

Junctura, but have gray primaries without darker shades. There is also an unnamed variety of *Verrilliana* with yellow secondaries, from Arizona.

The synonymy of the species here discussed should be as follows :

- 1173 *Junctura* *Walk.*
 Walshii Edw.
 Aspasia Streck.
 1174 *Arizonae* *Grote.*
 1186 *Semirelicta* *Grote.*
 Var. Pura *Hulst.*

I have *Catocala Violenta* also from New Mexico, collected by Prof. Snow.

(*To be Continued.*)

THE FOOD RELATIONS OF THE CARABIDÆ AND COCCINELLIDÆ. By S. A. FORBES. From Bulletin No. 6, Ill. State Lab. of Nat. Hist., Normal, Ill., Jan., 1883, 8vo., pp. 31.

Through the kindness of the author, we have been favored with a copy of the above paper, which embodies the results of a very laborious series of microscopic examinations of the contents of the alimentary canal of insects belonging to the Carabidæ and Coccinellidæ. In the Carabidæ the results of the dissection and study of 175 specimens are given, representing 38 species and 20 genera. Of the Coccinellidæ, the results of the dissection of 39 specimens are given, accompanied by carefully compiled tables presenting the evidence in the most convenient and accessible forms. Prof. Forbes' experiments show clearly that the opinions hitherto held by Entomologists as to the food of these insects are in many respects incorrect. While it is shown that the insects belonging to the genus *Calosoma* live almost exclusively on animal food, those of *Chlœnius* and *Galerita* to the extent of nine-tenths, and those of *Pterostichus* three-fourths; the species of *Harpalus* take only about 12 per cent. of animal food, *Anisodactylus* 21 per cent., *Amara* and *Amphasia* 23 per cent., and *Agonoderus* about 33 per cent.; the whole series of Carabidæ examined averaging 57 per cent. of animal food, the remainder being vegetable and consisting mainly of the pollen of flowers and the spores of fungi.

Of the Coccinellidæ examined, animal food constitutes but little more than one-third of the whole, the other two-thirds consisting of 45 per cent. of the spores of fungi, 4 per cent. of those of lichens, and 14 per cent. of pollen. Prof. Forbes has laid all who are interested in this subject under grateful obligations to him for his valuable contributions to our knowledge in this department.

DESCRIPTION OF THE PREPARATORY STAGES OF
PYRAMEIS ATALANTA, LINN.

BY W. H. EDWARDS, COALBURGH, W. VA.

(Continued from Vol. 14, p. 234.)

ON THE LARVAL HABITS.

The habits of these larvæ in Europe may not improbably differ in some respects from the habits in America. Our hot summers, as compared with England, at least, may compel more or less change. With us, speaking of my own district, and of the False Nettle, *Boehmeria*, as the food plant, the eggs I believe to be always laid on the young terminal leaves, as Dr. Harris states is the case with the Nettle, *Urtica*. I come to this conclusion, not because I have found eggs on the terminal leaves, for I do not remember that I have ever found an egg of *Atalanta* laid by a free female; but because the larvæ, in first stage, have always been observed on these leaves. I have repeatedly obtained eggs from females tied in bags over the food plant. On 1st Aug., 1881, upwards of 100 were so obtained. They were laid everywhere, on leaves, stem and bag. When the larvæ hatched, those on the lower leaves made an effort to reach the upper ones, and finding these occupied, accepted any position they could get, turning up the side of a leaf, when necessary. Several lived on the same leaf, each in its own case however. But in a free state, the young larva has always been found by me on the very small terminal leaf, which it has closed up from the base. Dr. Harris says: "*It spins a little web to cover itself, securing the threads all around to the edges of the leaf, so as to bend upwards the sides, and form a kind of trough, in which it remains concealed. One end of the cavity is left open, and through this the caterpillar thrusts its head while feeding.*" This does not properly describe the proceeding on *Boehmeria*. On this the newly hatched larva begins at