

with many leaves shading the surrounding soil, thus conserving moisture and promoting quick growth.

3. *Abundance of Insect Pests.* The disease is chiefly spread by means of infection from wounds, and under field conditions these are usually produced by insects, especially the cabbage worm (*Pieris brassicae*) which was very numerous upon cabbage and cauliflower leaves. A careful examination of over 100 plants showed that one or more larvae were present on each plant. Slugs also do considerable damage to these plants, and obviously smear themselves with a number of soil organisms, and as I have already mentioned, the *Bacillus oleraceae* is probably a soil organism.

Ants and other insects swarm around turnips, eating the rotted pulp, and no doubt serve to carry the germs to other plants.

4. *Injury from Planting, Cultivation or Wind.* Leaves of turnips are frequently bruised or injured during cultivation, by either hand or horse hoes. Cauliflowers may be injured during planting out, and the infecting organism brought into contact with the broken surface. In cases of very rank growth, a heavy wind may cause leaves to be broken off, and thus afford bacteria a chance to penetrate into the plant tissues. Many gardeners trim their cauliflowers on the field, and when these are infected they carry the disease on to another season. The same ground is often used year after year for the same crops, a dangerous procedure when disease is present, as it is likely to make the trouble endemic.

5. *Susceptibility of Varieties.* According to the limitations placed upon the meaning of "resistance" and "immunity" in plants by Russell, we shall define resistance as the "inherent power of the vegetable organism to withstand the action of bacteria in general;" and immunity as "the ability of the organism to repel the attacks of a germ which produces a pathological condition in a closely allied form."

We find that white turnips and cauliflowers are very susceptible to inoculations of *Bacillus oleraceae*, whether carried out in the laboratory, or met with under field conditions. Our laboratory experiments were all carried out on the Greystone variety of white turnips, which, under field conditions, seems to have some immunity; but which readily succumbs to artificial inoculations. We have kept careful record of the amount of disease present among the different varieties tested on our trial grounds.