	The following table will aid in separating the species:
1.	Antennæ yellow, base of each segment black
	Antennæ, except basal segments, brown
2.	Lateral appendages of the ninth sternite (below the pleural appendages)
	without a lower pendulous or claw-like armmadera
	Lateral appendages with a lower pendulous or claw-like arm
3.	Lateral appendages with only two arms4
	Lateral appendages with three arms
4.	Lower arm of lateral appendage slender; membranous, nearly straightfallax
	Lower arm of lateral appendage more strongly chitinized, claw-like, tip
	blackish5
5.	Lower arm of lateral appendages short, broad, flatrohweri
	Lower arm of lateral appendages long, slendergrata
6.	The two upper arms of lateral appendages consisting of two small subequal,
	spine-like processescoloradensis
	First and second arms of lateral appendages very different in size and shape7
7.	The blade-like processes arising from the posterior margin of the ninth
	sternite long, slender, sinuousalia
	The blade-like processes shorter, more triangular newcomeri

## PSEUDOSCORPIONS IN ANT NESTS.

By WILLIAM MORTON WHEELER, Bussey Institution, Harvard University.

The sporadic occurrence of pseudoscorpions, especially of species of Chelifer and Chernes, in ant nests has been reported by several authors. Haldemann<sup>1</sup> seems to have been the first to note this occurrence in America. Wasmann<sup>2</sup> states that species of the genus Chelifer are not uncommon in ant nests, "but apparently only as occasional inquilines." He also says that he received from Mr. Pergande specimens of Chelifer that had been taken in nests of the American Aphanogaster fulva. Banks³ describes several pseudoscorpions taken by Brues in the nests of Texan ants, namely Chelanops unicolor with Eciton cacum and Pachycondyla

On the Occurrence of Cremastocheilus and other Insects in Ant Nests, and of Chelifer found Parasitic under the Elytra of Alaus oculatus. Amer. Journ. Sci. Arts (2) VI, 1848, pp. 148-149; Ann. Mag. Nat. Hist., 1848, pp. 221-222.
2Kritisches Verzeichniss der myrmekophilen und termitophilen Arthropoden. Berlin, Felix L. Dames,

Verzeichniss der myrmekophilen und termitophilen Arthropoden. Berlin, Felix L. Dames, 1894, p. 193.

<sup>&</sup>lt;sup>3</sup>The Pseudoscorpions of Texas. Bull. Wis. Nat. Hist. Soc., VI, 1908, pp. 39-42.

harpax, Ideobisium rufulum with Camponotus sansabeanus and Olpium minutum with Eciton cæcum. I have myself not infrequently taken single pseudoscorpions of different species in the nests of various ants, and have received them in vials of ants sent to me for identification, but I have till recently supposed that they were accidental intruders and not myrmecophiles in the proper sense of the word.

Donisthorpe<sup>1</sup> gives the following more precise notes on three species of pseudoscorpions which he found in England: "Chernes scorpioides, Herm. In May last this species was found in the greatest profusion in F. rufa nests at Buddon Wood, Leicestershire. Mr. Wallace Kew, who kindly identified them for me, told me there were males, females, and females carrying eggs externally, present. They occurred in the nests, literally in thousands, especially at the very bottom of the nest. Every handful of the débris of the nests placed on paper was seen to be swarming with the Chelifers. The ants paid no attention to them. It has been recorded with the same ant in Denmark by Hansen. I have taken it sparingly with F. rufa at Weybridge (Ent. Rec., 1907, p. 255), and have intruduced specimens into my observation nests. The ants treated them with indifference. When a F. rufa worker was forced to take hold of a Chelifer, it dropped it at once. I think it is quite clear that this species, at least, cannot be said to have 'nothing to do with ants.' Ideoroneus cambridgii, L. Koch.-Several specimens were found in nests of L. flavus at Virtuous Lady Mine, in Devonshire, in April. Chthonius rayi, L. Koch, occurred in a nest of F. rufa in Parkhurst Forest, Isle of Wight, in April. I have taken this common species before with L. fuliginosus at Oxshott."

On January 15, 1811, while collecting at Point Joe, near Pacific Grove, Cal., I came upon many flourishing colonies of Formica subpolita nesting under rough stones in the grass near the seabeach. In every nest there were great numbers of snow-white root-coccids and root-aphids, several small white Isopods of an undescribed species, apparently related to the European Platyarthrus hoffmanseggi, and a dozen or more pseudoscorpions. These, which have been kindly identified for me by Mr. H. E. Ewing as

<sup>40</sup>n the Founding of Nests by Ants; and a Few Notes on Myrmecophiles. Ent. Rec. and Journ. Var. XXII, 1910.

specimens of Chelanops dorsalis Banks, were clinging to the lower surfaces of the stones, and were usually resting quietly in the small depressions or erevices, 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.

## FLUFFY CECROPIA COCOONS.

By Phil Rau, St. Louis, Missouri.

Much discussion has been carried on 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."

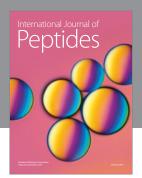
The following data collected upon this subject during the past two seasons will probably throw some light upon these little understood points.

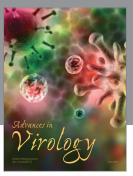
In the spring of 1910 and also 1911, large numbers of the cocoons were gathered at random about the fields near River des Peres and Macklind Avenue, St. Louis. In making these collections, no appreciable difference was observed in the positions o the two kinds of cocoons, the large, fluffy ones as well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

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

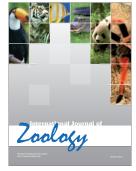
















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