

istic and may be roughly described as beaks, which, however, are of sufficient length for penetrating the tissues of the plant. In the head there is a force pump arrangement, where the secretions of the salivary glands is propelled into the puncture made by the beak, giving rise to irritation or congestion and thus increasing the supply of fluid in the vicinity of the wounds. Capillary attraction is supposed to be the chief agent in the ingestion of the plant sap. There is thus a continuous imbibition of fluid and the natural consequence of this is a copious discharge of effete matter. The nature of this latter, which, however, is not to be regarded as the excrement of the insect, varies very considerably. In some cases it is a solid; in others it is the honey-dew. In Australasia are found psyllids, which produce a substance called leaf-manna or lerp, and used as food. Certain coccids secrete a hard shining matter which surrounds the whole body and form the "ground pearls" of many countries. The manna of Exodus is believed to be the honey-dew of another coccid. Many other substances of economic importance might be mentioned as being the secretions of various insects belonging to the order Hemiptera. It is the aphid, however, which is mainly responsible for the great supply of honey-dew during certain seasons. This insect is well known to all whose occupations take them into garden or orchard. Beside the direct injury that it does by sucking up sap, worse damage due to fungi often follow its ravages. It has also proved that the aphid is an important factor in the spreading of bacterial diseases of fruit and other trees. (See Bulletin No. 176 Ontario Department of Agriculture).

The rapidity with which aphids perform their destructive work is truly marvellous. Their presence will often pass unnoticed until the plant or tree upon which they have been living has been badly injured or perhaps completely destroyed, by which

time they will have deserted their host for another. Nothing in the whole realm of nature is more wonderful or surprising than the life habits of these insects. Their rapid rate of multiplication is well-known, but few are aware of the exceptional facts relating to their methods of reproduction. Speaking in a general way the process is as follows. From a fertilized egg deposited in the autumn is hatched in the spring a wingless female which develops, and **without the agency of a male** brings forth **living** young. These grow rapidly and also in their turn, in the course of ten or twenty days, also, produce living young. This viviparous reproduction continues, generation after generation appearing, forming immense colonies. When the growth of their plant host is checked, and food becomes scarce winged females are produced, capable of migrating to new pastures, and these again depositing living young. Towards the end of the season there appear truly sexual forms, both male and female, whose union results in eggs which are to rejuvenate the race and commence fresh cycles of life in the succeeding spring. This summarized account does not, however, give an exact idea of what happens in any one species of aphids.

A great amount of discussion has taken place regarding the peculiar organs called the siphons, nectaries or honey-tubes. These are two wart-like tubercles or tubes situated towards the end of the body. They were formerly regarded as the means of secreting the honey-dew, a view now generally considered to be erroneous. Büsgen claims as the result of chemical analysis, that the substance issuing from these tubes is not honey-dew, but is more like wax. Some entomologists state that honey-dew is emitted entirely from the anal aperture. Buckton says: "Any observer may prove the forcible ejection of a liquid from this last passage by gently stimulating with a brush the abdomen of the full fed individuals of a colony of