

small an insect as the *Rhinocola*, in which the spines were microscopic, there could be no protective resemblance to plants. Dr. Gill said that the distribution of spines upon an insect would affect the play of the light and thus enable it to assimilate with its surroundings. Mr. Marlatt was of the opinion that these spines would prove to be of secondary sexual value and that their occurrence is not due to protective resemblance.

—Mr. Benton exhibited specimens of *Apis japonica* which had been sent to the U. S. Department of Agriculture by Professor Matsumuri, of Japan, and pointed out the differences between this species and *Apis mellifica*. He thought that its greater pubescence would make it a better pollenizer and that it would prove to be an active and energetic worker, so that possibly it might be well to introduce it into North America.

—Mr. Banks exhibited four rare species of Caddis flies, namely, *Neuronia pardalis* Walk., *Neuronia dossuaria* Say, *Halesus argus* Harris, and *Neophylax concinnus* McLach. He pointed out the resemblance of the second species to a scorpion fly and thought that this might be a case of protective mimicry. He further spoke upon the interest attaching to the Trichoptera through their close relationship with the Lepidoptera, which has recently been established.

—The following paper was presented :

THREE NEW SPECIES OF CHRYSOPIDÆ.

By NATHAN BANKS.

The lace-wing flies of the northeastern United States are probably mostly described, but those of the South and West have been little studied and doubtless will furnish many new species. The group is of much interest on account of its curious habits and life-history, and is also of considerable economic importance owing to the predaceous habits of the larvæ.

Chrysopa oculata has occupied in economic respects a place similar to that of *Lachnosterna fusca*. And just as the later studies of the May-beetles revealed many forms, so also the study of our golden-eyed or lace-wing flies will show that there are other species of nearly as much value as *Ch. oculata*.

The species of *Chrysopa* are exceedingly difficult to separate; the venation being remarkably constant in the various species, and other structural characters are of little avail.

Recourse has been taken to the markings of the head, which furnish, in most cases at least, a basis for natural classification. In this respect the genus is very similar to *Cecanthus*, in the crickets. As to the exact value of these cephalic markings, there will, of course, be various opinions. I have believed that Fitch carried it to an extreme, and that several of his so-called species are not entitled to specific or varietal rank. Yet these markings are of value, for in forms that to the eye appear certainly distinct the best characters for separation will be found to be these markings of the head.

Two of the species I describe below are from Colorado, both rather closely related to known forms; the one to the eastern *Ch. lineaticornis* Fh.; the other to the southwestern *Ch. punctinervis* McLach. The third, a species of *Leucochrysa*, comes from Alabama. All three have been collected by Prof. C. F. Baker.

Chrysopa sabulosa, n. sp.

Green; face yellowish, a short black stripe under each eye, broadest at tip, near the inner end is a small black dot; just below the antennæ is a transverse black mark. Above on the green vertex are two round black dots; the palpi are black. The antennæ beyond the second joint are black on their basal half; the basal joints are short and close together, and with a black stripe on the outer side, and a large black spot below. The prothorax is green, unspotted, very short, with a transverse furrow behind the middle. Thorax, legs, and abdomen pale green. Wings hyaline, with green veins, some transversals partly black, the divisory of third cubital black. Tip of wing broadly rounded, pterostigma quite distinct. Alar expanse 24 mm.

One specimen, Ft. Collins, Colo.

Differs from *Ch. lineaticornis* in more spotted head, in the large spot on lower side of basal joints of antennæ, in black divisory veinlet, and in shape of prothorax.

Chrysopa fraterna, n. sp.

Yellowish, marked with dark red brown. Face rather greenish, a short black stripe under each eye, and each side of labrum an elongate spot; a reddish band across the base of labrum and a spot in the middle. Two black lines between the antenna, diverging above, each side of venter near the eye is a black spot. Palpi broadly banded with black. Basal joint of antenna has a dark spot on inner side, and two lines above, second joint with a black ring, rest of antennæ pale. Thorax broadly margined each side with a red-brown stripe and a narrow line on the middle. Legs pale, a brown dot under tips of the anterior femora, and a band just before tip on posterior femora. Abdomen much spotted with dark red-brown. Wings hyaline, the subcosta, sector, cubitus and postcubitus dotted with brown; the transversal wholly dark. Tip of wing rounded; the sector of radius curves but slightly toward the radius.

One specimen, Ft. Collins, Colo.

Closely related to *Ch. punctinervis*, but larger and differently marked; quite noticeable by the band on hind femora.

Leucochrysa americana, n. sp.

Pale greenish. A transverse reddish spot under each antenna; above is a transverse red line bent downward in the middle, and giving off a spur between the antennæ. Vertex with two deep depressions. Antennæ wholly pale, longer than wings, basal joint short and stout. Prothorax short, narrowed in front; with a short black spot in the middle of the front margin, and a reddish-brown line on each anterior side. Legs pale. Abdomen pale, with a large reddish spot on the last ventral segment, and a dot on each side on the genitalia. Wings hyaline, rounded at tips; the hind pair narrowed and more acute; the pterostigma brownish, distinct. The third cubital cell much longer than the second, not very much broader; the divisory veinlet arising from quite near to the postcubitus. The sector of the radius is very much nearer to the radius at pterostigma than in the middle of its length. Alar expanse 27 mm.

One specimen, Auburn, Ala.

Easily separated from *L. floridana* by its smaller size and different markings.

In discussion Mr. Schwarz referred to the fact that we badly need synoptic tables of the lace-winged flies—the published descriptions are so widely scattered. Mr. Banks spoke of the characters used in classification and showed that for specific separation the characters are almost entirely colorational. Few or no structural characters of specific value can be found.

Mr. Ashmead stated that he had studied these insects to some extent and believed that if carefully studied venation would show characters of value.

Mr. Banks expressed himself as of the opinion that the venational characters are absolutely worthless. He showed that the two fore-wings of the same individual may differ in venation. Mr. Ashmead stated that the same difficulty exists with the dragon flies and with the Orthoptera, but that with prolonged study, even with this difficulty, Saussure has ascertained many excellent venational characters with the Orthoptera.

Mr. Marlatt said that a complicated venation should always be approached with caution and that in his opinion venation varies within specific limits in direct ratio to its complication. He

Bibliography of the Neuropterida

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