

A few puparia were found directly beneath the manure pile to a depth of twelve inches. The greatest numbers occurred in the region about eighteen inches from the pile and at a depth of twelve inches to two feet from the surface; this is graphically shown in the figure; the puparia were also numerous immediately below the surface of the soil. The numbers then gradually decreased proportional to the distance from the pile and dwindled away at a distance of about four feet from its base.

This observation is of practical interest to the sanitarian as indicating the habits of the larvæ under normal conditions. It illustrates the ability of the flies to emerge from a depth of two feet, as particular attention was paid to condition of the puparia, and the flies had emerged from all the puparia other than those that had failed to develop.

The Overwintering of the House-fly

The question as to the state in which *Musca domestica* passes the winter has been discussed recently by several workers, and it seems desirable to review the subject again in so far as my experience of conditions in the most northerly temperate latitudes of England and Canada are concerned. In my monograph on the house-fly (1914) the statement is made that three causes contribute to the disappearance of the flies at the end of the summer, namely, retreat into hibernating quarters or into permanently heated places, natural death, and death from *Empusa muscæ*. I must confess that the word "hibernation" has been used in too broad a sense by me, as it has not only implied a dormant state during the winter, which is the usually accepted meaning of the term, but it has also had reference to a possible and sometimes actual state of activity during the winter months. It is in this sense that the word "hibernation" was used, as will be gathered in reading the section under that heading, in the work referred to. It would be preferable to substitute the term "overwintering," as this will adequately cover all conditions and developmental stages and will avoid a possible misuse of the term "hibernation."

Taking all the evidence that is now available, it may be stated that in northerly latitudes *Musca domestica* exists in the overwintering period in the following states: