

specimens of *Chelanops dorsalis* Banks, were clinging to the lower surfaces of the stones, and were usually resting quietly in the small depressions or crevices, with their legs and chelæ folded up against their bodies. They were often covered with clusters of ants which seemed to be quite unaware of their presence. In the same locality and under stones of the same size, there were also many colonies of a Myrmicine ant, *Aphanogaster subterranea* var. *occidentalis*, but none of these contained any of the insects, Isopods or pseudoscorpions above mentioned. I believe, therefore, that *Chelanops dorsalis* may properly be regarded as a synœkete, or indifferently tolerated guest, of *F. subpolita*. At any rate, the observations here recorded and those of Donisthorpe above quoted, suggest that the association of pseudoscorpions with ants may not be as accidental and insignificant as we have hitherto supposed.

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### FLUFFY CECROPIA COCOONS.

By PHIL RAU,  
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Much discussion has been carried on<sup>1</sup> as to the nature and abundance of the large, loosely woven cocoons of *Samia cecropia* Linn.

Chief among the conclusions to be gleaned from these casual observations are: (1) that the fluffy cocoons occur only on low boughs or in damp places; (2) that they bring forth only female insects, and (3) that they harbor only parasitized pupæ. All of the writers agree that they are uncommon, or even "rare."

The following data collected upon this subject during the past two seasons will probably throw some light upon these little understood points.

In the spring of 1910 and also 1911, large numbers of the cocoons were gathered at random about the fields near River des Peres and Macklind Avenue, St. Louis. In making these collections, no appreciable difference was observed in the positions of the two kinds of cocoons, the large, fluffy ones as well as the tightly woven ones occurring in both the high and the low, the dry and the damp positions.

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<sup>1</sup>Ent. News, Vols. XI-XIII, XVII.



RAU-FLUFFY COCOON OF SAMIA CECROPIA.

The proportion of fluffy cocoons to compact ones was as follows:

Year.	No. fluffy.	No. compact.	Total.
1910	39	166	205
1911	105	560	665

The figures show that in 1910 the baggy cocoons occurred in the proportion, roughly, 1:4, and in 1911, 1:6. Hence they cannot be called rare in this locality.

The records kept at the time of the emergence of the imagines yield the following data:

Year.	Fluffy cocoons	Males.	Females.	Dead.
1910	39	17	22	0
1911	105	50	40	15

This shows that only a small per cent., if any, of the pupæ may have been parasitized. It further shows that sex plays no part in determining the form of the structure, but that individuals of either sex are quite capable of spinning cocoons of this character.

The tightly woven cocoons are so well known that any description would be quite superfluous. In the fluffy ones all degrees of size were found; some only slightly larger than the ordinary compact cocoon and a little more loosely woven. From this they ranged to the size illustrated herewith. This photograph gives the exact size of the largest one found. Most of them, however, were just about one half this size, and varied much in shape.

It was suggested that these individuals must represent a separate and distinct race. So when the female emerged from this large cocoon, it was bred with a male of like character, with the purpose of learning whether or not the tendency to fluffy cocoon spinning might be an inherited characteristic. It was, however, unfortunate that on account of the lack of proper facilities, the larvæ soon died.

But along with this experiment, some interesting data on oviposition were gathered. In the first place, the female was an exceptionally large one, the expanse of the forewings measuring 20 cm. It mated before daybreak, May 18, two days after emerging, and remained in copula the normal length of time, about twenty-four hours. By noon, May 19, it had deposited 358 eggs. For the next two days, no eggs were laid; on the 22d and 23d, 44;

on the 24th, none, and on the 25th, 23 eggs were deposited. The insect died on the 26th, after a normal life of ten days, retaining 93 ova. Thus the total number of eggs carried by this female was 518.<sup>1</sup> It is of interest to note that only the eggs which were deposited on the first day were fertile; although the insect remained *in coitu* the usual length of time, all the eggs deposited subsequently proved infertile.

It is much to be regretted that breeding experiments on the inheritance of fluffy cocoon making could not be carried to completion. This extremely interesting problem should be taken up by some one having proper breeding facilities.

July 29, 1911.

## NOTES ON COLEOPTERA FROM CONNECTICUT.

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### CARABIDÆ

In a previous article, entitled "Some Carabidæ Taken in Connecticut,"<sup>2</sup> the author gave notes on a number of species of this family. These additional notes are supplementary, and are the result of further collecting in the state.

*Cychrus lecontei* Dej. Found this species at night under an arc light, New Haven, May 7; about a week later Mr. B. H. Walden found it at another light.

*Cychrus elevatus* Fabr. Observed fragments of this species in the remains of an owl pellet. Several years ago in Pennsylvania, I dissected *C. stenostomus* Web. from the stomach of a toad.

*Carabus serratus* Say. New Haven, May 21, under an arc light. Previous to this year, I had never observed *Cychrus* or *Carabus* at arcs.

*Carabus memorialis* Mull. This introduced species occurs rather abundantly in one section of New Haven. Mr. J. K. Lewis, while on his way to the Station every morning, from April 25 to May 10, found specimens crushed upon the sidewalk in the vicinity of a

<sup>1</sup>Records kept on the oviposition of sixty-four ordinary cecropias (Trans. Acad. Sci., St. Louis, Vol. XX, p. 316, 1911) showed that the number produced varied from 200 to 480, with an average of 344.

<sup>2</sup>Psyche, vol. 18, p. 35 (1911).



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