

pair of legs, and usually lies so hidden in a groove excavated for its reception in the meso-sternum, that its use and importance might at first sight not be apparent. When, however, the beetle falls, or is placed upon its back on a surface too smooth for any projection to be reached with its short legs, the service rendered by this curious piece of mechanism will soon be seen, for when the beetle has vainly endeavoured to right itself by the use of its feet, and finds itself as helpless as a turtle in a similar predicament, it bends back its thorax and head until its arched body rests only on the back of the head and the tips of the elytra (wing-covers). By this movement the spine is released from the groove or socket into which it so neatly fits; then by smartly bending up the thorax again the projection is forced back into its receptacle. This is not so easily accomplished as its withdrawal. It appears to catch for an instant upon the margin of the groove, but by reason of its elasticity bends and springs in with a sudden jerk, producing the snap or click which is heard. The consequent sudden impact of the elastic elytra on the hard surface tosses the beetle several times its own length into the air, the height being greater as the substance on which it rests is smoother and harder. If it does not fall upon its feet the operation is repeated until the desired effect is accomplished.

Elaters may be roughly classed in two groups according as the larvæ are found feeding on the roots of plants (usually under ground) or in old and decaying wood, or under bark. The majority of the first, and a few of the second class are decidedly obnoxious insects, while the rest are more or less beneficial.

The eggs of the root-feeders are thought (although the fact has, so far as I know, never been actually determined by observation), to be laid on or among the roots or stalks of plants, either in the ground or just at its surface. They are very minute globular, or partly oval bodies of a yellowish-white colour and produce almost invisible slender grubs, which even when full grown are seldom more than an inch long.

In England these grubs have received the name of "wireworms," from their slenderness and hardness, and the same term is applied to them in this country. It is also incorrectly applied sometimes to the millepedes or myriapods, such as the *Julus*, which is found under stones or in wet wood, etc., and is often from two to three inches long. These are not true insects and are easily distinguished from the larvæ of the clickers by their many feet, the *Julus*, for instance, having over fifty pairs.

The larvæ of elaters more nearly resemble in shape the well known meal-worms, or grubs of the beetle called *Tenebrio molitor*. They have twelve segments besides the head, and have six true legs; also a prop-leg or tubercle on the least segment. They are semi-cylindrical, being rounded above and flattened beneath, and are cased in a very hard, horny covering, which affords them a most efficient protection from the attacks of their smaller enemies, and also enables them to burrow easily and rapidly through light soils.

Such larvæ as live in decaying or old wood are broader and more flattened and in some cases much larger than the earth burrowers. The eggs are probably laid in crevices of the bark or wood in which they undergo their transformations. These larvæ may be said to be beneficial in so far as they, with those of many other tribes of insects, aid in destroying and removing the decayed and prostrate vegetation, and thus make way for new growths.

I am not aware that any very marked damage has as yet been inflicted upon the crops in Canada by the larvæ of these beetles, but in the British Islands they have been accused of committing alarming depredations on grain, root crops and garden produce of various sorts. Much attention has been given to them by Curtis in his exhaustive treatise on "Farm Insects," and also by many other well-known entomologists. A number of species are described, four of which appear to be specially obnoxious and destructive. The larvæ live some years, perhaps as many as five, and moult, as do caterpillars, three times before entering the pupa state. This change takes place in a small cell some distance under ground, and in a few weeks the beetles emerge to a higher but much briefer existence, and are found upon various flowering plants, etc.

The four species so notorious for their ravages belong to the genera *Athous* and *Agriotes* of *Eschscholtz*, which are represented in this country by a number of species, having probably similar habits to their old world kindred.

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