

cure is effected by the intervention of the body cell. The effectiveness of the remedy is due to the fact that it acts as a stimulus and exalts the natural forces of the body.

Whether the drugs used in the treatment of foul brood act antiseptically or by stimulating the cells of the bee and making them more active to ward off the disease, is a matter of doubt; but it must be admitted that certain drugs do seem to effect a cure, and some of them are regarded as specifics by practical beekeepers.

In taking up the different methods of chemical treatment, I shall as far as possible describe them in the chronological order.

(1) *Carbolic acid.* Carbolic acid was first proposed by Butlerow (52), who recommended one part of acid to 600 of syrup, this proportion being the limit in which one can give the remedy to bees. Cech (53) in a work published in 1877, also recommended carbolic acid.

The Oheshire treatment (26) consists in using a treatment containing half a decilitre of carbolic acid in a litre of water, thoroughly shaking it up until the acid is entirely dissolved, and using half a decilitre of this in a litre of syrup. In this treatment it is also necessary to reduce the infected stock to the number of frames it can use, and if the queen is diseased to destroy her and substitute a healthy one. The syrup is given by pouring it into the empty cells of the brood nest.

This method of treatment has been frequently reported to be successful; but there have been many failures, perhaps partly owing to the fact that it is difficult to get the bees to take the medicated syrup.

Experiments on the Antiseptic Value of Carbolic Acid. According to McKelzie (28), two per cent. carbolic acid does not kill the spores in six days. One per five hundred of the acid prevented the germination of the spores, but when taken out of the solution and placed in ordinary beef broth it gave luxuriant growth. Hence McKelzie thinks that the explanation of the value of carbolated syrup in the treatment of foul brood consists in preventing the germination of the spores. The bee journals refer to numerous instances in which feeding carbolated syrup produced an improvement in diseased stock; but as soon as the treatment stopped, the disease broke out afresh.

Salicylic Acid. The salicylic acid treatment was first used by Hilbert in 1876. The following is the method of use:

Solution of Hilbert No 1—Pure salicylic acid, $12\frac{1}{2}$ grams; alcohol, 100 grams.

Solution of Hilbert No. 2—200 drops of solution No. 1 (about five grams) in 200 grams of distilled water or rain water.

Fumigation—One or two grams of the pure acid for fumigation.

Syrup—From 200 to 240 drops of Solution No. 1 (or about 5 to 6 grams) in a litre of syrup, well mixed before the syrup cools.

As soon as the disease is noticed the hive is disinfected and the syrup fed; and this treatment is also used for other colonies as a preventive treatment. The fumigation is accomplished in a kind of tin lantern furnished with a small alcohol lamp, suspended over which is a small movable trough for placing the acid in. The flame of the lamp is regulated in such a manner that the acid is liquified and slowly evaporated without burning. Too great heat will decompose it and render it ineffective. The fumes of the acid spread through the hive in the form of a white vapour. Whilst the fumigation is in progress the entrance boards and all parts that can be disinfected are washed with No. 2 solution. Fumigation and washing are repeated every 4 or 5 days until a cure is effected. The diseased colonies receive,