

## A BEETLE ON THE WAR PATH.

[By Edward C. H. Day, of the School of Mines, Columbia College.]

Beetles constitute the order of the Coleoptera or sheath-winged insects, so called because their anterior pair of wings are modified into a, more or less, hard case, within which the thin, membranous, and delicate hinder pair, when not in use, are folded. The wing cases, or "elytra," do not subserve the purpose of flight, and as such heavy-bodied insects, as beetles usually are, require a large expanse of wing to support them, we accordingly find the hind wings in this order, in general, largely developed. If we watch a lady-bird as it alights, we see that at first the wings extend far behind the elytra, but soon our welcome little friend furls the outer portions quickly and neatly beneath their cases. We could not, therefore, have a more expressive term for this group than the word coleopter; and there are are but few forms belonging to the order that the beginner in insect studies will fail to recognize at once as "sheath-winged." The wing cases, in some exceptional instances, are much reduced in size; more frequently the true wings are more or less aborted, and the beetles then, of course, do not possess the power of flight. The inner edges of the elytra always fit together along the middle of the back; that is, they do not overlap and partly cross one another, as do the wings of the true bugs, which belong to another order, the Hemiptera.

The transformation of the beetle is a complete one. It begins life as grub, generally with legs (three pairs), and furnished like the adult insect with powerful gnawing jaws. When it passes into its pupa stage it becomes inactive, the legs and wing cases of the future insect are, however, free, and the perfect form is already clearly foreshadowed. This enables us at once to distinguish the coleopterous pupa from those of the flies or the butterflies, in which the wings and limbs are soldered into the pupa case, thus effectually disguising the outlines of the form that is about to appear from it.

Beetles, from their vast numbers and from their varied habits, are of great economical importance. Of the weevils alone, a family to which the notorious pea weevil and plum curculio, and a host of other pests belong, from 8,000 to 10,000 species, according to Packard, are known; and the total number of species of beetles, of all families and from all countries, preserved in collections, is variously estimated at from eighty to one hundred thousand. Of these, some, as the Scolytus, figured in a late number, bore into timber; others feed upon leaves, flowers, or fruit; great numbers are carnivorous, preying upon their fellow insects; while many, again, are scavengers, living upon carrion or decaying substances. There are species that live in the nests of ants, and an entire group that inhabit fungi. Some kinds are altogether arboreal, while whole families are confined to the waters. The grubs, too, are equally variable in their habits, their food generally corresponding in its essential character to that of the perfect insect. The habits of beetles are thus of the most varied interest to the observer, though we do not find among them such high instincts as we do among the Hymenoptera (the bees, wasps, and ants), which we have heard well termed "the thinking insects." On the other hand, the remarkable forms and the brilliant colors of many beetles and the comparative ease with which they are preserved in cabinets, render this order a great favorite with the mere collector.

The beetle shown, in the annexed illustration, descending the tree towards the procession of caterpillars, is the *Calosoma* (beautiful body), a terrestrial and, as we can almost determine by a superficial glance, a carnivorous insect. Its neat, light form, its evidently active legs, its trenchant jaws, all indicate a predatory being. It is clothed, too, in a close-fitting coat of mail—an armor brilliantly burnished, its dark green color flashing gorgeous metallic tints in the sun light. This is evidently one of the free-lances of the insect world. Its larva, taking the caterpillars on the other flank is likewise on the war path. Our picture, in fact, represents one of the innumerable scenes in nature, in which the maxim is enforced that "might is right;" and that train of slow leaf-eating caterpillars is as certain to lose some of its members, as they swarm up the tree trunk, as the richly-laden caravan in the desert is to be harried and black-mailed by the marauding Arab. The *Calosoma*, however, and its grub, unlike the human plunderers, are to be regarded as the friends of civilization and agriculture.

In this connection we may remark, that it is quite worth the gardener's while to learn something of the nature and habits of the grubs, which he turns up with the spade, for in his ignorance on this subject he too generally smites his best friends as well as his worst foes. On the lower left-hand corner of the cut, the pupa of the *Calosoma* is represented buried

in its temporary tomb. How strange that death-like, transforming trance, interposed between two periods of such active existence

Among a host of other carnivorous genera there are about thirteen species of the genus *Calosoma* recorded as occurring in the United States; of these, one, the *Calosoma scrutator*, is a common, large, and beautiful example. It is known to be the determined enemy of the canker-worm, and, according to Harris, it may be found, in the month of May, searching beneath and upon the trunks of the trees infested by those caterpillars.

The caterpillars represented in our engraving are of a European species, worthy, however, of illustration for several reasons. They are of a genus most destructive to the forest vegetation of Europe, and they have on occasions caused incalculable damage to the oaks, elms, and pines which they infest. Like many allied caterpillars, they live in a common web or tent, which they weave on the trunk of the tree on



THE CALOSOMA AND ITS PREY

which they have been hatched, but in this tent each caterpillar makes its own chamber. When the feeding hour comes they sally forth from their tent by the common doorway, in regular order, one always leading, then two, then three following, until, finally, the whole community marches on in a gradually swelling column. From this habit they obtain their common name of "processionary" caterpillars. Finally, the hairs which clothe them possess a remarkable property, expressed in the scientific appellation of the moth from which they come—*Cnethocampa* (*kneto*, to irritate, and *kampe*, a caterpillar). The penetration of these hairs into the skin, produces an irritation similar to that of a nettle. When the caterpillar is about to change to a chrysalis, it lines its chamber with its hairs, and he who incautiously places his hand on such a nest will not be likely soon to forget his experience. Noel Humphreys quotes the case of a boy who, while birds-nesting, was so severely stung on the neck and breast by these hairs, that the irritation caused his death. A very common caterpillar in this country, belonging to a different genus of the silk-spinning moths, possesses this same disagreeable power of nettling at once your skin and your temper. Curiously it has likewise the habit of marching in strictly following-processions of progressive development; but, happily for us, it is behind its European fellow in the matter of a domicile—it has not arrived at the idea of tent building, and of lining its sleeping apartment with its own cast-off hairs, but the entire community rest together beneath the primitive

shelter of a leaf. The moth from which this particular American stinging caterpillar comes, is the large and handsome Io moth (*Saturnia Io*), and differs considerably from the Io thus represented in the engraving as the parents of the European processionary caterpillars.

## White of Egg an Antidote for Corrosive Sublimate.

It is asserted by Peschier, that the white of one egg will render four grains of corrosive sublimate innocuous. Orfila administered to a small dog twelve grains of this poison; after it had acted for about eight minutes, the whites of eight eggs were given; it vomited several times, the pain ceased, and in five days it quite recovered. The white of egg should be beat up in a little water, and it should be given freely, at intervals. A woman, named Rose Maney, poisoned herself with corrosive sublimate; various remedies were tried, but with little benefit. The morning after the poison was taken, the whites of two eggs, beaten up with a little cinnamon water, were given; this dose was repeated every half hour, until she had taken the whites of twelve eggs, when she began to feel easier; and, during the time she had been under this treatment, she had only vomited twice, and other unfavorable symptoms began to disappear. The white of egg treatment was continued until she had taken the whites of thirty-two eggs. She went on progressing favorably, and was eventually cured. Here the albumen was not given till many hours after the poison was first taken. There is another substance which is considered to act as an antidote, namely, gluten. Its properties were discovered by Taddei, an Italian chemist. In administering it, it is usual to mix the gluten with soap, so as to hold it in suspension. If eggs are not at hand, gluten may be thus used. It is easily prepared by kneading dough, made of flour and water, under a tap from which the water is pouring in a small continuous stream; the starch is washed away from the flour, the gluten remaining behind; and this should be rubbed up with soap and rinsed with water.

Thenard, the great French chemist, during a lecture, by mistake drank a strong solution of corrosive sublimate. He immediately discovered what he had done, and made the fact known to his class. The excitement produced was intense. He told them to bring him eggs. Eggs were sought for in every direction; in a few minutes large quantities were obtained by his anxious pupils, and thus the life of this eminent professor was saved. This happened shortly after the discovery of the effects of albumen on corrosive sublimate were discovered by Orfila. A case is also recorded of a gentleman who, by mistake, drank a portion of an alcoholic solution of this substance. He was so alarmed by the taste that he did not finish it. He was, however, seized with a sense of tightness in the throat, burning at the stomach, and purging. Orfila saw him when the symptoms had acquired great severity, having lasted two hours. The administration of white of egg caused a mitigation of his sufferings, and he ultimately recovered.

## Potatoes.

In Gerarde's "Herbal," 1597, page 926, will be found the following interesting account of the uses of the potato: "The potato roots are among the Spaniards, Italians, Indians, and many other nations, ordinary food and common meat; which no doubt are of mighty and nourishing parts, and do strengthen and comfort nature; whose nourishment is, as it were, a mean between flesh and fruit, but somewhat windie; yet being roasted in the embers, they lose much of their windiness, especially being eaten sopped in wine. Of these roots may be made conserves no lesse toothsome, wholesome, and dainty, than of the flesh of quinces, and likewise those comfortable and delicate meats called in shops Morselli, Placentula, and divers other such like. Their roots serve as a ground or foundation whereon the cunning confectioner or sugar-baker may work and frame many comfortable delicate conserves and restorative sweetmeats. They are used to be eaten roasted in the ashes. Some when they be so roasted infuse and sop them in wine; others, to give them the greater grace in eating, do boil them with prunes, and so eat them; likewise others eat them (first being roasted) with oil, vinegar, and salt, every man according to his owne taste and liking. Notwithstanding, howsoever they be dressed, they comfort, nourish, and strengthen the body, vehemently procuring bodily lust."

TO TAKE INK-STAINS OUT OF MAHOGANY.—Put a few drops of spirits of niter in a teaspoonful of water, touch the spot with a feather dipped in the mixture, and on the ink disappearing, rub it over immediately with a rag wetted in cold water, or there will be a white mark, which will not be easily effaced.