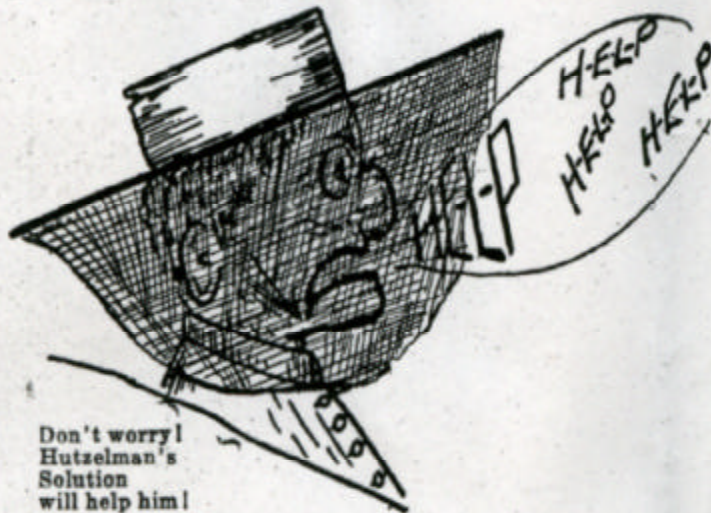


Hutzelman's Solution

A MERICAN FOUL BROOD has existed in the United States almost since the introduction of honeybees into this country. Tremendous losses have occurred and its wide spread makes it a serious problem everywhere. Some of our best beekeeping territory has been abandoned because of this disease. It attacks colonies of all strengths and at any season of the year when the bees are active. The disease does not disappear of its own accord. The disease generally remains in the colony until the colony is entirely destroyed or until the disease is eradicated by the beekeeper. The honey flow has little effect on the course of the disease. All races and strains of bees are attacked by it. American foul brood is infectious, so diseased colonies should be treated at once.



SYMPTOMS.

American foul brood generally shows itself in the larva just about the time that the larva fills the cell after it has ceased feeding and has begun pupation. At this time it is sealed over in the comb. The first indication of the infection is a slight brownish discoloration and the loss of the well-rounded appearance of the normal larva. The larva gradually sinks down in the cell and becomes darker in color, and the posterior end lies against the base of the cell. By the time it has partially dried down and has become quite dark brown (coffee colored), the most typical appearance of the disease manifests itself. If a match, stick or toothpick is inserted into the decaying mass and withdrawn, the larval remains adhere to it and are drawn out like a thread, which sometimes can be stretched for several inches before breaking. This ropiness is the chief characteristic looked for by the beekeeper in diagnosing this disease. The larva continues to dry down, forming a hard scale on the lower side wall and base of the cell. The disease usually attacks only worker larvae.

HOW TO CONTROL AMERICAN FOUL BROOD.

This terrible disease can be completely eradicated from an apiary by the use of Hutzelman's Solution, saving the combs instead of burning them as formerly.

It was in 1920 that American foul brood attacked my apiary of 150 colonies at Glendale, Ohio. My knowledge of chemicals and my desire to do some research work on this disease led me to begin a long and careful series of experiments in search of a practical and applicable destroyer of the germs of American foul brood. Within a few months I hit upon an alcohol-formalin solution with which I treated hundreds of my combs affected with American foul brood without a single recurrence of disease in these combs. This solution has become known as Dr. Hutzelman's Solution, and three years' experience with it goes to show that there is no comb too badly diseased to be successfully treated with it. Do not destroy your diseased combs. Various authorities have estimated the value of drawn combs at about 50 cents. Under the old system of controlling this disease one would have to melt up the wax, clean the frames and put in new foundation, thus handicapping the bees with an undrawn comb. With the Hutzelman solution the beekeeper soaks his combs, and the cost of treatment is 2 to 4 cents and sometimes only 1 cent, depending on the amount of solution absorbed by the combs and evaporated and also on whether extracting combs or brood combs are treated. Above cost does not include labor. If the treating of the combs is performed in the winter the expense will be considerably lower than in the summer, as the solution will evaporate very little.

WHAT IS HUTZELMAN'S SOLUTION?

The Hutzelman solution is an alcohol-formalin solution, and patent has been applied for it. It is not only an infringement on patent to make it, but it is difficult to make it in exactly right proportions, and it is dangerous to make it from the alcohol that can be purchased by the beekeeper, which contains violent poisons, such as pyridine, nitro-benzol, etc. All of these are very soluble in beeswax, and adhere strongly to beeswax, as is shown by the odor of combs treated by a solution made from ordinary denatured alcohol, six months to a year after treatment; also brood from such combs frequently dies from effects of poisoning. Honey would become poisoned by being stored in such combs. The safe rule is to use a solution that you know is all right.

AMOUNT OF SOLUTION REQUIRED.

Enough solution must be ordered to fill the tank or receptacle that is used, full enough to cover completely the combs. About one gallon is required to fill the space occupied by one comb; that is to say, if a tank holding four combs is used, in order to cover the combs four gallons will be needed. If a 10-comb tank is used, then 10 gallons

will be needed. For every 75 standard extracting combs or 60 brood-combs, an extra gallon will have to be used. Of course, the beekeeper will have the ten gallons left, the other gallon having been only absorbed and evaporated. Extracting combs, or combs containing no scales or dead larvae, require only 12 hours' immersion in the Hutzelman solution. Brood-combs containing dead brood or scales require 48 hours' immersion.

DIRECTIONS FOR USING HUTZELMAN'S SOLUTION.

In order to disinfect extracting combs that have American foul brood, first, all honey must be removed from the comb. This may be done by one of several ways; but, probably, the best way is to extract in the usual way and then soak the combs in water several hours to wash out the remaining honey. Combs containing only a few ounces or less of honey need simply to be soaked in water, after uncapping all cells of sealed honey. After the combs have stood in water a few hours, the water may be thrown out by hand or in an extractor. The combs need not be absolutely dry before immersion in the disinfectant solution.

Each side of every comb should be carefully inspected for cells of sealed honey which may have been missed. When a stray cell is found, it should be pierced or torn open. The solution will wash out the honey. The point is, not to run too much honey into the disinfectant solution, as the combs will come out sticky, and fail to dry, in which case they will need to be rinsed in clean water before drying.

THE SIZE OF TANK TO USE.

The size of tank to use depends on the number of combs to be treated with a given quantity of Hutzelman's solution in a specified time.

Several 10-frame tanks rather than one large tank is more practical for the simple reason that, as the solution becomes used up, a tank can be dropped out of use. However, a tank constructed so that two or three tiers of combs can be placed therein is practical, because, as the solution becomes used up, a less number of tiers of combs can be placed therein. The combs must always be covered with the liquid while in the tank.

A tank made of any kind of metal can be used for this solution.

The tank should be constructed to fit the frames closely, so as to avoid filling vacant space with the disinfectant.

HOW TO FILL THE TANK WITH COMBS.

Stand the combs in the empty disinfecting-tank in their natural position, but as closely together as possible. In case of Hoffman frames some extra space may be saved by standing alternate combs upside down. When the tank is filled with combs they should be held down by a weight placed on a thin board laid across the middle of the top of the combs.

Combs may also be held down by flanges placed at correct height along the inner walls of the tank.

Now the disinfectant solution may be poured in until the combs are covered. In case of large tanks an excellent way is the method of permitting the solution to enter the tank through a pipe leading into the bottom, as devised by Mr. O. E. Barber, and described in November, 1923, *Gleanings in Bee Culture*.

HOW TO REMOVE THE HUTZELMAN SOLUTION FROM THE COMBS.

If an extractor is at hand, the solution may be thrown out of the combs very easily. It is wise to have the extractor covered when operating. The same care should be used as when extracting honey.

After extracting, set the combs in clean supers in the open air to dry. There need be no fear of infecting bees with them, as the combs are absolutely sterile, and when dry are ready to use in any healthy hive. The liquid from the extractor should be poured back into the tank and more combs be put in to soak.

If you have no extractor, take the wire basket furnished; lay a comb upon it; grasp the handle at either end, and give two or three sharp downward jerks, at the same time holding it over the tank or a pan provided for the purpose. The comb is readily emptied on its lower side. It should then be turned over and the other side likewise emptied. It is then ready to dry.

Hives, bottom-boards, covers and any kind of bee equipment can be disinfected with this solution by immersing them in it for 12 hours, or by scraping them clean and then just dipping them in the disinfectant.

OTHER IMPORTANT INFORMATION.

Disinfecting should be done out of doors or in a well-ventilated room, on account of the unpleasant fumes coming from the liquid, especially in warm weather. However, these fumes are not harmful in the least.

In extracting the solution from the combs with an extractor, a hand extractor is best to use, because the extractor should be given only a few whirls. In other words, the solution should not be fanned with the extractor running at high speed.

Granulated honey is removed by uncapping and soaking in water.

Combs should be handled with a pair of rubber gloves or a frame-lifting tool. Do not permit the solution to remain on the hands, as it will harden and crack the skin. It can easily be washed off in water.

Capped-over dead larvae need not be uncapped for treatment, as this capping is porous.

Pollen-clogged combs will be disinfected.

The solution can not be used to disinfect honey for re-use.

This solution can be used over and over again, and will keep indefinitely in closed cans. It should be kept in a cool place and well corked.

Freezing weather has no injurious effect on the solution. After treating several batches of combs, the solution becomes more or less brown, due to propolis. This does not harm it in the least. In case too much sediment collects at the bottom of the tank, strain through heavy muslin.

The loss by evaporation is very slight if the tank be kept covered, in a cool place, while the combs are soaking.

The solution does not corrode the wire nor damage the combs or wood.

This solution is inflammable, and therefore can not be sent by parcel post.

Packed for shipment, the solution averages 9 1/2 pounds per gallon, and is classed as third-class freight.

Patents pending.

J. C. HUTZELMAN, Glendale, Ohio.