length, separating at the posterior fourth to admit the passage of muscles which are described later. The united commissures are slightly enlarged posterior to the first thoracic ganglion (*c*).

The muscles which cross each other between the commissures connecting the first and second and second and third thoracic ganglia are generally found in lepidopterous larvae, and serve to hold the second and third thoracic ganglia in the median line. The mode in which these muscles cross each other and interlace the commissures, as seen in the figure, is the same between the second and third as between the first and second thoracic ganglia. This mode of interlacing of the muscles and commissures is exactly the same in the larva of *Sphinx ocellata* as it is in that of *Harpyia*.

The kind of asymmetry existing in the nervous system of the larva of *Har-*

pyia has been found, as far as I know, in no other arthropod, but, upon suggestion of Professor Leuckart, of Leipzig, in whose laboratory I was studying when I discovered the asymmetry in the nervous system of the larva of *Harpyia*, I examined *Hirudo medicinalis*, the blood-leech, the nervous system of which has an analogous asymmetry. The genital organs are in such a position, in *Hirudo*, as to necessitate the pushing of the nervous system slightly to one side, near their outlet.

Of four specimens of *Hirudo* examined, two had the nervous system to the right and two to the left of the genital organs; but of six specimens of *Harpyia* dissected, all had the commissure between the first and second thoracic ganglia deflected toward the left.

Paris, France, 3 Dec. 1887.

NOTE ON CATOGENUS RUFUS.

BY GEORGE DIMMOCK, CAMBRIDGE, MASS.

IN the winter of 1878-1879 I received, from Suffield, Conn., a lot of nearly full-grown larvae of *Elaphidion parallelum* in twigs of *Carya alba*. One of these larvae, in a portion of a twig split in two parts which were carefully and tightly held together by a rubber band, was reserved upon my writing-table for the purpose of taking notes on its transformations. This larva pupated in the early part of March, and was then in an apparently healthy condition.

A short time after the larva of *Elaphidion* had pupated, a small white larva

made its appearance in the cavity of the wood, in which the pupa was confined. As the pupa seemed in no way injured I could not determine whether or not the larva had hatched from an egg within the pupa. This larva was shown at the 58th meeting of the Cambridge entomological club. It was then very small and had the appearance of being lepidopterous. Supposing it to be the larva of some kind of museum pest that had, in a mysterious way, gained access to the pupa, I took no description or figure of it. It grew slowly, devouring the pupa

of the *Elaphidion*, until about 20 May, when it pupated, having eaten all but a few shreds of the pupa of the *Elaphidion*. The new pupa, which is represented in

Fig. 7.—Pupa of *Catogenus rufus*. a, ventral view. b, dorsal view.

fig. 7, was that of a coleopteron, and from it emerged, about 1 July, *Catogenus rufus*.

The pupa of *Elaphidion* was 15.5 mm. long, and the pupa of *Catogenus* was 10 mm. long. The pupa of the latter weighed about one-fifth as much as that

of the former; therefore there must have been a remarkable economy in the digestive processes of the larva of *Catogenus* to enable it to utilize, in the manufacture of new tissues, one-fifth of the material which it devoured. No such power of economical assimilation can, of course, be found in the case of herbivorous larvae, nor have I been able to find any such case recorded for carnivorous larvae. It is surely not the case with the different species of larvae infesting collections, for often a single larva of *Anthrenus* will devour dried specimens many times as heavy as the *Anthrenus* it is to produce.

Paris, France, 21 Dec. 1881.

NOTE ON *DEILEPHILA LINEATA*, FABR.

BY HENRY WEBSTER PARKER, GRINNELL, IOWA.

Last summer (1880), *Deilephila lineata*, Fabr. was the most conspicuously common moth in the vicinity of Grinnell, Iowa, especially during the month of August. At all hours of the day, one or more might be seen hovering over nearly every flower of the innumerable weeds, mostly thistles and *Helianthus*, by the roadsides. In places, the moths might be estimated by the hundreds. At Amherst, Mass. I captured

this species, repeatedly, at twilight of the evening. Harris speaks of it as a morning sphinx. Does he mean early morning only? Where it is comparatively scarce, is it mostly crepuscular, and, where common, does it gain courage, and is it even obliged to seek its food at all hours of the day, the supply of food being small in proportion to the number of moths?