

is a crippling of commercial queen rearing, a check on the trade in bees, and a decisive effect on the manufacture and sale of bee-keepers' supplies. All these factors must be considered in an estimate; and, what is more, the damage is accumulative. It cannot be calculated by the year and then totalled; the progressive loss must be figured.

In New York State, where European foul brood has been combatted for nearly a decade, and where it is now well suppressed, it has been estimated that the damage from loss of bees alone, in a very limited area, in 1899 and 1900, was at least \$45,000.

In Ventura County, Cal., where American foul brood flourishes, a thriftless bee-keeper had 151 colonies, which, from neglect, were reduced to 14 colonies in a little over twelve months' time. One hundred and thirty-seven colonies had died or were nearly dead. But there are many more and even sadder cases, were there space to relate them.

The Spread of Bee Diseases

Both types of foul brood are highly infectious; the way in which they are spread might be compared to the spread of typhoid fever in human communities. Honey is the common carrier of this infection, just as milk and water are the agents which frequently spread typhoid fever.

In diseased colonies of bees, practically every part of the hive becomes contaminated with the germs of the disease. Consequently, when disease is found in the bee-yard, every precaution must be taken that bees from healthy colonies do not come in contact with any part of the diseased colonies or hives. Honey, being so irresistible to the bees, is, of course, the main thing to be guarded. Since diseased colonies soon become weakened, from the lack of young bees to replace those dying from old age, they are less likely to maintain guard against robbers,

which are a great source of danger in the spread of infection. Immediately on discovery, diseased colonies should be treated.

FEEDING HONEY

In these days of widespread bee disease it is dangerous to feed any honey to bees; it is far preferable and less dangerous to supply them, if they need stores, with a syrup of sugar and water, half and half. It is safe to feed honey to bees only when it has been vigorously boiled for at least a half hour; and, as Dr. Phillips has recently stated, in order to avoid risk, "it is better to make this an hour." In boiling, the honey should always be diluted with equal parts of water in order to prevent scorching.

DISINFECTION OF TOOLS AND HANDS

All tools used in manipulating diseased bees, as well as the operator's hands, should be thoroughly disinfected before opening a healthy colony.

DEPLETED HIVES FROM GREEN-HOUSES A SOURCE OF DANGER

In Massachusetts particularly there is another source of infection which is difficult of control. Each year several hundred colonies of bees are placed in green-houses by those who grow cucumbers under glass. In the adverse conditions of the cucumber house the hive soon becomes depleted and is promptly thrown on the rubbish pile. If the hive originally came from a foul-brood region—which is not improbable, inasmuch as the green-house men buy their bees wherever they can get them—all the bees within a radius of several miles of the rubbish pile are exposed. More than once the writer has seen from two to a half dozen such hives cast out on the rubbish heap. While there is no intention of endangering neighbors' bees, it is as criminal to throw out of doors any hive in which bees have died as it is to shake the bedding or

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