

oak trees and rose bushes, are caused through the irritation of the plant tissues by minute larvae of the cynipid gall flies. These flies are all very small, the largest of them being not more than one-third of an inch in length. The female flies have a long slender and flexible, yet strong, sharp pointed ovipositor, containing several needles or awl-like pieces, which they use to prick the soft tissue of the leaf or the tender twig, so that the egg may be deposited in this succulent tissue of the growing plant. In this manner one or more eggs are inserted into the leaves, twigs and roots of trees and herbaceous plants, where but one or two eggs are inserted into one leaf or twig, there the galls become large, on the other hand, however, if a dozen or so of eggs are inserted there the galls remain small.

In a short time the egg gives birth to a tiny footless maggot-like larva, which then feeds largely by absorbing the sap through its skin. At this time the development of the gall begins where the larva lies.

The stimulus for growth in most cases comes from the larva and probably arises from the irritation through special salivary excretions and to some extent through physical irritation caused by the wiggling of the larva.

The pupa is passed within the gall and the adult usually emerges in the Autumn or Spring.

Sometimes eggs are deposited by flies upon trees or shrubs different from those from which they emerged and the hatching larvae stimulate the growth of entirely different shaped galls and the larvae develop into gall flies of a markedly different species from their mother. The eggs of these gall flies, however, produce a species of larvae and gall flies similar to that of their grandparent.

It is frequently of interest to note the presence of other insects besides the gall maker in these galls.

As many as fifteen different species have been found in a gall upon the common golden rod. Some of these are parasites, others only guests or inquiline. The inquilines are often very similar in appearance to the species which actually produces the gall.

It is most remarkable to find the extraordinary instinct with which gall flies are endowed and which leads the adult flies to the right selection of the plant and the proper position and place on it, to lay their eggs, and the passive response of the plant to the growth and stimulating irritation of the gall fly larvae.

