

every year, while of the remaining three, there are every year from two to three broods, each of them generated by females belonging to the preceding brood. Eight of the ten feed externally upon the leaves and tender stems of the potato, while two of them burrow like a borer exclusively in the larger stalks. Finally almost every one of these ten species has its peculiar insect enemies, and a mode of attack which will prove very successful against one, two, or three of them will often turn out to be utterly worthless when employed against the remainder." While happily for Ontario, our potato crops are not as yet subject to the attacks of quite so many noxious insects as appear to afflict our neighbours over the lines; yet we have already a sufficient number to make us very anxious to ascertain any mode of destroying them, and to become acquainted with those friendly insects whose chief mission seems to be to assist the agriculturist in his arduous efforts.

### 1st. THE THREE-LINED LEAF BEETLE, (*Lema tri lineata*, Oliv.)

Order, COLEOPTERA; Family, CHRYSOMELIDÆ,

*Eating the leaves of the potato both in the larval and perfect state.*

This beetle belongs to a family of destructive insects that spend the chief part of their lives upon the leaves of various plants, and which as they derive their entire nourishment both in the larval and perfect state from leaves only, may fairly be called leaf beetles.

FIG 65.



Colours, Pale Yellow and Black.

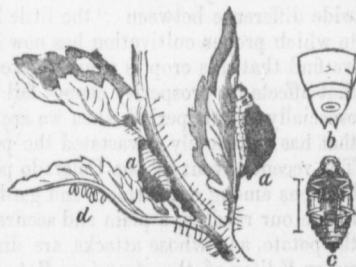
FIG 66.



Colours, Yellow and Black.

The perfect beetle Fig No. 65 is of a pale yellow colour with three black stripes on the wing cases; the intervening spaces of yellow are thickly covered with small punctures or indentations; and on the thorax or throat are two black spots. It bears a very strong resemblance to the common cucumber beetle, (*Diabrotica vittata*, Fabr.) Fig No. 66, from which however, it may readily be distinguished, by its somewhat darker shade of yellow, its slightly larger size and by the peculiar formation of the thorax, which is what naturalists term "constricted" or what may be better described as being pinched in at the sides after the fashion of a modern young lady's waist. It also differs in some other respects which are less obvious. The larva of the three-lined leaf beetle may at once be known from all other larvæ that feed on the leaves of the potato by its peculiar and unsightly habit of covering its back with its own castings. In Fig 67 (a, a) the larva which is of a dull white colour, is shown in profile, both full and half grown, covered with the soft greenish excrementitious matter which it discharges from time to time. (Fig. 67 b) shows the last few joints of the abdomen of the larva magnified and viewed not in profile, but from above. The vent of the larva as may be seen from this last figure is situated on the upper surface of the last ring, so that its casting falls upon the back, and by motions of the body is with each successive discharge pushed forward towards the head, until the whole back of the insect is entirely coated with it. When the load becomes too heavy, or gets hardened by exposure to the air, it is thrown off by the insect, and the process is commenced anew. Former writers have thought that this curious device was intended as a protection from the rays of the sun, for the tender and soft bodies of the larvæ, but we do not agree with this view, for there are many other larvæ, of various species, destitute of any such protection, whose skins are equally tender and sensitive, and we incline to the more rational opinion, that this singular shield is provided as a security against the attacks of Ichneumon flies, who frequently deposit their eggs in the living bodies of their victims. It is also possible that this repulsive covering may be of service against the attacks of birds, for we do not remember ever to have noticed any birds feeding on these larvæ. Fig 67 (c) presents a somewhat magnified view of the pupa.

FIG 67.



Colour - Dull White.

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