

# OLD BEEMAN INVENTIONS SERIES Part II

- What Bees We Have
- How to Keep Own Stock
- Best Grafting House I Know

by Bill Ruzicka P.E., BSc.  
Commercial Bee breeder in British Columbia  
Canada



## Vernon Stock History & Present Maintenance

The Vernon Stock Improvement project was originated by Provincial Apiarist John Corner, I believe, in 1980 - 1985. John Gates got his first Apiary job in this project and stayed with it. He can probably give you a much better description of it, but, as I recall, about 30 beekeepers donated 2 - 5 hives (the best we had). From these strains, through artificial insemination, in 5 years the program improved bees for local conditions and Vernon stock was created. As part of the project everyone (including myself) was taught how to raise queens, graft and learn the principle of selecting stock. During the project we requeened our hives with this stock. At the end the research team returned the hives and stock to the beekeepers to keep.

To the best of my knowledge I am the only one left who has kept this stock without knowingly introducing another strain into it. Keeping a line without inbreeding was my decision and one of my “inventions is how”: Our breeders hives go through all of the rigors of our operation including pollination and are sold after grafting new generation from them as breeder queen nucs. (We do not cage and mail breeder queen. We mail them in nucs.) We sell one Queen-right and one Queen-less, 4 frame nuc from each of our pollination units. From what is left, at the end of May we have 800 - 1000 queen mating units with 3 to 8 frames. They have been celled from 20 breeders in even numbers (maximum 50 daughters from each breeder). At this stage we already start our new selection as the hives are marked for good behavior, brood pattern, hygienic behavior, honey production, and speed of development. Anything we do not like gets killed, and the bees are slashed together. The good ones are laying eggs in single boxes with queen excluders and Dadants as honey super on until August.

Depending on the year, between the 3<sup>rd</sup> week of July and mid August, 144 singles are put on top of other singles to create wintering colonies. We catch and sell 140 queens. Those are the tested queens we advertise for sale. If we have some extras we catch them and put their bees and brood above the queen excluder. By Labor Day the brood is born and the combs are full of honey.

All of our wintering units are scaled and fed to the proper wintering weight 125 lbs for 2 high colonies and 65 lbs for 8 frame colonies. The initial weight is written on front of the

hive. Yellow and red pins are put on as ration for food-feed. When they are taken away in exchange for full or half feeders, we stop. It prevents hives from being honey bound. We also record mite levels and check for any diseases at this time. We give another mark for wintering strength, spring development, stores consumption, or conservation.

In April we select 60 possible breeders; those breeders get a drone comb to produce our mating drones. At the same time we put in 2 MiteGone formic acid pads. Our drones are reared and born during formic acid treatment, and we have had no problems with drone sterility.

In mid May, by the end of pollination, we bring all our hives, including those 60 designated breeders into one yard and select the final 20 as breeders. All our hives are now in the "Bob yard," where all the nuking, queen rearing and mating is now done.

*In front of the picture is the breeder circle with rotating crane. At left is the incubator circle with hives incubating the brood from the starter/ finishers. At rear is our Grafting House shrouded in a lot of smoke; we are ready to graft.*



In one day, I graft 2000 cells evenly from 20 selected breeders. The selected breeders are made into queenless starters, finishers, cell builders, incubators and caged virgins banks, all at one. We take the selected breeder apart. In its place we put a Queen excluder under an empty, but wet from extracted honey, Dadant super. We put second Queen excluder on top of it. Then on the second excluder we put a deep box with two 2 frame size inner feeders. Feeders are filled with thin feed, leaving space for 6 frames.

We find the queen and put her into the nuk box to be sold with the bees and brood in 4 frame nuk as the breeder queen.

We find 2 combs of her freshly laid eggs with some already failing, to be our larva graft combs. Each is accompanied by one comb of open honey and one of solid pollen on the other side, filling the 6 frame space. Preparing 20 units like that takes the better part of the day. We let the bees do their work for the next day and start the graft the next morning.

The two combs of larva graft are handed to the grafter by the helper, and each produces one comb of graft with 3 bars of 17 cups each. Each bar is grafted from different parts on

the comb, if possible also from the other side, to get more ½ sisters for variety of queens' genes. The frames with grafted cups are immediately put in place of where the larva graft was, and the used larva graft is put to incubate on other hives where we incubate the rest of the brood from the starters/finishers.

While the cells are being produced, we make and sell 350-400 Queen-right 4 frame nuks, and 200-300 queenless nuks. Our customers either introduce their own queens or use them as boosts to their over-wintered weak colonies.

At the same time, we create 800-1000 mating units. Those on the original location of the old hives are left open and house our mature flying drones. We also make screened nuks, all in standard, deep equipment using our feeder dividers and wintering nuk bottoms. Note the entrances are to the wide side of the box, so moving the feeder can create 2 to 8 frame units.



*In the picture, mating units are prepared for Mitegone Formic Acid Treatment. The pads are ready to go in at back against the feeder on the last comb, together with feed. It does not affect either drones or the mating of queens.*

### **WE DO NOT MOVE NUKS INTO OTHER YARDS.**

We screen them and put cells in. Then we leave them in the same yard screened for 5 days. We open them when checking for virgin emergence; that way we do not leave drones behind and achieve 95+% mating success.

I aim for the cells to be around 7 - 8 days old when I plan to introduce them to the mating units to prevent emergence when we get delayed by bad weather. However, I have had good results with any age of cells, from 4 days to caged virgins. The cells are retrieved by taking 10 cells from each master in sequence so a maximum of 50 cell daughters with several half-sister groups from each breeder queen are installed. About 200 cells, 10 from each breeder, are caged and left to emerge as caged virgins; the rest of the cells are sold or terminated.

At the age of 15 days, all cells should be open and the virgins emerged. At this point we open all screened nuks and check all of the mating units. We use JZBZ cell protectors so it is easy to find out if the virgin has emerged. Also in 3 frame units, virgins are easily visible, and any bad looking, imperfect virgins or unemerged cells are replaced by a perfect caged virgin.

When the mating weather comes, we have generally 800 - 1000 mating units with virgins of the same age in one gigantic mating yard. Fifty daughters of each breeder are mating with drones mostly from 60 selected drone mothers, and some extra drones are usually left over from 280 pollination units, which we use to produce 500 super nucs for Alberta. At the same time mating units are created and cells put in. This is all done in two to three days.

## **THE ONLY THING WE DO NOT REALLY CARE ABOUT IS THE COLOR OF THE QUEENS.**



*Ninety percent of Vernon stock will be "mellow yellow" queens. These are actually a light brown color but bigger than normal queens.*



*The rest are from bright yellow to black and anything in between. My daughters call them "yellow and black tigers" Depending on whether a yellow or black stripe prevails, "negritas" if fully black.*

## **I HOPE I HAVE SATISFIED YOUR CURIOSITY.**

**You need a minimum of 250 hive gene pool to do this.**

The Vernon project taught me a lot, but I also added a lot from my own experience over 30 years. The following are the inventions.

### **1. Queen Rearing**

From all different queen rearing techniques, I simplified the methods to the one I just described. It requeens all my hives while producing a large income from sold bees.

I manipulate breeders only once, and in that configuration I have starter/finisher, cell builder, and virgin incubator all in one.

I do not believe in caging breeder or over-wintered queens which are laying 2000 eggs a day. It wrecks them. Instead we sell them in nucs where they continue laying.

### **2. Mating Improvement**

Contrary to all tradition and recommendations, we do not move mating nucs to other yards for mating. It leaves the drones behind.

- Doing all queen-rearing, nuking and mating in one yard makes it easy and keeps all drones in one place.
- Selection of drone mothers and putting drone combs in them keeps our stock clean on the drone side.

### 3. Rain Cover



*Another use of my cranes and round yard. It rains during Q rearing once in 5 years, so rotating a tent cover over 20 breeders comes in handy.*

*As you see, it can be rotated over each 4 pack of breeders. Picture shows the rest of the yard. Can you figure out what is on top of the fence post?*

### 4. Grafting House



*As always, poverty and necessity is the mother of all inventions. I had the foundation for the grafting house ready, but ran out of time and money, so I converted my 1960 truck into one.*

*It has light, heat, and seat. Just add a graft table and control humidity with wet towels and spray; and you will never build that grafting house.*

## 5. Bee Glasses

As all old men, my eyes are not that good. I can't see the eggs, but not only is wearing reading glasses uncomfortable but the lenses get dirty easily.

*I mounted my prescription lenses directly on my bee hat. This way I can wear a sweat band and move the glasses away if I don't need them, just by tilting the hat.*

Have a honey day;

Bill Ruzicka



*The writer is a professional engineer who, in 1980, became a bee breeder and inventor of many technical innovations. He holds the patent for the discovery of a biological Varroa mite treatment with fungus *Hirsuttella Thompsonia* which was passed over to USDA labs hopefully available in the future. Until then use his other patent: MiteGone formic acid treatment on [www.mitegone.com](http://www.mitegone.com). Contact Bill at 1-250-762-8156*