

larvae which have died of this disease have a very characteristic odor which resembles a poor quality of glue. This disease seldom attacks drone or queen larvae. It appears to be much more virulent in the western part of the United States than in the East.

#### European Foul Brood.

European foul brood (often called "black brood") is not nearly as widespread in the United States as is American foul brood, but in certain parts of the country it has caused enormous losses. It is steadily on the increase and is constantly being reported from new localities. It is therefore desirable that bee-keepers be on the watch for it.

Adult bees in infected colonies are not very active, but do succeed in cleaning out some of the dried scales. This disease attacks larvae earlier than does American foul brood, and a comparatively small percentage of the diseased brood is ever capped. The diseased larvae which are capped over have sunken and perforated cappings. The larvae when first attacked show a small yellow spot on the body near the head and move uneasily in the cell. When death occurs they turn yellow, then brown, and finally almost black. Decaying larvae which have died of this disease do not usually stretch out in a long thread when a small sick is inserted and slowly removed. Occasionally there is a very slight "ropiness," but this is never very marked. The thoroughly dried larvae form irregular scales which are not strongly adherent to the lower side wall of the cell. There is very little odor from decaying larvae which have died from this disease, and when an odor is noticeable it is not the "glue-pot" odor of the American foul brood, but more nearly resembles that of soured dead brood. This disease attacks drone and

queen larvae very soon after the colony is infected. It is as a rule more infectious than American foul brood and spreads more rapidly. On the other hand, it sometimes happens that the disease will disappear of its own accord, a thing which the bee-keeper never knew to occur in a genuine case of American foul brood. European foul brood is most destructive during the spring and early summer, often disappearing in late summer or autumn.

#### Treatment of Infectious Diseases.

The treatment for both American foul brood and European foul brood is practically the same. It is impossible to give minute directions to follow in every case, but care and common sense will enable any bee-keeper to succeed in fighting diseases of brood.

**Drugs**—Drugs, either to be given directly in food or to be used for cleaning combs, cannot be recommended for either of these diseases.

**Shaking treatment.**—To cure a colony of either form of foul brood is necessary first to remove all of the infected material. This is done by shaking the bees into a new hive on clean frames with fresh foundation, care being taken that the infected honey does not drop into the healthy combs. The healthy combs may be saved, provided there is enough to make them profitable, by piling up combs from several infected hives on one of the best of the diseased colonies. In a week or ten days all the bees which are worth saving will have been removed and the colony may be drummed out into a new hive or preferably into a hive with clean frames. Box hives are hard to shake for disease and are a men-

aces in the neighborhood where disease is spreading. Shaking of the bees should be done at a time when the bees in the apiary are in the midst of spreading disease. This can be done after bees have been shaken during a good season. Bees should be exercised by shaking material away from the combs or the combs removed from the hive. Wax from diseased combs should be rendered by sonification. High heating is used in the regular wax extractor. A diseased colony should be burned to prevent spreading. Bees should be sterilized by heat for at least half an hour, if possible, to the bees. If necessary, it should be repeated, and special care should be taken that no infected material is left in the hive. Frequently necessary treatment by shaking the foundation in new frames for five days. The bee-keeper must determine when necessary, but when it is safer to run the risk rather than run the risk. If repeated, the infected combs should be destroyed. Bees from deserting colonies on the queen may be a queen-excluder entrance.

with bee escape treatment may be instead of shaking the combs the hive should be drummed out into a new frame and foundation. This is at once transferred, and the field is