(4) All contributions must be sent to the depot at Toronto for re-shipment at a date to be hereafter fixed upon.

(5) The Committee will not hold themselves responsible for loss from accident, defective receptacles or careless packing.

(6) Every contributor must abide by the prices realized and expenses necessarily incurred will be chargable to the sales account upon an equitable basis.

(7) Before shipping to the depot every contributor shall make out an invoice of the goods, and each case shall be numbered consecutively on the invoice, which must show the gross and net weights of the case or cases.

(8) The Secretary of the Committee shall keep a book on which an account shall be opened with each contributor, and an account of sales shall be sent him at the general settlement.

I will be willing to give any inform...io. i. my power on the above subject to persons desiring such.

W. COUSE, Secretary-Treasurer. Meadowvale, Ont., April 15th, 1886.

## ARTIFICIAL FERTILIZATION.

HE following we extract from the author's edition of the Report on Experiments in Apiculture, by Nelson W. McLain, agent in

charge of the apicultural experimental station at Aurora, Ill.:

ARTIFICIAL FERTILIZATION.

Since we began this work we have given much thought and labor to experiments in methods of artificial fertilization.

No other branch of apicultural experiment possesses the same scientific interest or practical value to the industry of bee-keeping.

Ever since the art of bee-keeping began to be practised upon scientific principles, the value of exact knowledge and perfect control of the process of fecundation has been recognized.

In 1846 an able German apiarist wrote: "If it were possible to ascertain the reproductive process of bees with as much certainty as that of our domestic animals, bee culture might unquestionably be pursued with positive assurance of profit, and would assume a high rank an ong the various branches of rural economy."

And in a current number of one of the most progressive bee journals, a prominent writer on apiculture says: "The apiarist who finds out a sure, safe, and certain method of controlling fecundation as it is controlled in the animal kingdom, will confer a great and lasting blessing upon bee-keepers, and be the means of advancing the profession a long way towards perfec-

tion." Realizing the difficulties to be overcome, there was little encouragement to expect success. However, all progress "is usually the slow outgrowth of repeated trials," and "failures precede successes."

Various methods and expedients have been adopted for securing the fertilization of queens in confinement, none of which have proved satisfactory.

During the past two years reference has occasionally been made in apicultural papers to a process of fecundating queens while in the larva and the pupa or nymph stage of development, by crushing drone larva upon the queen larva, or by opening the cell and introducing crushed drone larva upon the nymph queen. In a few instances experimenters have reported that the practice has been successful, and the queens thus treated have begun laying fecundated eggs in from one to two days after leaving the cell.

In each of the reported cases some important fact in the evidence tending to establish the genuineness of the claim to success seems to have been wanting or doubtful. In consequence these reports have been received with reserve and often with ridicule.

For putting these claims to the test, we caused a number of queen cells to be built, and just before the cells were capped I squeezed the contents of the generative organs of nymph drones upon the larval queens. The bees removed the larvæ and destroyed the cells. After other queen cells were capped we opened them by making a horizontal incision at the base of the cells, and another at right angles down the side of the cell, and laid back a part of the side, exposing the queen pupa. Through the opening in the cell we squeezed the liquid contents of the generative organs of imago drones upon the pupa queens. The sides of the cells were then replaced and sealed with melted bees-wax and rosin. These cells were placed in nursery cages and hatched in queenless nuclei colonies. These queens were liberated in nucleus colonies after their wings were clipped. Upon being hatched they resembled fecundated laying queens more than virgin queens. The treatment they received from the bees and their action upon the combs was that of fecundated rather than that of virgin queens. Repeated experiments, however failed to produce a queen capable of laying fecundated eggs. Still, the fact that the treatment given the embryo queens had to such an extent change 1 their physiological characteristics was suggestive. From the analogy between the animal and vegetable kingdom when ripe seed is known to grow better than unripe, it seemed more than probable that the contents of the generative

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