

the ground. This is a useful means of disposing of empty tomato and other cans. To prepare these easily, they need only be thrown into a bonfire, when the tops and bottoms fall out and the sides become crumpled. The central piece of tin can then be cut down the centre with a pair of shears, and forms two tubes.

(b) Wrapping a piece of paper round the stems of plants when setting out will also save a great many.

(c) Hand-picking or digging out the cut-worms whenever a plant is seen to be cut off should, of course, always be practised.

Prof. B. Smith says that plants such as tomatoes, cabbages, etc., can be protected when set out by putting at the base of each plant a tablespoonful of poisoned bran, using 1 lb. Paris green to 50 lbs. bran. This should be well mixed, dry, and then moistened with sweetened water until the whole is thoroughly wet, but not sloppy. This mixture is very attractive to cut-worms, being usually preferred to the plants. Against climbing cut-worms, which sometimes injure fruit trees and bushes, dendrolene or the other preventative remedies advised for canker-worms will afford protection.

There are two enemies which deserve special notice and for the good service they do should be known by sight to every cultivator. They are the



Cut worm Lion.

fiery ground beetle or cut-worm lion (*Calosoma calidum*—Fab.) and the black wasp (*Ammophila luctuosa*). Both of these are desperate enemies of the cut-worms, the former feeding on them in all of its stages; the latter digging them out and storing its nest with them as food for its young grubs.



Black Ground Wasp.

Grasshoppers and locusts (*Acrilidae*) are reported from Kamloops, Lytton, Ashcroft, Columbia Valley, Fort Steele, Nicola, Tobacco Plains, East Kootenay, Grasshoppers. Louis Creek, Adams Valley, in the interior, and from Surrey Centre, Sardis, Agassiz and Vancouver Island, in the lower country.

These grasshoppers, or locusts, are of several different varieties, the most common one in the interior probably being *Melanoplus atlantis* (Riley). Dr. Fletcher says:—

"The large amount of damage annually wrought by locusts is seldom appreciated. Their habits are to frequent grass lands, where a large proportion of the crop may be consumed without making much difference in the appearance of the fields. It is only after hay is cut, or in seasons of unusual drought, that locust injuries are much noticed. If, however, their numbers at all times and their voracity are considered, it will at once be seen that they must every year destroy much produce. They do not develop wings until July, and previous to that they pass most of their lives low down among the stems of grasses. Besides locusts, there are many other forms of grass-feeding insects which every year levy a heavy toll unnoticed.

These may all be to a large measure controlled by the use of machines called 'hopper-dozers,' or 'tar-pans,' which were invented in the West some years ago at the time of the so-called 'locust invasions.' Prof. Herbert Osborn, of

Iowa, writing on means of destroying grasshoppers, says:—"In meadows and pastures, we believe the use of the hopper-dozer the most practical plan that can be recommended. In many cases it can be used to capture these and the leaf-hoppers at the same time, especially if used when grasshoppers are still quite small and can be held by a thin layer of coal-tar used on the simple flat sheet of iron. When larger they need a deeper layer of coal-tar, or a pan of water with a covering of coal oil on it. A cheap and simple plan for this purpose, costing from \$1.50 to \$2, was described many years ago by Prof. Riley. It consists of a strip of sheet-iron 8 or 10 feet long, turned up 1 inch in front and 1 foot behind, with pieces soldered in at the ends (or made of wood), and hooks placed in front at the ends for the attachment of ropes. If to run on rough ground, it will be better to put runners 1½ or 2 inches high underneath. Into this put a layer of coal tar half an inch deep, or water and kerosene. It can be drawn by a boy at each end, or by horse-power if preferred.