

THE STRAWBERRY DISEASE.

BY

HENRY TRYON.

(Read on 5th October, 1893).

THIS paper related to the features presented by a special strawberry disease of not infrequent occurrence in Southern Queensland, occasioned by the attacks of a fungus parasite, *Sphærella fragariæ*, the morphological characters of which were also dilated upon.—(Abstract). Vide "*Queenslander*," 21st October, 1893.

THREE UNDESCRIBED INSECTS WHOSE FOOD-PLANT IS THE MORETON BAY FIG AND THE INJURIES WHICH THEY OCCASION.

BY

HENRY TRYON.

(Read on 19th October, 1893).

SOME three months since our hon. secretary, Mr. R. Illidge, drew attention to certain lepidopterous insects which, in their caterpillar phase, fed upon the foliage of the Moreton Bay fig, and I will now introduce to the notice of those present several insects belonging to other orders which are very harmful to the same plant.

The first to mention is the homopterous insect, *Psylla fici* (H.T.). A curious appearance has of late years characterised some examples of the species of native fig grown for ornamental or shade purposes in different parts of our metropolis, and especially so the Moreton Bay fig—*Ficus macrophylla*. Large dark-brown opaque more or less glossy scab-like bodies, composed of a viscid glutinous substance, have appeared on the under surfaces of the leaves, the leaf-tissue at and around these spots

has become brown and dead, and the leaves themselves have eventually dropped off whilst still green. Sometimes but one of these bodies is present on a leaf; oftentimes, however, five or six; and as for size they vary from $\frac{1}{4}$ in. to 2 in. across. So prevalent is the affection that in many cases trees have been completely denuded of their foliage. Some of them have, however, been fortunately able to develop terminal shoots and so commence afresh their vegetative growth; others, too debilitated through loss of their assimilative organs to do so, have emitted frail lateral offsets, which in turn have either become covered with a curious dwarfed foliage or have even also perished. In many trees, as a consequence, the symmetry of form has been permanently affected; in all, the growth has been seriously retarded.

This injury is due to the attacks of a small transparent four-winged snout-bearing jumping insect referable to the order Homoptera and the genus *Psylla*, measuring about two lines in length. Its inimical relation to the fig tree, on which it subsists, will be seen from the following particulars concerning its life history.

The eggs are laid side by side, in groups of from five to a hundred—or even more, on the under surface of the leaf. They are small oval dull-brown objects, having each a central ridge and a beak-like downwardly-directed process—the extremity of which is the point of attachment. Owing to their colour and the number which each group comprises, the latter are conspicuous objects. Several groups generally occur on each leaf or the entire margin may be bounded by them, and thus the eggs present on a single leaf may amount to some thousands.

In hatching the egg splits open along the dorsal keel, and the young one to which it gives birth is wingless and active. This is a parallel-sided six-legged reddish-yellow insect, rounded in front and behind. A curved line separates an anterior smooth from a posterior segmented portion. The former, in addition to the six legs, bears two bright red lateral eye-spots. The most conspicuous feature in the ringed portion is afforded by two orifices—the dorsal spinnerets, one on each side near the hinder border, and from each of these the insect emits con-

tinuously a relatively thick ultimately opaque and white thread. As, too, the insects when in this larval state, though active, do not move far from one another, these threads soon interlace, and thus the leaf appears to have white glistening objects scattered over its green surface. The insects now soon insert their probosces into the leaf-tissue, after which event they probably move but little. They now, too, elaborate from the milky plant-juice and excrete an extremely viscid and tenacious substance which, however, does not adhere to their own bodies since these are covered by this time with a mealy secretion. This glutinous substance becomes blended with the foregoing threads and forms a compact low canopy beneath which the insects, arising from each group—or conjoined groups—of eggs feed. It, moreover, day-by-day, becomes more extensive, elevated, and darker. The insects after several ecdeses, or changes of the skin, eventually cease feeding and become active pupæ. In this pupal condition they resemble the larvæ, but possess conspicuous wing-cases as an additional feature. The pupæ after a while crawl out from beneath their covering and may be found scattered all around it, usually within a distance of half-an-inch. And from them the perfect or winged insects emerge through a longitudinal opening behind the head. It now resembles a miniature cicada, and has its wings placed perpendicularly along the sides of the body, and extending some distance beyond its hindmost extremity. The head is very broad and bent downwards beyond the large protuberant lateral eyes. It has a stout jointed proboscis and ten-jointed antennæ. These have their two short basal joints yellow, but are in other respects black. The hind part of the thorax supports two blunt tubercles. The hind body is six-jointed. The legs are yellow, and the leg-joints of the hindmost pair have at their extremity six little spines which assist the insect in leaping. On the least disturbance the adult *Psylla* springs from its support, takes wing, but quickly alights again.

It would seem that as the eggs are freely exposed they might readily be destroyed by the application of insecticides. It happens, however, that their shells are very thick and impervious, so that kerosene emulsion may be sprayed upon them with little or no appreciable effect. The adult insects are,

however, readily destroyed, but owing to their restless disposition can with difficulty be reached. Fortunately, however, the larva is pursued by a small bright metallic hymenopterous insect with lance-shaped hind body and short ovipositor. This parasite lays its egg within or upon the young *Psylla*. At the present time the eggs of the *Psylla* upon the leaves of our Moreton Bay figs are in process of hatching, and it is an interesting sight to notice these little friendly insects moving stealthily amongst the destructive larvæ with wings folded back depositing their eggs one by one in them, the latter as yet for a short time unprotected by their glutinous secretions.

2. The second injurious insect is a beetle which when adult drills a round hole in the young shoot just below the terminal bud and feeds its way upwards through the centre of the wood. Growth is consequently retarded, and the shoot breaks off. Neither this injury nor the insect which occasions it seems ever to have been remarked. The latter belongs to a family of very notorious timber-destroying insects—namely, the *Scolytidæ*; and may probably prove to belong to an undescribed genus allied to *Phloëtribus*. It is a very stout, short, parallel-sided, dark purplish-brown beetle, having an obscure light-coloured band widely bounding the thorax behind. It measures about $\frac{1}{4}$ in. in length. It is probably equally destructive in its larval condition, but its early stages have not as yet been observed.

3. A third destructive insect from the Moreton Bay fig also belongs to the order of beetles. It is a remarkable member of the *Anthribidæ* related to Montrouzier's genus *Proscoporphinus*, hitherto found only in New Caledonia. A curious feature in it is the excessive length of the antennæ in the male sex, these organs measuring five times the length of the body. It has also the strange habit of leaping considerable distances. Unlike the last-mentioned insect, it is during its larval condition that it carries on its depredations. The specimens shown were bred from pieces of recently dead wood; but as these were derived from trees which were previously injured by the *Psylla*, it is believed that the beetles are not the primary cause of the destruction of the branches in which they occurred. No doubt, however, they determine the death of many parts of the tree which but for their attacks would recover.

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