

Dr. Shimer, of Mt. Carroll, Illinois, who gives the following account of its mode of transformation to the perfect beetle: 'The fat full grown larva of *Calosoma calidum* chooses a hard piece of ground, as a waggon road in the field, where it bores into to pass the pupa state. I have seen them many hours in boring a few inches. These fierce insects often wage terrible battles when they encounter each other, and they will eat each other as readily as cut-worms, as I found whenever I put more than one of them into my collecting box. He that would breed these insects to the perfect state must pack the dirt in his breeding box as hard as a waggon road, or he will fail, as I always did before I saw their operations in the field. In using moderately compact earth, the larva digs it over and over, endeavouring to find a suitably dense place, works up the dirt into balls, until its feet are clogged up with earth and juices from its mouth, and it sinks exhausted and dies. In a few days after it enters the grounds, the beautiful spotted, perfect beetle appears, and, strangely, the smell of the beetle is peculiar, and entirely different from the larva.' This cut-worm lion has quite a formidable appearance and is exceedingly agile. It is flattened, of a black colour, with six legs upon the breast, and a pair of sharp hook-like jaws projecting in front of its head. It pursues the worms in their retreats under the ground, and seizes them wherever it comes in contact with them. Sometimes a young cut-worm lion will seize a worm twice as large as itself, and will cling with a bulldog tenacity to its prey, through all its throes, its writhings and twistings, till at last the worm succumbs, exhausted, and the victor bites two or three holes in its skin and proceeds to suck out its juices."

Riley considers this larva the most efficient insect destroyer of cut-worms that is known, and when we consider the great ravages of these latter, we should carefully protect and foster any and every means that may prove useful in lessening their evils.

It is also well known that the perfect insect feeds on the larvæ of the common potato beetle, *Doryphora decemlineata*, Say. Our fiery ground beetle also destroys large numbers of the canker-worm, *Anisopteryx vernata*, Peck, a much-dreaded pest which attacks the elm, cherry, apple, plum and other trees. Our friend, being very active, runs over the ground in search of the soft-bodied canker-worms, and will even mount upon trunks of trees for the same purpose.

Another very destructive enemy which is devoured by *Calosoma calidum* is the army-worm, that pest which plays such havoc with wheat and other cereals in many districts.

The beneficial effects of the presence of a few fiery-ground beetles among growing plants is so clearly recognized, that many will take pains to secure them and transport them to their gardens.

The next *Calosoma* we will consider is the rummaging ground beetle, *Calosoma scrutator*, Fab. (Fig. 23.) also called the beautiful-bodied searcher, and the green caterpillar-hunter.

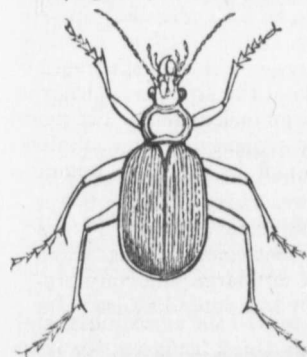


Fig. 23.

This is the largest and handsomest member of the family, but the beauty and brilliancy of its colouring require to be seen to be appreciated. It is larger than the insect previously described, but of the same general outline. The head and thorax are of a deep purplish colour, the latter with a greenish coppery margin; the wing covers are of a bright and shining green, with fine longitudinal lines and scattered punctures, and a broad, coppery red margin. The underside is deep shining green, varied with coppery markings. The legs are blackish brown, in some lights deep purple.

"This magnificent beetle is rather a rare insect in Canada, though found occasionally in most parts of Ontario. Collectors of insects can often find specimens in summer, after a southerly gale, on the outer shore of Toronto Island, which is a famous place for obtaining rare beetles that have been drowned in the lake and washed ashore by the waves." (Rev. C. J. S. Bethune in Annual Report of Entomol. Soc. of Ontario, 1872.)

Among the insects preyed upon by this insect friend are the canker-worm, the army-worm, and the forest-tent caterpillar, *Clisiocampa sylvatica*, Harr., which latter is well known in Canada from its ravages during the past few years.