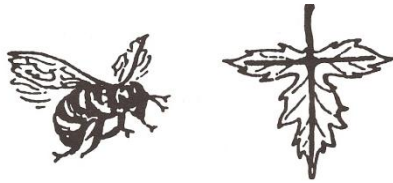


I. M. N.
SYSTEM OF QUEEN REARING

by
Mel Disselkoen



Letter to Readers----October, 2008

It is now twenty years since I wrote the booklet *I. M. N. System Of Queen Rearing* which I copyrighted and published in 1988. At that time there was a lot of discussion about how to handle world trade and the consequences to American beekeepers of importing foreign honey. Back then, as today, foreign countries that produced honey crops large enough to export were using the biological and technological disclosures of America's Rev. L. L. Langstroth (modern beehive) and G. M. Doolittle (grafting of queen cells) to challenge the price of American honey. Today, twenty years later, we now know that foreign countries don't have to abide by American standards set by the FDA regarding honey houses or other regulations set by individual states. They are free to sell to domestic packers and their only requirement is that the honey not be contaminated. Obviously, our government has instituted an extraordinarily unfair trade relationship that wrongly uses the innovative disclosures of Langstroth and Doolittle to burden the American honey producer. The only fair solution to this current double standard is to rescind all American regulations in the processing of honey.

In 1988, I foresaw problems like those already mentioned and also the potential abuse of my own disclosures. This left me no choice but to place restrictions on my disclosures so as to not contribute to further injustices. The intent of Rev. L. L. Langstroth and G. M. Doolittle was to help their fellow man and they presented their disclosures in good faith regardless of politics. When I enhanced Dr. C. C. Miller's method of rearing queen cells on the spot without grafting, I also did it in good faith to help my fellow man and not hurt American beekeepers in the future.

As a result of the double standard and abuses that have already taken place, I have concluded that trying to save the U.S. beekeeping industry takes priority over whether any of my disclosures are abused in the future. For that reason, I have decided to make the *I. M. N. System Of Queen Rearing* available for download on my web site, www.mdasplitter.com, without charge, restrictions, or licensing fees. Between Rev. L. L. Langstroth, G. M. Doolittle, Dr. C.C. Miller and my own disclosures here, you can now rear quality queens on the spot by breaking the cell wall below the 36-hour-old larvae. For twenty years now I have reared bees successfully on the 43rd parallel using this system. Even when the mites arrived ten years ago, I discovered that a virgin queen that is newly-mated after June 20 (the change of days) out breeds the varroa mite and simultaneously breaks its breeding cycle, therefore eliminating the need for miticides.

By removing my previous restrictions and sharing these disclosures under the honor system, I am asking fellow beekeepers, foreign countries, honey boards, pollination boards, and any plant board such as blueberries or almonds to voluntarily make contributions towards my research into bee behavior if these disclosures are profitable to you.

Mel Disselkoen

May 12th, 2008
Bloomingdale, Michigan



Twenty years later: Lynn Quinn and Bob Ramsey display 6 quality queen cells reared by using the *I.M.N. System of Queen Rearing* of breaking the bottom of the cell wall to the midrib on 36-hour-old larvae

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by

International Mating Nuc, Inc.

P.O. Box 9552

Wyoming, MI 49509

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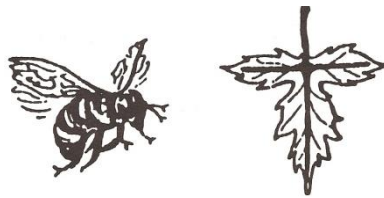
Printed in U.S.A.

DEDICATION

This work is dedicated to all
beekeepers, worldwide, who want
to rear 100 queens a day or 100
queens a year without grafting

LOGO

Both Rev. L. L. Langstroth and Mr. G. M. Doolittle made reference to their creator and designer in the prefaces of their books. I am of the same persuasion as these brothers of mine. When I realized how God designed the kingdoms to complement each other, I asked a contemporary artist to draw this logo for the I.M.N., Inc.



ACKNOWLEDGEMENTS

This acknowledgement is for my wife who has endured, patiently, my running here and running there, my checking this and checking that, hours of research and my comments, "I'll be a little late tonight, Hon, I have to change a comb." Thus allowing me to chase my dream and fulfill my objectives.

I lovingly and appreciably say, "THANK YOU, Carol."

SUGGESTED READING

BEYOND THE ATOM

By

John DeVries, Ph.D.
Professor of Chemistry, Calvin College

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PREFACE

Two of the greatest beekeepers the world has ever known and the two I can relate to most are the Reverend L. L. Langstroth and Mr. G. M. Doolittle. Their persistence in observation of the honey bee, their willingness to research and experiment with bees, and their generosity in disclosing their findings for the benefit of their fellow man are virtues both Americans possessed.

In retrospect of the 137 years since Rev. L. L. Langstroth discovered the bee space in 1851 and the modern bee hive, the 100 years since Mr. Doolittle's book *Scientific Queen Rearing* of 1888 in which he disclosed to the world the procedure in the rearing of queens by the use of grafting larvae in a queen cell, it is ironic that the inventions of these two Americans would 100 years later put American beekeepers in a stressful situation, since almost all imported honey comes from countries that use the methods these two men disclosed. I speculate that their intentions were to help their fellow man, not unfairly put the American beekeepers out of business.

At the present time our Honorable President and the Honorable Congress have not been able to put an ad valorem duty on imported honey according to the country of origin which would preserve a fair and free world trade. The country of origin has already determined that their percent ad valorem duty is fair, therefore, it is their policy and not ours. Economically it would help the government out of the honey subsidy program. This would be politically and economically wise while still making sense. If the foreign country wants a no-duty American market then they must remove ad valorem duty on American honey at their borders. Each country sets the policy as to what the American import ad valorem duty will be. If the Presidency is not responsible for preserving fair trade then the Congress must because it is the ultimate law maker and can override Presidential vetoes. We do not need a new Congress but we do need a responsible one that preserves fair and free world trade with our neighbors and friends. The Olympic games could never work if we all played with different rules.

Why would anyone disclose something that would eventually put them out of business? Would Rev. Langstroth and Mr. Doolittle have made those disclosures? Would they have put some restrictions on them? I believe they would have disclosed them with restrictions thus preserving their virtues of helping their fellow man while relying on a person's or country's honor. Therefore, I have decided to make partial disclosures with the following restrictions.

Mel Disselkoen

Wyoming, MI

U.S.A.

1988

NOTICE

Restrictions to Disclosures:

These disclosures of the International Mating Nuc, Inc. are presented on the honor system. If you use any of these proprietary concepts and procedures of the International Mating Nuc, Inc., a lifetime license, in writing, per individual is required at \$150.00 U.S. dollars. This license is not transferable or refundable. The International Mating Nuc, Inc. reserves the right to change fees or stop the issuance of licenses at any time without notice.

You are using the proprietary concepts and procedures of the International Mating Nuc, Inc. whenever you

- (1) Use a split frame or split frame insert for the purpose of queen rearing
- (2) Use protection for the larvae such as bullets, cotton swabs, ball bearings or any other material or device or infringe in any way on the spirit of this concept
- (3) Use the procedure and process of shaking flour or any other material to kill larvae on any kind of honey comb or infringe in any way on the spirit of this concept
- (4) Use the procedure or process to break or remove the cell wall around the larvae for the purpose of queen rearing or the production of royal jelly or infringe in any way on the spirit of this concept

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CHAPTER 1

Farrar's Law

Dr. C. L. Farrar stated in his article *Production Management of Honey Bee Colonies* that "Any break in larval nutrition is detrimental when one realizes that a queen larvae must increase about 1,500 times in weight between hatching and completion of its feeding 5 days later. It is not enough that a queen lay fertile eggs; she must be fully developed if she is to be a good queen, one capable of building and maintaining a full-strength colony."

This is so important that I have taken the liberty for these disclosures to call it *Farrar's Law*. Since most novices can't graft without breaking larval nutrition.

CHAPTER 2

HISTORY

In the past, several attempts at rearing queens without grafting have been attempted with limited success. The two most familiar methods are the Case-Hopkins and the Miller methods. The Case-Hopkins method involves placing a frame of larvae above and horizontal to the top bars of the cell builder. The Miller method used strips of foundation fastened in a frame and then trimmed down to young larvae and given to the cell builder. Some problems with these methods are; cells are not reared where desired, cells are too close together, cells are limited in number, and cells are not easily handled. At that time there was no better known way to kill larvae other than smashing the comb which is messy and the comb may not be used over again. The International Mating Nuc, Inc. does recognize other forms and articles on split frames but none of them suggests or implies these concepts, procedures, methods and devices in rearing queens.

CHAPTER 3

DISCOVERIES AND DISCLOSURES OF THE I.M.N., INC.

Killing the Larvae with Flour



Figure 1: Case-Hopkins method on split frame insert. Twenty-four excellent cells.

In the Case-Hopkins method when I would put the frame insert horizontally on the cell builder they would rear queen cells wherever they wanted. This means that they would join them together and make it inconvenient for removal. When I smashed the comb leaving one row out of three there was a mess, especially if honey was in the comb. It was also difficult to use the comb over again. There had to be a better, faster, and neater way to kill larvae. After several experiments, I discovered that common wheat flour (the kind you use to bake or make a pollen supplement) will gum up the larvae making it impossible for the nurse bees to care for them. By covering every third cell with something to protect the larvae, such as bullets or cotton swabs, I could prepare a comb with larvae spaced just right. I can put 100 bullets on a comb in three minutes and then the shaking of the flour takes only 15 seconds. This proved to be fast, neat, and I could use the comb over again.

Behavioral Determination on Vertical Comb

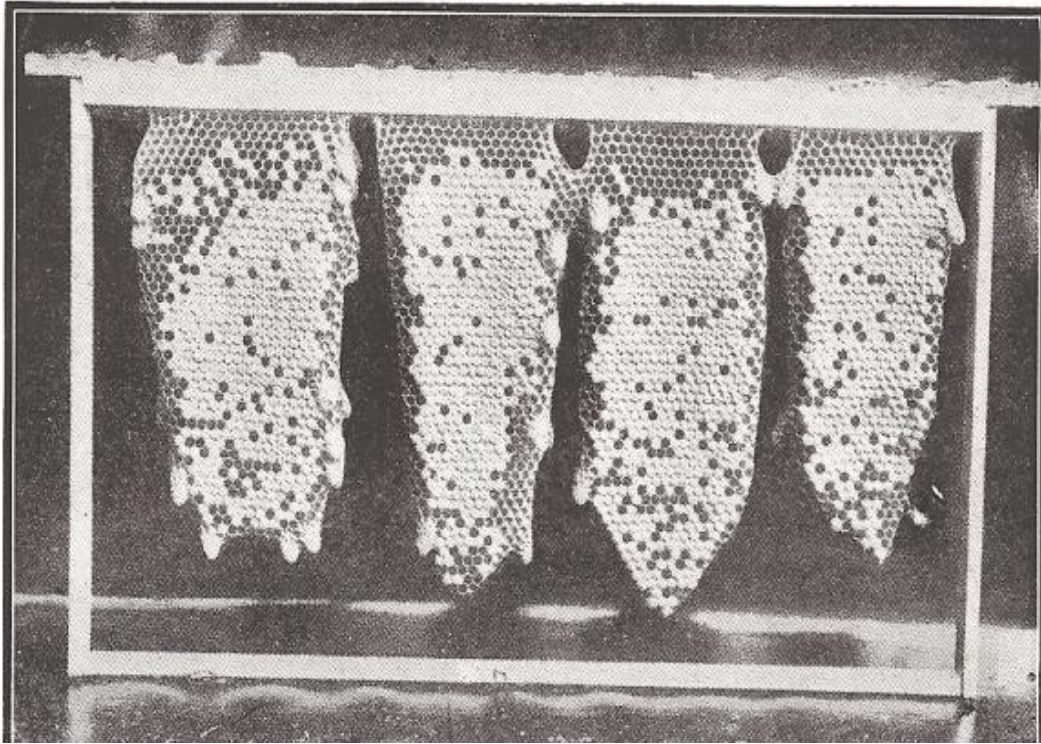


Figure 2: Miller frame from Frank C. Pellett's *Practical Queen-Rearing* used with permission from Dadant and Sons

After I discovered how to kill larvae in the worker comb I thought that now queen rearing would really be simple as I would be able to just hang the frame in the cell builder similar to the Doolittle grafting method. What a surprise I encountered. The bees would rear four or five queen cells on the face of the comb but all the rest would be worker larvae. I then realized the trouble Dr. Miller experienced in his method of queen rearing. I have always wondered why Dr. Miller went to so much trouble in making his queen-rearing frame. It is not that bees can't build cells on the face of a vertical comb, but instead it is that they won't. Dr. Miller realized this problem also so he designed his frame to give the bees more "edge perimeter." The more edge, the more chance for cells. In the book *Fifty Years Among The Bees* by Dr. C. C. Miller he states, "Rarely, if ever, will a cell be found elsewhere than on the edge of the comb, and I have never known the bees to start a cell after the larvae were too old. I do not know why there is this difference. I know only the fact. But it is a very convenient fact. "

How can I change their behavior? The difference that rarely, if ever, will a cell be found elsewhere than on the edge of the comb is the cell wall below the larvae. If the cell wall is removed, the behavior toward that larvae will change. If the cells open downward on a horizontal placed comb as in the Case-Hopkins method, they will rear queen cells. If the cells open sideways as in the vertical, natural-hanging frame, they will rear worker cells except for four or five emergency type cells on the face of the comb.

If everything is equal, a tilt of 90° from horizontal to vertical will change their behavior. It may be argued that natural queen cells open downward and worker cells open sideways but in both cases the bees are just as queenless and have just as many larvae in which to rear queens. Since the larvae have no choice in the matter, the decision rests with the bees. I discovered and am disclosing that if I break or remove the cell wall to the midrib below the larvae in a naturally hung comb then the behavior will change toward that larvae and they will rear it as a queen. One can only speculate what would have happened if Dr. Miller had discovered this. Maybe queens would always have been reared this way. It certainly should have given Mr. Doolittle and grafting some competition because of the ease of production and quality of the queens. Now all beekeepers can do it. In some ways I wish Dr. Miller would have discovered this and made the disclosure to the public. However, I can take this opportunity to make a much belated *THANK YOU* for his disclosures which I could build on years later.



Figure 3: David and Amy displayed the first comb that produced fourteen nice cells where I broke the cell wall below the larvae after shaking the comb with flour. One cell was removed (top right). Worker brood was reared where cell wall was not broken enough.

CHAPTER 4

EQUIPMENT

The Split Frame Insert

The split frame insert consists of one or two ½ inch rectangular blocks cut to fit the frame's inside diameter. Then a window (I use 14 in x 5 in) is cut into the blocks. If you want comb on one side of the frame, you use one sheet of plastic based foundation between a windowed and a solid block, then bolt

the two together. If you want comb on both sides use two windowed blocks with two sheets of plastic based foundation and bolt them together. Place these split frame inserts in the frame where they are held in place by pins through the end bars, rubber bands around the frame or by friction

The Regular Frame

Simply a frame with plastic based foundation

The Splitter Nuc Box

A disposable nuc box of my design for the breeder queen (See Fig. 4).

Bullets

I use .257 cal. bullets placed in the cell to protect the larvae when flour is shaken over the comb to gum up and kill the other larvae (See Fig. 5).



Figure 4: The Splitter Nuc Box (used with permission from M.D.A. Apiaries)



Figure 5: Bullets

Flour Shaker

I use the International Mating Nuc with the perforated cover for shaking flour. A coffee can will also work.

Inner Cover for Split Frame Insert

Use on cell builder for horizontal support of split frame insert (provides space for the cell when they hang down, $\frac{3}{4}$ inch stock (see Fig. 6).

The Incubator

The incubator is made of hive bodies so I can make it as large as I want for emerging queen cells. The electricity components are in the top box. I can operate this incubator just like a bee hive, moving oldest cells to the top (see Fig. 7).

The International Mating Nuc

Patented, used to mate the virgin queen. Use round sections for the comb. Place 300-500 bees into the nuc and confine four hours or more, then give them a virgin and set on location at dusk. Confined, queenless bees will usually accept any queen given to them after four hours of confinement. The fertile queen is harvested in two weeks. Broodless nucs can handle 30° to 40°F day/night differences that is common in the north. Also no brood for varroa mite to feed on (see Fig. 8).

Cages

Push in cages to confine the virgins in the incubator so they won't kill each other. Rectangular cage for the vertical frame and round cage for the horizontal frame insert. Use 1/8 inch hardware cloth. The round cage when used with a 5/8 inch plastic furniture leg tip can be pushed over the comb and give a twist to remove the cell, then put the plastic tip on the other end to introduce to a nuc the conventional way. This is an alternative to the incubator. Leave a little queen candy in these cages so the virgin can feed herself.



Figure 6: Inner cover for split-frame insert



Figure 7: The Incubator



Figure 8: The International Mating Nuc

CHAPTER 5

THE I.M.N. SYSTEM OF QUEEN REARING

I keep my breeder queen in a small 5 frame nuc and I supply bees and feed as needed. This keeps the queen laying strongly with the bees drawing out foundation. The middle frame #3 is a frame that the queen can lay in at all times. It divides the brood nest so the queen lays on one frame insert one day while the bees are drawing comb in the other. Each day the split frame insert with eggs is removed and given to a support colony. The split frame insert positions are #2 and #4 with honey and feed in #1 and #5 positions. The hive will always have emerging brood from frame #3 along with open brood. The queen will be free running which eliminates excluders and the handling of her daily. A queen naturally wants to keep her brood nest intact so I never had her cross the solid backsides of the split frame insert in positions #2 and #4 to go and lay in the outside frames #1 and #5. The hive is operated every day by alternating the split frame insert #2 and #4. The support colony could be the cell builder that you will use 3 days later when the oldest larvae is 24 hours old and the youngest larvae are just hatching. The split frame insert is placed horizontally as in the Case-Hopkins method. The regular frame can be used in the 5 frame breeder hive but I can't stop her from going to the other side of the frame.

This is not a problem, however, if you want to rear cells on both sides of the comb in the vertical manner. I am giving you notice that this would complement the Miller method as you can simply use this comb in the cell builder. This regular frame could also be put in the middle of any brood nest to obtain eggs similar to the Miller process. I have always used broodless, free-flying cell builders but there are several other good documented methods to rear cells. I recommend leaving the cell builder queenless for one hour as I feel I get a better take. I realize some authorities state it makes no difference. I usually use a strong 1 or 2 story hive for the cell builder and after I cage the queen I shake all the bees off the brood and leave at the parent location. I leave pollen and honey frames for the bees to cluster on and then give the queen and brood to another hive to care for.

Now take the frame of larvae from the support colony and brush off the bees. Place the .257 cal. Bullets in every 3rd cell containing a larvae always leaving 2 cells between larvae including between the rows on the horizontal split frame insert. Flour is then shaken over the frame to gum up and kill the exposed larvae. If this frame is to hang naturally, the bottom cell wall must be broken or removed to the midrib to change the bees behavior toward these larvae. I do this after I shake flour over the comb. Flip the comb over to remove bullets and bump gently to remove excess flour. Then put the frame vertical and with the point of one of the bullets break the bottom cell wall to the midrib. When a frame is to hang vertically 5 rows of cells must be left between rows of queen cells to provide room for the cells. These cells will be sealed in 5 days and the first will begin emerging about a week later. I take the frame with cells home two days before they emerge and place them in the incubator with the protective push in cages. I usually have prepared International Mating Nucs ready with food, comb, and 300-500 bees so the virgins can be put with them as soon as they emerge. They are set out at dusk and the fertile queens are caught 2 weeks later.

Equipped with an excluder the International Mating Nuc may be an excellent nuc for the ovipositioning of instrumentally inseminated and polyploidy queens.

CHAPTER 6

CONCLUSION

I have presented this material using just one breeder hive to keep it simple. How many breeder hives can you operate a day? How many top quality queens can you rear in a day, a year, or a lifetime? It is not unusual to have 60-100 cells on a horizontal frame insert using a full strength cell builder. You can easily rear 100 cells in one day. I have shown you the parts to make at home so you can invest and proceed in the license instead of gadgets. I have set the cost of the license over a lifetime on a per queen basis to be insignificant but yet not free. These disclosures are presented on your honor in the spirit of Rev. L. L. Langstroth and G. M. Doolittle, that is to help my fellow man. It is not intended to hurt my fellow American beekeepers 100 years from now.

Figure 9

The queen, the cell builder, and I have worked on this frame together. The queen had to lay in the 137 worker cells and the cells at the bottom. I had to protect the larvae in the 137 plus cells with cotton swabs as they had to fit inside the cells because some were next to each other. The cell builder had to rear this brood and produce queen cells where desired. The comb is not perfect in this joint effort but the concepts are displayed showing that I can kill larvae where I want. Therefore, I think it is good enough to present to you my message. So to all my friends, worldwide . . .

