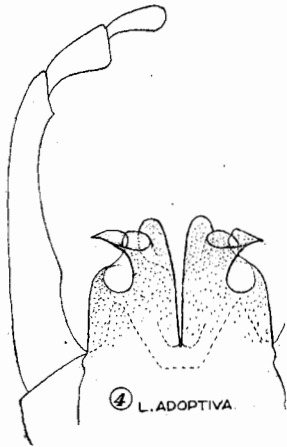
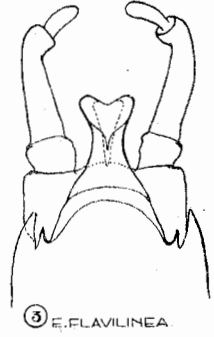
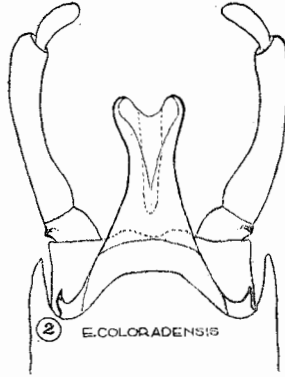
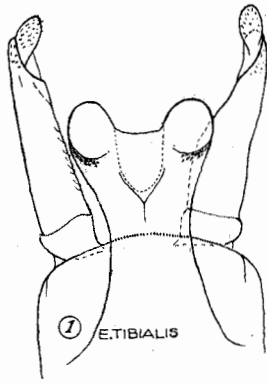
***Centroptilum bifurcatum* McD.**

This species was described (1924, Can. Ent., lvi, 96) from a single male from Waterton Lakes, Alta. and attention was directed in the name to the forking of vein 2 of the hindwings near its apex. Further specimens of the species were collected by me during the latter half of August, 1928, both at Waterton Lakes and at Lethbridge, Alta. I find from an examination of these that the forking of the above-mentioned vein is not a constant feature and should not be used as a specific character, none of my additional Waterton specimens and only two of my Lethbridge ones possessing it.

I give a figure of the male genitalia (fig. 5), showing a small pointed tubercle between the basal joints of the forceps. This allies the species with the Eastern *semirufum* McD. and with the European *luteolum* Mull. This latter species has been listed from North America on the strength of Eaton's record (Mon. Eph. 175/6) from the Hudson Bay region; I think it probable, however, that this record was based on a specimen of *semirufum* which is very similar in maculation but possesses considerably broader hindwings; the name *luteolum* should therefore be dropped from our lists.

***Centroptilum conturbatum* n. sp.**

Male. Eyes (dried) dark black-brown. Head and thorax shiny black, the pleural sutures brownish. Abdomen dorsally with segments 2-6 and part of



NORTH AMERICAN EPHEMEROPTERA

7 white, hyaline, with occasional faint dusky shading on posterior portion of middle segments; segments 8-10 and at times part of 7, chocolate brown; ventrally white with segments 1-6 hyaline and 7-10 opaque. Legs and setae white, immaculate. Wings hyaline with colorless veins and crossveins. Male forceps (fig. 6) distinguished by the tubercular nature of the inner margin of the first joint and the long third joint. Length of body 5 mm.; of wings 5 mm.

Female. Head ruddy brown, tinged with yellowish at vertex next the eyes. Thorax brown with slight ruddy tinge. Abdomen ruddy brown dorsally, white ventrally. Legs and setae pale, the former at times slightly tinged with brownish.

Holotype.—♂, Cameron Lake, Waterton Park, Alta., August 20, (J. McDunnough); No. 2985 in the Canadian National Collection, Ottawa.

Allotype.—♀, same data.

Paratype.—6♂, 5♀, same data.

This small species, readily recognizable by its dark thorax and white anterior portion of abdomen, was captured swarming over a small drainage creek in the late afternoon on the borders of Cameron Lake at an altitude of about 6000 ft.; the type of male genitalia would appear to ally it with *album* McD.

Centroptilum walshi n. sp.

Male. Eyes, (alive), pale yellow; (dried), bright reddish. Pro and mesonotum light ochreous brown, shading on the posterior one-third of mesonotum into creamy; metanotum and entire sternum creamy. Abdomen with segments 2-6 hyaline white, with broken black spiracular line; segments 7-10 opaque, creamy, shaded dorsally with light purplish brown (the purplish color may be due to discoloration). Legs and setae whitish. Wings hyaline with pale venation.

Female. Light ochreous, the abdomen dorsally tinged faintly with a ruddy shade and considerably blotched (as is frequently the case in this genus) with black. Length of body 6 mm.; of wings 6 mm.

Holotype.—♂, Clinton, Ia., July 23, (G. S. Walley); No. 2986 in the Canadian National Collection, Ottawa.

Allotype.—♀, Homer Park, Ill., June 30, (T. H. Frison).

Paratypes.—1♂, Oakwood, Ill., June 8, (Frison and Auden); 1♂, Homer Park, Ill., June 30, (T. H. Frison); 1♀, Oakwood, Ill., June 9, (Frison and Auden).

The species is evidently allied to *album* McD. but the male forceps (fig. 7), show a much stronger tubercle on the inner side of the basal joint apically. The size of the species is considerably greater than that of *album* and the pale metanotum and entire sternum, as compared with the wood-brown color of these parts in *album* is a further character which will at once distinguish it in the male sex.

A female specimen of this species, originally sent by Walsh to Hagen, is in the Museum of Comparative Zoology at Cambridge, Mass., labelled *mendax* Walsh. I do not think this specimen can be regarded as representing a true type as Walsh originally placed *mendax* in a section containing species with only two wings and drew up his description largely from a single male, as follows: "♂, Pale ferruginous. Seta of antennae fuscous, pale at tip. Sternum and venter pale greenish hyaline, the latter opaque at tip. Legs pale, tips of tarsi cloudy.

Wings hyaline, veins moderate, cross-veins fine, all hyaline; isolated veinlets all single."

Judging by this description one would expect *mendax* to be a *Cloeon* with the dorsum of the abdomen entirely pale ferruginous in the male sex and, as I have several specimens of a *Cloeon* from southern Ontario before me which fit in, at least in this respect, with Walsh's description, I am holding the name *mendax* to these specimens, until topotypical material can be secured.

***Ameletus cooki* n. sp.**

Male. Head, prothorax, postero-lateral portions of mesothorax and meta-thorax blackish; mesothorax dorsally brown shaded with orange-brown anterior to wing base and on and before the scutellum; pleura and sternum largely blackish with orange shading at base of legs, especially of midlegs. Abdomen dorsally orange-brown, with slight duller brown suffusion along the lateral margin which tends to form obscure semitriangular patches in the postero-lateral corners and sometimes extends narrowly along the posterior margin of segment; tracheae forming a black network on the anterior segments. Beneath, segments 2-6 dull hyaline whitish with traces of orange in the median line; segments 7 and 8 opaque, bright ochreous; segment 9 largely black-brown with ochreous tinges; forceps-base ochreous; setae dirty whitish with dark intersegmental rings. Prolegs blackish brown; mid and hind legs lighter brown with their basal joints tinged with orange-brown. Wings hyaline, the longitudinal veins light amber, the crossveins pale and indistinct except in the costo-apical area where they are tinged with smoky. Length of body 7 mm.; of forewings 8 mm.

Holotype.—♂, Brackett Creek, near Bozeman, Mont., Aug. 7, (J. McDunnough); No. 3037 in the Canadian National Collection, Ottawa.

Allied to *dissitus* Eaton but smaller and more slender. In the male genitalia (fig. 10) the apical portion of the penes is neither so thick nor so strongly incurved and the stimuli, (situated between the penes and the basal plate of the forceps) are not nearly so long. I take pleasure in naming the species after Dr. W. C. Cook through whose instrumentality I was enabled to visit so many of the collecting grounds around Bozeman.

***Ameletus similior* McD.**

This species was described from females in alcohol from Jasper Park, Alta. In late August, 1928, I found several subimagos of an *Ameletus* species sitting in the early morning on the rocks at the edge of Cameron Creek, Waterton Lakes Park, Alta, and from these I obtained in due course one perfect female adult and one male that was only partially able to shed its skin. These specimens proved to be *similior* McD., showing the characteristic brown medio-ventral blotches. In the male, heretofore unknown, the thorax is shiny black-brown and the abdomen as far as can be judged, deep brown, shaded with lighter brown, much as in *velox* Dodds; I figure the male genitalia (fig. 12) which are also quite similar to those of *velox* but with the tubercles between the forceps-bases less developed and with the penes wider apart and less incurved apically.

***Siphonurus barbaroides* n. sp.**

Male. Very similar to the eastern *S. barbarus* McD. and still more so to the western *S. columbianus* McD. but differing in the finer details of the

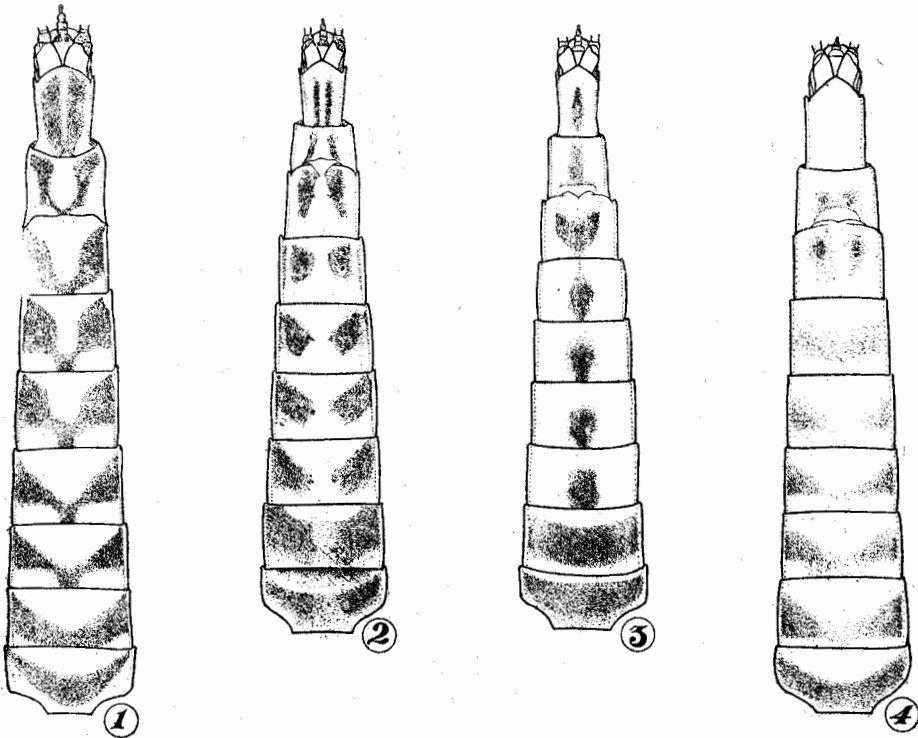
genital structure; as in *columbianus* (vide Can. Ent., 1925, Pl. V, fig. 14) the penes are drawn out laterally into short, blunt points (fig. 9) which at once distinguishes them from those of *barbarus* (fig. 8); the spinulation is finer and more extended than in *columbianus*.

The abdominal pattern is essentially the same as in *barbarus*; in my type series the thorax and abdomen dorsally are deeper in color than are the types of *barbarus*, being pitch black instead of pitch brown, but this may merely be due to the freshness of the specimens. The size is about that of *barbarus* and considerably less than that of *columbianus* and the wings show none of the brownish tinges in the pterostigmatal region found in this latter species. Length of body 10-11 mm.; of forewings 10 mm.

Holotype.—♂, Knowlton, Que., June 14, (W. J. Brown); No. 2997 in the Canadian National Collection, Ottawa.

Allotype.—♀, same data, captured in copulation with the holotype ♂.

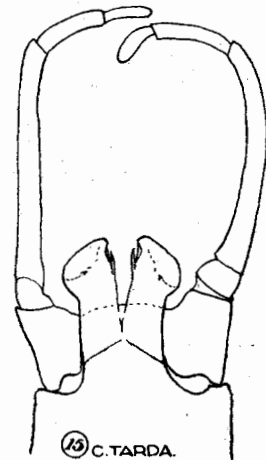
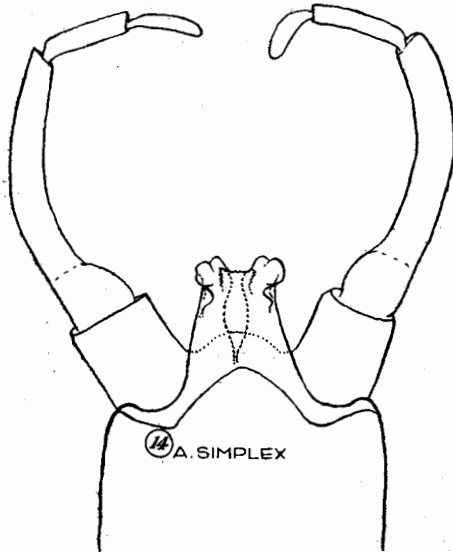
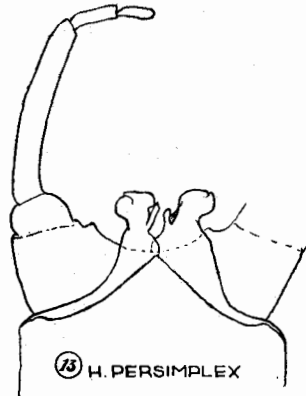
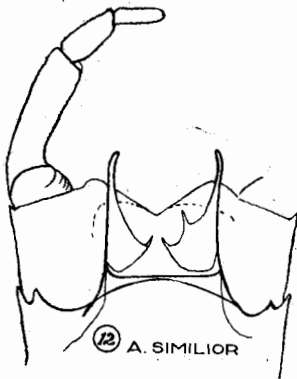
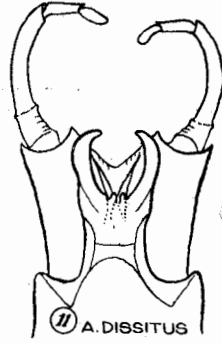
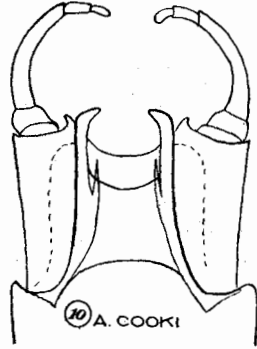
Paratypes.—14 ♂, 8 ♀, same locality, June 13-14, (Brown, Fisk, Adams).



Ventral abdominal maculation of (1). *Siphonurus quebecensis* Prov. (2). *S. barbaroides* McD. (3). *S. rapidus* McD. (4). *S. berenice* McD.

In the Knowlton region three other species of *Siphonurus* occur, viz.: *quebecensis* Prov. (*triangularis* Clem.), *rapidus* McD. and *berenice* McD. (*novangliae* McD.); from fresh alcohol material of the above four species Mr. G. S. Walley

NORTH AMERICAN EPHEMEROPTERA



has prepared the present drawing, depicting the ventral abdominal maculation and the female genital plate which shows good characters for separation and is very useful in determining specimens which have been in alcohol for a considerable length of time and in which in consequence the color pattern has been more or less lost. The holotype female of *triangularis* Clem. is such a specimen, for example, and the synonymy of this species with *quebecensis* Prov. might have remained doubtful if it had not been possible to use this character.

HEPTAGENIINAE

***Epeorus albertae* McD.**

Iron albertae McDunnough, 1924, Can. Ent., lvi, 129.

In describing this species as an *Iron* I find I overlooked the similarity of the claws on the male fore tarsus, both being blunt, a feature which is characteristic of the genus *Epeorus*.

In 1928 I took specimens of *albertae* in both the Yellowstone Park, Wyo. and in the vicinity of Bozeman, Mont. and while not actually breeding them through was pretty definitely able to associate the adults with a typical *Epeorus* nymph found at the same time in the adjacent streams; it is evidently this same nymph which has been figured by Needham in Bulletin 201, Utah Agricultural Experiment Station, fig. 18, 1927.

Comparisons between the western *albertae* nymphs and the eastern *humeralis* ones showed that a great similarity exists between the two in all structural characters; in the adult males of *humeralis*, however, the fore tarsal claws are dissimilar, one being blunt and the other sharp: unless, therefore one is willing to split still further it would seem that this difference in the male fore tarsal claws cannot be used as a generic character. As far as my present knowledge of the nymphs and adults goes I believe that *albertae* McD., *humeralis* Morg., *suffusus* McD. and *punctatus* McD. are all best placed in *Epeorus*.

As to whether *Epeorus* and *Iron* should remain separate and if so, on what characters, is a matter which I hope in a later paper to discuss at more length. I must, however, emphatically disagree with Lestage's classification (1917, Ann. Biol. Lac., viii, 238) which actually places *Epeorus* and *Iron* in different subfamilies on the strength of characters drawn from the first pair of nymphal gills; all other structural details of the nymph (setae, mouth-parts, etc.) and of the adult (length of first tarsal joint in male, genitalia, etc.) show such a marked relationship between these two genera in contradistinction to the other genera of the Heptageniinae, that it would certainly seem as if too great emphasis had been laid by Lestage on the variations in gill-shape; such fragile body-appendages as Ephemeropterid gills must of necessity react very quickly to environmental conditions and while doubtless offering good specific and even possibly generic characters cannot with safety be used as a sole means of separating subfamilies, most especially so in cases where other more stable structural details are in direct contradiction to such a classification.

***Iron deceptiva* McD.**

When describing this species as *Cinygma deceptiva* (1924, Can. Ent., lvi, 132) I called attention to the fact that Dodds (1923, Trans. Am. Ent. Soc., xlix, 107, Pl. ix, figs. 19-22) had confused two species under the name *longimanus*

Eaton. It now turns out that the nymph (figs. 19, 20) which he attributed to *longimanus* is really that of *deceptiva*, the true *longimanus* nymph being figured by the same author as *Iron* nymph No. 1 (figs. 23, 24).

In the latter part of August, 1928, I took a number of full grown nymphs of *deceptiva* in Cameron Creek, Waterton Park, Alta. and at the same time captured the subimagos as they were emerging from the stream, securing a good series of adult specimens in due course. Odd nymphs and subimagos of *longimanus* were also taken but this species at the time was practically over, its main emergence occurring almost a month earlier than that of *deceptiva*.

As pointed out by Dodds, *deceptiva* nymph may be distinguished from that of *longimanus* by the less developed first pair of gills and the lack of a round dark spot, situated about the middle of each femur, which is found both in the nymph and adult of *longimanus*. Needham has recently (1927, Bull. 201, Utah Agricultural Experiment Station, p. 15) given a correct figure of *longimanus* nymph but has failed to correct Dodds' error, a matter of some importance since *longimanus* is the genotype of *Iron*.

***Cinygma tarda* n. sp.**

Male. Eyes almost contiguous, dull greenish (alive). Head light wood-brown, bases of antennae ochreous, slight purplish or ruddy tinges at times next the eyes. Thorax light brown, shaded with yellowish ochre on the mesothorax, anterior to scutellum, and on the anterior portion of metathorax; pleura shaded with ochreous. Abdomen dorsally light brown, the anterior one-half to two-thirds of segments 3-7 pale hyaline, the brown color concentrated more particularly in the postero-lateral corners; segments 8-10 rather brighter brown than the preceding segments with ochreous tinges laterally; ventrally largely pale hyaline with brown medioventral oval patches and segments 8 and 9 opaque, deep ochreous. Setae dirty white. Legs pale brown. Wings hyaline, the crossveins in the basal half pale, indistinct, darker and better defined in the apical area, especially the costal ones. Length of body 7 mm.; of forewing 7.5 mm.

Female. Much as in male but with darker abdomen; head dull clay brown variegated in the ocellar region with brighter brown.

Holotype.—♂, Banff., Alta., August 29, (J. McDunnough); No. 2988 in the Canadian National Collection, Ottawa.

Allotype.—♀, same data.

Paratypes.—40 ♂, 1 ♀, same data.

The species belongs in the *mimus-ramaleyi* group but differs in male genitalia structure (fig. 15). It was very common, swarming at dusk along the banks of the Bow river near the railway station. I also took long series of the same species in the Upper Gallatin Canyon, Montana, earlier in August; it apparently frequents all the smaller streams of this region along with *ramaleyi*; the Montana specimens are rather brighter in coloration than the Alberta ones.

***Anepeorus simplex* Walsh.**

In working over a collection of Ephemeroptera made by Mr. G. S. Walley in the vicinity of Davenport, Ia., a locality directly across the Mississippi river from Rock Island, Ill., where Walsh's material was collected, I came across a single male Heptageniid which I believe to be the true *simplex* Walsh. In describing the species (as *Heptagenia simplex*) Walsh calls particular attention to the short-

ness of the fore tarsus in the male "which never exceeds three-fourths the length of the tibia." My specimen, besides agreeing excellently with the rest of the description, shows just this peculiarity, the fore tarsus being scarcely more than one-half the length of the tibia, the individual joints being short and more or less subequal. The species very evidently falls into the genus *Anepeorus*, a reference which is borne out by the male genitalia, herewith figured (fig. 14); I would call particular attention to the strong excavation at the base of the forceps, a feature apparently only found in this genus.

I have stressed the length of the fore tarsus in my above notes as it seems probable that Walsh confused two very similarly colored species under the name *simplex*. The specimens sent by him to Hagen under this name and now in the Museum of Comparative Zoology at Cambridge, Mass. do not agree with his original diagnosis in respect to the male fore tarsus which in the Cambridge specimen is actually longer than the tibia and has joint 1 about one-half the length of joint 2, which is considerably longer than joint 3. I believe that these specimens cannot be considered to represent the true *simplex*.

Mr. Walley fortunately secured a small series of this second species which is quite distinct on structural and genitalic characters, although (as I have already noted) very similarly colored. As it appears to be unnamed I describe it as follows:

Heptagenia persimplex n. sp.

Male. Eyes wide apart. Vertex of head between the eyes bright yellow, shading into pale creamy below the antennae. Thorax creamy with yellowish tinge at bases of fore legs. Abdomen pale creamy, hyaline, the last three segments opaque. Setae whitish. Legs pale yellowish, shading into dirty whitish on the tibiae and tarsi; fore tibia tipped with smoky; whole fore-tarsus distinctly longer than the tibia; normally joint 1 is about one-third the length of joint 2, which is subequal to 3 and twice as long as 4, joint 5 being about same length as 1; (there appears, however, to be considerable variation in the relative lengths of the tarsal joints and the two legs of the type male are not even similar). Wings hyaline with dark crossveins, those of the costo-apical section being somewhat thicker than the others but not nearly so noticeable in this respect as are those of *simplex*; the costal crossveins are also more numerous between the base of wing and the bulla (5-6) than in *simplex* (3-4) and in consequence the distance between the basal crossvein and the next following is not nearly so long. Length of body 7 mm.; of forewings 7.5 mm.

Female. Very similar to the male in coloration with abdomen slightly more yellowish, due to the underlying egg masses.

Holotype.—♂, Pleasant Valley (near Davenport), Ia., June 22, (G. S. Walley); No. 2987 in the Canadian National Collection, Ottawa.

Allotype.—♀, Clinton, Ia., June 23, (G. S. Walley).

Paratypes.—1 ♂, ♀, Ames, Ia., July 22, (G. S. Walley); 1 ♀, Clinton, Ia., June 23 (G. S. Walley).

The species is placed in *Heptagenia* on account of the type of male genitalia (fig. 13); on length of fore tarsal joints alone it could just as well be included in *Ecdyonurus* as I use it at present.

Heptagenia cruentata Walsh.

Heptagenia cruentata Walsh, 1863, Proc. Ent. Soc. Phil., ii, 205.

Heptagenia reversalis McDunnough, 1924, Can. Ent., lvi, 118.

Material brought back by Mr. G. S. Walley from Davenport, Ia. proves conclusively that *reversalis* McD. is a synonym of *cruentata*. The Manitoba specimens on which I based the name *reversalis* show little of the ruddy coloration of the tibiae mentioned by Walsh as characteristic of *cruentata*, but in all other respects, including male genitalia, are similar; the amount of ruddy suffusion on the tibiae and on the head of the female is probably variable in individuals and depends partially on the age of the specimens.

Rhithrogena robusta Dodds.

Rhithrogena robusta Dodds, 1923, Trans. Am. Ent. Soc., xlix, 103.

I secured a male specimen of this species at Lake Minnewanka, Banff, Alta., Sept. 1, 1928. It is a new record for our Canadian fauna.

It might be noted that Dodds' figure of the genitalia (*op. cit.* fig. 12) represents the penes in a rather distorted and unnatural condition, the apices being normally wide apart and not curved in at the tip; the peculiar truncate nature of the extreme apex and the arrangement of spines leaves, however, little doubt as to the correct identity of the specimen before me.