

community, depending for its existence on large numbers, has, by turns, artificial methods, from the earliest stages of growth, rendered the mature product incapable of independent existence. There being no individual life outside of the community, some the welfare and interest of the community govern every individual action; and, without apparent rule, harmony prevails over the whole. To the wisdom of the old having control of the young is due the congruous incongruity which we study in bee life.

The worker bees are undeveloped insects. From insufficient or innutritious food given to the workers while in the immature or larval state, their complete development is arrested; and this arrested development renders them more susceptible to disease. It is well known that undeveloped or impaired growth is liable to be attacked by microbes; and the worker bees, from the beginning of their existence, are so exposed.

All bee-keepers know that as we diminish the size of the hive, and thereby reduce storing room, we increase the necessity for feeding the bees; and, while bee-keepers assert that honey is more nutritious, and is a better food than sugar, they aver that sugar answers as well as honey for feeding bees. Both assertions cannot be true, and I believe the latter is not true. All attempts to convert sugar into honey, and to utilize the bees as manufacturers for this purpose, have failed.

Insects already rendered vulnerable to disease from innutritious food in the larval state cannot still be fed on innutritious food in the mature state without becoming a prey to disease. Feeding bees largely on sugar must lower their vitality, and queens raised by sugar-fed bees, from the defective nutriment given them may be want-

ing in vital strength, and their progeny, from their inherited weakness, may be predisposed to disease. Dzierzon said, twenty years ago, that bees should be fed on well ripened honey; and what I now say is, therefore, only a varied reiteration.

The necessity for feeding bees can be done away with to a great extent by giving them a larger hive, and this is the only way in which it can be done. Increasing the capacity of the hive by increasing the number of shallow frames will not help the bees in a cold climate. Cold climates require increased numbers and larger combs for reasons fully stated in previous articles. It is obvious that the more uncertain the climate in any locality, the larger must be the hive in order to save the bees from starvation, disease, and death.

There is another point connected with feeding which bee-keepers will have to think over, and that is—the general use of antiseptics in food given to the bees. Feeding healthy animals on disinfected food with a view to prevent disease caused by the bacteria, is not an established practice in therapeutics. The antiseptic can be of no use when disease is not present, and it may be productive of harm. Food sterilized by antiseptics is, to a corresponding extent, impaired in nutritive value. Even milk, sterilized by boiling, loses in nutritive properties. Feeding bees continually on poisons, in order to prevent the growth of bacteria only occasionally pathogenic from abnormal conditions which might possibly be avoided, cannot be approved of by what we know of the bacteria or the diseases produced by them. It may be said that experience proves the poisons to be of benefit. This, to say the least is very doubtful. For centuries it was thought that experience proved bloodletting to be of benefit