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Description of Insects belonging to the order NEUROPTERA Lin., Latr. Collected by the Expedition authorized by J. C. Calhoun, Secretary of War, under the command of Major S. H. Long.

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ARTICLE IV.

NATURAL HISTORY.

Genus PHRYGANEA L. Latr.

1. *P. VIRIDIVENTRIS*.—Body pale brownish; abdomen bright green; feet whitish.

Inhabits the Ohio river.

Body pale brownish, somewhat hairy, hairs cinereous; head white beneath; eyes prominent, chestnut-brown; antennæ rather longer than the body, light brown, whitish at base; pectus white; feet white; tarsi of the intermediate pair of feet, dilated; superior wings ciliated, dusky or blackish, beyond the middle a few whitish spots somewhat arranged in two bands; inferior wings dusky, immaculate; abdomen bright green.

Length to the tips of the wings three-twentieths of an inch. Length of the antennæ one-fifth of an inch.

Observed at Cincinnati about the middle of May; is common but not very numerous.

2. *P. NUMEROSA*.—Body black; antennæ and feet pale brownish; abdomen with a rufous raised lateral line.

Inhabits the Ohio river.

Head transverse, narrow, black, with numerous cinereous hairs; eyes remote, prominent, hemispherical, black-brown; antennæ as long as the body, brown; basal joints hairy, black; palpi pale; thorax black with cinereous hairs; feet pale brownish; wings whitish brown, immaculate, nervures brown; abdomen black, posterior margin of the segments pale rufous, lateral lines of the incisures raised, rufous; tail pale rufous.

Length to the tip of the wings one-half inch; of the body three-tenths of an inch; of the superior wings nine-twentieths of an inch; of the antennæ three-tenths of an inch.

This species appears in vast numbers early in May on the river Ohio. From the 7th to the 9th of that month, when descending the river, I observed them near each shore, flying [161] in opposition to the direction of the wind, and so extremely numerous that, having a white appearance when flying, they might be compared to flakes of snow, in a moderate fall of that meteor. They were most numerous on the 7th, and appeared to decrease in number daily.

3. *P. LATERALIS*.—Body blackish; wings white; superior wings spotted with brown; eyes dark reddish-brown; feet white.

Inhabits Shippingport.

Body blackish with cinereous hairs above, and shaded with plumbeous beneath; eyes prominent, dark reddish-brown; antennæ and mouth pale; thorax black, with cinereous hairs; pectus black, slightly cinereous or plumbeous; feet whitish; wings white; superiores slightly spotted with brown, a common spot on the middle of the inner margin, and several nearer the tip, somewhat arranged into a band, the costal one of which is larger; inferiores white immaculate; abdomen blackish, pale vitta each side, and a pale posterior margin to the segments; caudal appendages white.

Length to the tip of the wings two-tenths of an inch; of the body two-tenths of an inch; of the antennæ three-tenths of an inch.

This species appears in very great numbers on the banks of the Ohio, near Shippingport, on the 21st of May. Judging from the small space of about half a mile on the Indiana side of the river, where I had an opportunity to see them, their numbers could be little inferior to that of *P. numerosa*, which occurred a few days before, but of which a specimen was now rarely seen.

4. *P. SEMIFASCIATA*. [Ante, p. 97.]

Genus *BAETIS* Leach.

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1. *B. FEMORATA*.—Wings whitish; nervures deep brown, and marginated with brown; inferior wings subovate, hardly half as long as the superior ones.

Length of body half an inch nearly.

Male. Body brown; abdomen beneath whitish; eyes large, prominent, approximate, separated above only by a fissure; thighs banded with reddish-brown near the middle, and at tip; wings snowy white: nervures brown, and margined with brown, more particularly so at the base, middle and tip of their costal margins; caudal setæ hardly twice the length of the body.

Female. Body brown; scutel yellowish, distinct; venter whitish; eyes distant; front prominently carinated: wings whitish; nervures brown, equally margined with brown; inferior wings less than half as long as the superior; feet pale brown, a reddish-brown band and tip to the thighs; caudal setæ hardly as long as those of the male.

Caught at Cincinnati, Ohio, and did not appear in any considerable numbers.

Genus CLOEON Leach.

C. POSTICATA.—Abdomen pale green, behind brown; thorax black opaque; wings white.

Inhabits Shippingport.

Eyes apparently four, approximate; superior ones elevated, subpedunculated; cornea subdiscoidal, slightly convex, edge tinged with yellow; inferior ones smaller, not elevated, longitudinally oval, dark reddish-brown; thorax deep black opaque: wings pure white, immaculate, inferior ones very small; feet pure white, anterior pair slightly dusky at base; scutel elevated; abdomen pale bluish-green, hyaline, three terminal joints deep brown opaque above; seta two, long, pure white.

Length of the body three-tenths of an inch; of the setæ seven-tenths of an inch. [163]

A small and delicate species. Considerable numbers of them appeared on our boat, May 21st, while at Shippingport. The contrast between the black and greenish colors of this insect is very striking; and the greenish portion of the abdomen is so diaphanous as to exhibit the movements of the interior of the body.

Genus EPHEMERA Latr., Leach.

E. CUPIDA.—Body black; wings dusky, inferiores pale, dusky at tip; thorax with three distinct longitudinal lines.

Inhabits Ohio river.

Male. Body black; front carinated; eyes small, remote; thorax black, with a cinereous tinge, a longitudinal dorsal broad black vitta, and a lateral impressed line; wings dusky, inferiores pale, with a dusky tip; feet pale brownish; tarsi black; anterior feet blackish; abdomen black, incisure beneath pale; setæ rather longer than the body.

Female resembles the male, but the eyes are larger, contiguous, and brown, with each a smaller, longitudinal, black one on the inferior orbit; abdomen black; segments above and beneath pale at the posterior edge, a dorsal obsolete white line, and on each two divergent, abbreviated, obsolete, whitish lines, originating at the base of the segment and terminating near the middle of its length; setæ longer than the body.

Length of the body of male seven-twentieths, female nine-twentieths of an inch; of the setæ of male two-fifths, female four-twentieths of an inch.

This species is rather numerous on the Ohio, in the neighborhood of Cincinnati, the 15th of May.

Genus MYRMELEON Linn., Latr.

M. ABDOMINALIS.—Pale testaceous, varied with black; abdomen very long.

Inhabits Arkansa.

Head and thorax pale testaceous, densely spotted and lineated with black; antennæ clavate, blackish, the segments tipped with testaceous; nervures varied with black and white; feet whitish, spotted with black; abdomen hairy, very much elongated, pale testaceous, with longitudinal black lineations, posterior half blackish.

Length one and one-half inches; of the superior wings one inch.

This we obtained near the Rocky Mountains. The abdomen of the female is not longer than the wings, and the latter have a distinct white spot near the tip on the costal margin.

Genus BITTACUS Latr.

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B. STIGMATERUS.—Body yellowish; abdomen falcate, wings with an opaque carpal spot.

Inhabits Missouri.

Body pale yellowish ; stemmata large, frontal, placed triangularly, two superior ones dusky ; front with a blackish area between the stemmata ; maxillary palpi blackish ; eyes prominent oval ; thorax between the origin of the of the superior wings, with two convex, longitudinally oval elevations ; wings nearly equal, pale yellowish, a subopake carpal spot near the tip of each ; abdomen falcate.

Length to tip of wings three-fourths of an inch.

Found near Fort Osage on the Missouri.

Genus SIALIS Latr. [PERLA Geoffr.—SAY, MS. correction.]

1. S. DORSATA.—Body black, varied with rufous ; labrum pale ; thorax with a dorsal rufous vitta and anterior and posterior rufous incisures.

Inhabits the Ohio river.

Head blackish, with about six blacker spots ; labrum pale, beneath pale yellowish ; palpi black ; thorax blackish, with impressed blacker lines, anterior and posterior incisures and dorsal vitta rufous, angles rather prominent ; a pale obsolete line from the base of the thorax to the abdomen ; beneath yellowish, disk of the segments black ; trochanters yellowish ; wing nerves deep black ; abdomen black, segments above with yellow posterior margins ; venter pale yellow.

Length to the tip of the wings one and three-fourths of an inch.

Numerous in May near Pittsburgh.

2. S. IMMARGINATA.—Body black varied with yellow, or yellow varied with black ; wings dusky ; nervures brown immarginate ; thorax transversely quadrate, posterior angles somewhat rounded, disk somewhat rugose with impressed irregular lines, an impressed dorsal line, on each side of which is a slightly arquated one ; eyes deep black-brown ; all beneath yellow.

Inhabits the Ohio river.

Length to the tip of the wings more than an inch ; male much smaller.

Pupa pale, varied with black ; abdomen annulate with black at the base of the segments ; all beneath immaculate ; thighs [165] with a black obsolete spot on the exterior tip ; antennæ and setæ pale

rufous; head with a black band before the eyes which include an undulated white line.

This species differs much in the distribution of its colors; it is generally entirely yellowish beneath, and sometimes also on the tergum; the thorax also has sometimes a yellow dorsal line, and sometimes a black one. It appears in considerable numbers towards the end of May.

3. *S. IMBECILLA*. Body pale green; wings white.

Inhabits the Ohio river.

Body pale green, immaculate; eyes prominent, chestnut-brown, stemmata chestnut-brown, placed triangular, equidistant; antennæ dusky, hairy; wing greenish white, immaculate; thorax transversely oval, sculptured.

Length to the tip of the wings seven-twentieths of an inch; of the body about one-fifth of an inch; of the antennæ three-twentieths of an inch.

Occurs in considerable numbers on the river Ohio, about the middle of May. I observed it at Cincinnati.

4. *S. BILINEATA*.—Body pale greenish yellow; thorax bilineate; head with a black double converging line; eyes reddish-brown.

Inhabits the Ohio river.

Body pale greenish-yellow; head a double black frontal line, including the stemmata behind, converging and confluent before, and truncate at the anterior stemmata; an obscure triangular spot on the clypeus; eyes deep chestnut-brown; antennæ dusky, pale at base; thorax with two equal, dilated, parallel, blackish vittæ; scutel bimatulate, spots blackish, placed transversely; wings white, nervures blackish; tergum black.

Length of the body and wings, from two-fifths to one-half of an inch.

Found near Cincinnati, and occurs not unfrequently about the 15th of May. The obscure spot on the anterior portion of the head is sometimes wanting.

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