THE TOMATO-CATERPILLAR MOTH.

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THE tomato-caterpillar moth (*Heliothis obsoleta* Fab.) is one of the most widely distributed and destructive insects to field, garden, and orchard crops. It occurs throughout the world, attacks a wide range of plants, and is practically omnivorous. As a field-crop pest in New Zealand it is not so outstanding, although it is commonly found associated with army worms (*Cirphis unipunctata* and *Melanchra composita*), and feeds on the ears of maize, millet, &c. To the gardener and orchardist, however, it is of considerable importance, since it attacks tomatoes, beans, apples, peaches, &c.

The adult moth (Fig. 1) measures about ¾ in. in length. The colour and markings vary a great deal, being greyish-white, greenish, reddish-brown, &c. The hind wings usually have a dark area along the outside edge, while the front ones have darker transverse markings of varying intensity. During the spring months the first flight of moths appears. The moths are most active as evening approaches, when the females lay their eggs either singly or in batches up to nine hundred or more upon the stems or leaves of any one of the host plants. Within a few days the minute caterpillars hatch, and make a meal of the empty egg-shells before progressing in search of a vegetable diet. As they grow in size, damage caused by the caterpillars becomes more conspicuous, and it is then usually that the grower first becomes aware of their presence. In the case of the tomato or apple the caterpillar eats a hole through the skin of the fruit and excavates a large cavity within (Figs. 2 and 3), the damage being more apparent the older the caterpillar gets.

The caterpillar (Fig. 4) is ornamented by numerous stripes, the colour of which shows a great range of variation (reddish, blackish-brown, or greenish, &c.) in different individuals. When full grown the caterpillar measures up to 1½ in. long, and leaves the fruit, usually dropping to the ground, into which it burrows to a variable depth according to the nature of the soil. Some have been found as much as 7 in. below the surface, but as a rule they do not burrow so deep. The caterpillar then constructs an earthen cell in which it transforms to the brownish pupa. The period between hatching from the egg and transformation to pupa varies from four to six weeks during colder weather, and from about three to four weeks in the warm seasons. The pupal stage varies from about a fortnight to a month according to climatic conditions.

The number of broods, which may vary from three or more, is also dependent on climatic conditions; the broods are not always well defined, there being a considerable overlapping. The insect passes the winter in the pupal stage underground, and the larvæ from the first spring brood feed for the most part on foliage or on immature fruit; the later broods are quite apparent from their depredations upon ripening fruit. During last November a considerable amount of damage to young apples was recorded from Hawke's Bay and Gisborne by the Orchard Instructors for these districts (Mr. W. H. Rice and Mr. M. Davey respectively).