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PAPERS FROM THE HARRIMAN ALASKA  
EXPEDITION.

XXII.

ENTOMOLOGICAL RESULTS (14):

THE ODONATA.

BY ROLLA P. CURRIE.

THE Odonata collected by Professor Trevor Kincaid during the Harriman Expedition comprise eight species, represented by eighty-nine specimens. None of these appear to be new; yet the collection is interesting in that it serves to extend the known range of certain forms and to add to our knowledge of the Odonata fauna of Alaska.

No paper on the dragonflies of this territory has been hitherto published; and only three species, additional to the eight collected by the Harriman Expedition, have been previously reported from Alaska. These are *Enallagma annexum* (Hagen), *Æschna sitchensis* (Hagen) and *Æschna clepsydra* (Say), thus making eleven species.

Family *AGRIONIDÆ*.

Subfamily *AGRIONINÆ*.

*LESTES* species (?).

One female belonging to some species of this genus was taken at Fox Point, July 26-28. The species of *Lestes* are separated, mainly, by the characters of the male abdominal appendages, and females taken

singly cannot always be determined with certainty. The following description of the specimen is given for future reference :

Length 34 mm.; abdomen 26; hind wing 20.7; pterostigma 1.7. Blackish-brown. The following parts are pale yellowish, viz: under parts of head, lips, genæ (except a few spots), rhinarium, tips of two basal joints of antennæ, mid-dorsal thoracic carina, humeral stripe (which is wider below), sides of thorax inferiorly (except 2d lateral suture above and some spots near coxæ), and venter of thorax (except middle line which is wider behind). Abdomen yellowish, marked above with dark metallic green as follows: on segment 1, a narrow longitudinal median line, widening behind, and divided into two large divaricate spots; on 2, a mid-dorsal band, divided by a median line which is widened in front, the band widened and orbicular posteriorly (enclosing a pale spot on either side) and connected with the dark apical ring by a short stalk; 3-5 similar, but the dividing line uniformly narrow, the band forming a point anteriorly and barely reaching the base; 6 without posterior pale spots, the bands otherwise as in 3-5; on 7 and 8 the band is wider, not separated, not stalked behind; on 9 and 10 they narrow posteriorly; the bands on 6-10 are blackish-brown, hardly metallic. Sides of abdomen with indistinct dark markings, these principally apical. Venter dark. Tenth segment with its apical margin triangularly notched above, scarcely elevated. Anal appendages two-thirds the length of 10, conical, pale, black on apical half. Genital valves pale, their edges dark apically and minutely denticulate; valvular processes dark, about as long as appendages. Legs pale, the femora without, tibiæ within, and the tarsi, black. Pterostigma brown.

#### ENALLAGMA CALVERTI Morse.

*Enallagma calverti* MORSE, Psyche, VII, No. 227, p. 208, March, 1895. (Male described.)—WILLIAMSON, Ent. News, XI, No. 5, p. 455, text fig. 6, Pl. IX, figs. 5, 9 and 10, May, 1900. (Female described and male appendages figured.)

Kukak Bay, June 29-July 5; Cook Inlet, July 21; Kadiak, July 20; Juneau, July 25: thirty-three males and nineteen females.

These specimens average larger than those I have seen from the United States: Length, ♂ 30.7 mm.-35 mm., ♀ 31.5-35.6; abdomen ♂ 24-27.3, ♀ 24.8-27.3; hind wing ♂ 18.7-21.8, ♀ 20-22.2. In the markings of head, thorax, and abdomen they agree fairly well with *E. cyathigerum* (Charpentier) as described by Selys<sup>1</sup> and exhibit similar variations in the shape and extent of the dorsal abdominal markings, as follows:

<sup>1</sup> Bull. Acad. Belg. (2), XL1, p. 505, 1876.

*Males:* On segment 1, basal spot usually quadrate, narrowed and more or less rounded on sides behind, its hind margin sometimes excised but usually straight or nearly so and generally with a small median triangular projection; on segment 2, transverse posterior spot: *in front*, convex and more or less rounded, sometimes pointed medially; *behind*, convex, or straight, or sinuated and pointed; sometimes united with apical margin by a short stalk which varies greatly in length, width and shape; sometimes connected with an inferior lateral stripe present in some specimens; on segments 3 to 6, spots more or less pointed anteriorly, widened and usually rounded posteriorly, broadly united with apical ring; spot on segment 3 covering posterior  $\frac{1}{3}$  to  $\frac{1}{2}$ ; on 4 covering  $\frac{1}{3}$  to  $\frac{3}{4}$ ; on 5,  $\frac{2}{5}$  to  $\frac{4}{5}$ ; on 6,  $\frac{2}{3}$  to  $\frac{5}{6}$ . The spot on segment 7 covers apical  $\frac{5}{6}$  or more. Dorsum of segment 10 entirely black. Other irregularly placed spots are sometimes present.

*Females:* Spot on segment 1 similar to that of the males; on 2 quite variable in shape and size, the narrowed portion not always reaching the anterior margin, sometimes bifid; posterior widened portion rounded or angulate laterally; connected directly, or by a short wide stalk, with the apical ring. Spots on segments 3 to 7 similar to those on male but longer, covering apical  $\frac{3}{4}$  or more on all of them. Spot on segment 8 exceedingly variable in shape, broadly or narrowly pointed anteriorly, widened behind, connected with posterior margin directly or by a stalk, in one specimen *not* reaching posterior margin; widened portion sometimes connected with a lateral spot or stripe. Spots on segments 9 and 10 covering entire dorsum, narrowing behind.

The postocular spots (in both sexes) are large and in most specimens denticulate behind as in *E. annexum* (Hagen), the denticulations sometimes connected with the blue of rear of head. The male appendages agree well with those of *calverti* as described by Morse and figured by Williamson.

These variations seem to be individual rather than geographical, although the males from Juneau all have very long dorsal spots on the abdominal segments.

This species, described from Nevada, has also been reported from Massachusetts, Maine, Wyoming and Washington.

Family *ÆSCHNIDÆ*.

Subfamily *ÆSCHNINÆ*.

*ÆSCHNA JUNCEA* (Linn.).

*Libellula juncea* LINN., Syst. Nat., I, p. 544, n. 10, 1758.  
*Æschna juncea* KIRBY, Synonymic Cat., p. 87, 1890.

One male from Kadiak, July 20; one female, Unga Island, July 17, collected by Prof. W. E. Ritter. The National Museum also contains one male and three females from Nushagak River, Alaska, collected by McKay (No. 97).

This species occurs throughout the northern portions of Europe, Asia, and North America.

The pterostigma is brown, paler in the female specimen.

### ÆSCHNA CONSTRICTA (Say).

*Æshna constricta* SAY, Journ. Ac. Phila., VIII, p. 11, 1839.

*Æschna constricta* KIRBY, Synonymic Cat., p. 88, 1890.—CALVERT, Trans. Am. Ent. Soc., XX, p. 249, 1893.—KELLICOTT, Bull. Ohio State Univ. (4), No. 5, p. 83, March, 1899.—WILLIAMSON, 24th Ann. Rep. Dept. Geol. and Natural Resources, Ind., 1889, p. 305, Pl. IV, fig. 10, Pl. VII, figs. 14 & 15, 1900.

Two males, Kadiak, July 20, and Cook Inlet, July 21; two females, Kadiak, July 20.

This is a common species in the United States and has also been recorded from British Columbia, Kamchatka, and Siberia.

The pterostigma in the males is black; in the females yellowish-brown.

Family *LIBELLULIDÆ*.

Subfamily *CORDULINÆ*.

### CORDULIA SHURTLEFFI Scudder.

*Cordulia shurtleffi* SCUDDER, Proc. Bost. Soc. Nat. Hist., x, p. 217, 1866.—SELYS, Bull. Acad. Belg. (2), XXXI, p. 265, 1871.—KIRBY, Synonymic Cat., p. 52, 1890.

One female, Kukak Bay, June 29–July 5; one female, Fox Point, July 26. A female, labeled 'Alaska' and determined as this species, by Dr. P. P. Calvert, is in the collection of the U. S. National Museum; it was received from the U. S. Coast and Geodetic Survey, through Professor T. C. Mendenhall, Superintendent.

This species has also been reported from Nova Scotia, Great Slave Lake (Fort Resolution), New Hampshire, Maine and Pennsylvania.<sup>1</sup>

The wings are subfumose in the specimen from Fox Point.

### SOMATOCHLORA ALBICINCTA (Burmeister).

*Epophthalmia albicincta* BURMEISTER, Handb. Ent., II, p. 847, 1839.

*Cordulia albicincta* HAGEN, Syn. Neur. N. Am., p. 138, 1861.

*Cordulia eremita* SCUDDER, Proc. Bost. Soc. Nat. Hist., x, p. 215, 1866.—SCUDDER, Proc. Bost. Soc. Nat. Hist., XI, p. 300, 1867.

*Epitheca albicincta* SELYS, Bull. Acad. Belg. (2), XXXI, p. 303, 1871.

*Somatochlora albicincta* KIRBY, Synonymic Cat., p. 49, 1890.

<sup>1</sup>Ent. News, IX, p. 184, September, 1898.

Eight males and one female, Kadiak, July 20; one female (L. J. Cole, collector), Kadiak, July 4; one male and two females, Kukak Bay, June 29–July 5.

Length, ♂ 47 mm.–49 mm., ♀ 49–50; abdomen with appendages, ♂ 34–36.8, ♀ 35–36.4; hind wing, ♂ 29.4–31.6, ♀ 31–32.2; pterostigma, ♂ ♀ 2.5–3.5; appendages, ♂ 3, ♀ 3.4. The wings in the males are almost clear hyaline; in the females they vary from a clear hyaline to a distinct subfumose. Triangles on anterior wings free or crossed by one nervule; on posterior wings, free (crossed by one nervule in one male and one female); sometimes crossed on right wing, free on left and vice versa. The luteous lateral thoracic spots are sometimes very small or entirely absent.

This species was described from Labrador by Burmeister, while Scudder's *eremita* was from Hermit Lake, in the White Mountains of New Hampshire. Kirby, in his synonymic catalogue, gives it also as occurring in Alaska.

#### Subfamily LIBELLULINÆ.

#### LEPTETRUM QUADRIMACULATUM (Linn.)

*Libellula quadrimaculata* LINN., Syst. Nat., I, p. 543, 1758.—CALVERT, Trans. Am. Ent. Soc., XX, p. 258, 1893.—KELLCOTT, Bull. Ohio State Univ. (4), No. 5, p. 100, March, 1899.—WILLIAMSON, 24th Ann. Rep. Dept. Geol. and Natural Resources, Ind., 1899, p. 331, 1900.

*Leptetrum quadrimaculatum* KIRBY, Synonymic Cat., p. 27, 1890.

Two males from Fox Point, July 26–28. This species is found throughout the Northern Hemisphere.

The wings in these two specimens are not clear hyaline, where unmarked, but have a subfumose tinge.

#### LEUCORHINIA HUDSONICA (Selys).

*Libellula hudsonica* SELYS, Revue des Odonates ou Libellules d'Europe, Mem. Soc. Roy. Sci. Liège, VI, p. 53, 1850.

*Diplax hudsonica* HAGEN, Syn. Neur. N. Am., p. 180, 1861.

*Leucorhinia hudsonica* HAGEN, Proc. Bost. Soc. Nat. Hist., XVIII, p. 78, 1875.—KIRBY, Synonymic Cat., p. 12, 1890.—HAGEN, Trans. Am. Ent. Soc., XVII, p. 233, Pl. X, figs. 13 and 18 *a* & *b*, 1890.

*Leucorhinia hageni* CALVERT, Trans. Am. Ent. Soc., XVII, p. 36, Pl. V, figs. 2–4, 1890.

Kukak Bay, June 29–July 5, two males; Virgin Bay, Prince William Sound, June 25–26, six males and five females.

These specimens agree very well with Calvert's description (*L. hageni*). The color of thoracic dorsum and sides varies in both sexes from yellow to reddish-brown, this variation being, probably, partly

due to difference in age; the majority of the males are reddish-brown and of the females, yellow. There is considerable variation, also, in the extent of the basal spots of anterior and posterior wings; in two of the females the triangular spot of hind wings extends to the inner angle of the triangle; in two other specimens, also females, the first (anterior) spot of front wings *does not* reach the first antecubital; in the males the first (anterior) spot of hind wings reaches not more than half way to the first antecubital, except in two specimens and in neither of these does it quite reach it. The dorsal abdominal spots are pointed behind, not always reaching the hind margin of the segments. Several specimens have a small basal spot on segment 8. The venation is quite irregular; 6-8 antecubitals in front wings of males (regularly 7), 7 in females; 6-9 postcubitals. On posterior wings, 5-6 antecubitals, 6-10 postcubitals. Two or three rows of discoidal areolets on front wings. Discoidal triangles of both wings free or crossed by one vein. Internal triangles free or composed of two or three cells.

This species has been recorded from Lake Winnipeg, Saskatchewan River and Fort Resolution, British America, from Massachusetts, and from Pictou, Nova Scotia.

The following are notes on four species of dragon flies previously reported from Alaska but of which the Harriman Expedition collected no specimens.

#### ENALLAGMA ANNEXUM (Hagen).

*Agrion annexum* HAGEN, Syn. Neur. N. Am., p. 87, 1861.

*Enallagma cyathigerum* race *annexum* SELYS, Bull. Acad. Belg. (2), xli, p. 506, 1876.—WADSWORTH, Ent. News, III, No. 1, p. 8, January, 1892.

*Enallagma annexum* WILLIAMSON, Ent. News, XI, No. 5, p. 454, text fig. a, Pl. IX, figs. 3 and 7, May, 1900.

*Distribution*.—Sitka, Alaska (Hagen); Red River and Saskatchewan, British America; (?) Irkutsk, northern Asia; Vancouver Island; Hermit Lake, White Mountains, New Hampshire; Massachusetts (Selys); Manchester, Maine (Miss Wadsworth); Wyoming, California, and Washington (Williamson).

#### ÆSCHNA SITCHENSIS Hagen.

*Æschna sitchensis* HAGEN, Syn. Neur. N. Am., p. 119, 1861.—HAGEN, Proc. Bost. Soc. Nat. Hist., xviii, p. 33, 1875.—KIRBY, Synonymic Cat., p. 87, 1890.—HAGEN, Psyche, v, No. 170, p. 353, June, 1890.

*Distribution*.—Described from Sitka, Alaska, and afterwards reported from Saskatchewan, British America.

## ÆSCHNA CLEPSYDRA (Say).

*Æshna clepsydra* SAY, Journ. Ac. Phila., VIII, p. 12, 1839.

*Æshna clepsydra* HAGEN, Syn. Neur. N. Am., p. 122, 1861.—KIRBY, Synonymic Cat., p. 89, 1890.—CALVERT, Trans. Am. Ent. Soc., XX, p. 248, 1893.—KELLICOTT, Bull. Ohio State Univ. (4), No. 5, p. 84, March, 1899.—WILLIAMSON, 24th Ann. Rep. Dept. Geol. and Natural Resources, Ind., 1899, p. 305, Pl. VII, figs. 12 and 13, 1900.

*Æshna eremita* SCUDDER, Proc. Bost. Soc. Nat. Hist., x, p. 213, 1866.

*Distribution.*—Occurs commonly throughout eastern North America; has also been reported from Dakota and the Saskatchewan in the Great Plains region; and from Irkutsk and the Wilui River, Siberia, and from Finland.

## ANAX JUNIUS (Drury).

*Libellula junia* DRURY, Ill. Nat. Hist., 1, pl. 47, fig. 5; App. Vol. II, 1773.

*Æshna junia* WESTWOOD, Ill., Exot. Ent., by Drury, Westwood's Ed., p. 116, pl. 47, fig. 5, 1837.

*Æshna junius* SAY, Journ. Acad. Nat. Sci. Phila., VIII, p. 10, 1839.

*Æshna junia* BURMEISTER, Handb. Ent., II, pt. II, 2d half, p. 841, 1839.—RAMBUR, Hist. Nat. Ins., Neur., p. 196, 1842.

*Anax spiniferus* RAMBUR, Hist. Nat. Ins., Neur., p. 186, pl. 1, fig. 14, 1842.

*Anax junia* SELYS, Revue des Odonates ou Libellules d'Europe, Mem. Soc. Roy. Sci. Liège, VI, p. 328, 1850.

*Anax junius* HAGEN, Syn. Neur. N. Am., p. 118, 1861.—HAGEN, Verhandl. Zool.-Bot. Gesells. in Wien, XVII, p. 33, 1867.—BRAUER, Reise der Oesterr. Fregatte Novara um die Erde, Zool. Theil II, 1 Abth., A, Neuropt., p. 62, 1868.—CALVERT, Trans. Am. Ent. Soc., XX, p. 249, 1893.—KELLICOTT, Bull. Ohio State Univ. (4), No. 5, p. 77, March, 1899.—WILLIAMSON, 24th Ann. Rep. Dept. Geol. and Natural Resources, Ind., 1899, p. 306, 1900.—HOLLAND, Ent. News, XI, No. 3, p. 382, March, 1900.

*Distribution.*—North America, Cuba, Kamchatka, China and Hawaiian Islands. Dr. Holland, in the last citation, records one young male from the mountains between Mission and Fortymile creeks, Alaska, collected July 25, 1899, by Rev. S. Hall Young, and one male from Eagle, Alaska, taken August 3, 1899, by J. Murray Presnall.