

larger mates, are considerably the more formidable of the two, their short, thick, sharp-pointed mandibles, being provided for the purpose of boring holes in bark to deposit their eggs, are very strong.

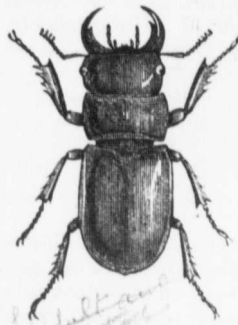


Fig. 32.

This family is represented in Ontario by a small number of insects, the most typical of which is *Lucanus dama*, Thunb. (Fig. 32), which is a large, smooth, brown beetle, of little more than an inch in length. The jaws of the male are very long, and finely pointed and are curved like a sickle and bear on their inner edge, near the middle, a small sharp tooth. The head, to bear these large mandibles, is necessarily large; in the female it is much smaller and narrower, and is densely covered with punctures which give it a rough appearance. The eggs, which are yellow and oval, are laid in a hole, made by the female, in the bark of a tree, near the root, about the end of July, when this beetle should be sought for. The grubs live in the trunks and roots of several sorts of trees, but chiefly in old apple trees, willows and oaks; they are long, thick, nearly cylindric white grubs, of a very fleshy consistency, closely resembling, in general appearance, the larvæ of the *Scarabæidæ*, but they are distinctly separated by certain characteristic points in their internal structure, and by their bodies being destitute of the transverse foldings so conspicuous in the latter. The larvæ of the *Lamellicornes* are remarkable for having their bodies curved, so that the end of the abdomen is drawn under the body, which prevents them from crawling on a flat surface and necessitates their always lying on their sides. The larva of *Lucanus dama* has a horny rust-coloured head furnished with two powerful jaws, which it employs in gnawing the wood, upon which it feeds and which it reduces to a kind of tan. The antennæ are short. It has six reddish articulated legs, which are attached to the first three segments of the body. When mature it forms a cocoon out of the minute chips and debris which it has itself made during its life. In this cocoon it undergoes its transformation to the pupa and perfect insect. In the pupa state the large mandibles or horns of the male are folded down over the breast. Röscl, who studied thoroughly the European representative of this family (*Lucanus cervus*) and discovered that the male and female were one species and not two, as previously believed, says that that insect lives six years as a larva. The injury which they cause is sometimes considerable, as they bore not only into the solid wood but also into the roots of trees.

It is supposed that the larvæ of these insects are what were eaten by the Romans, as a great delicacy, under the name of *Cossus*.

The name of *Pectinicornes* or "comb-horned," has been proposed for this family, but so far it has not been generally accepted by entomologists.

The *Petalocera* of Dumeril (*Scarabæus* of Linnaeus) or second division of *Lamellicorn* insects, is one of immense extent, being divided into more than 700 genera, comprising some 6000 species. They are distinguished from the foregoing family by having the antennæ not abruptly bent into an angle, eight, nine or ten jointed and terminated by a large mass, composed of several, generally three, plates, which shut and open at will. In some species these plates are flat, so as to be placed side by side, in others the basal one is hollowed so as to form a sort of box in which the intermediate plate is enclosed. The mandibles do not exhibit any striking sexual variations; but the head and thorax of the males in some of the groups, are armed with horns and protuberances of the most bizarre and diversified appearance, of which it is very difficult to conceive the uses. The antennæ of the males too, are occasionally developed more than those of the females. The mentum is large and horny. The body is generally more or less convex, the legs robust and as a rule toothed on the outer edge.

These insects are almost all of them vegetable feeders, the greater part subsisting upon it when in a state of decay. Some in the perfect state feed upon leaves and flowers, and their larvæ upon the roots of grass, etc., often causing great damage. In the colours of these insects we find a conformity to their habits; those that burrow under ground are generally of black and obscure hues, while those that frequent leaves and flowers are often splendidly attired. The origin of the name *Scarabæus* is doubtful; the word never occurs

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