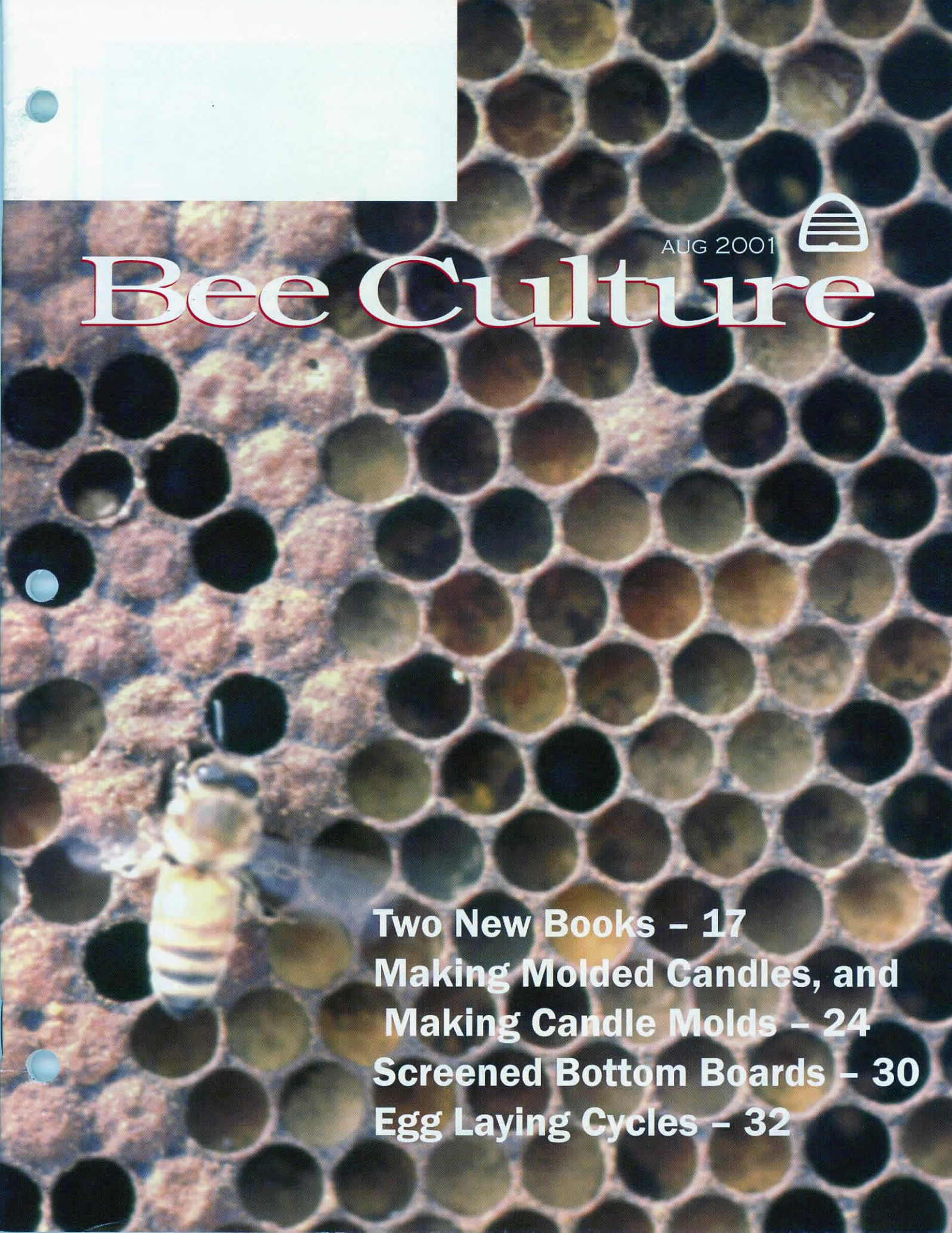


AUG 2001

Bee Culture

Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

AUGUST 2001 VOLUME 129 NUMBER 8

FEATURES

Subscription Information

U.S., one year, $20; two years, $38. Newsstand price: $2.50. All other countries, (U.S. Currency only), $10.00 per year additional for postage. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), August 2001, Volume 129, Issue 8, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Advertising

For information on placing display advertisements, contact Dawn Feagan in our Advertising Dept. 800.289.7668. Ext. 3220

POSTMASTER: Send address changes to BEE CULTURE, The A.I. Root Co.,623 W. Liberty St., Medina, OH 44256

Bee Culture is Printed on Recycled Paper

How much space is available for your bees to put away stores for winter? Is there enough room for laying eggs, for storing honey and for storing pollen? And for bees to be? Explore both the *Inner Cover*, and Mike Burgett's article on egg laying cycles and find out before it's too late this fall.

DEPARTMENTS & COLUMNS

Publisher – John Root

Editor – Kim Flottum

Production Coordinator – Kathy Summers

Circulation & Advertising – Dawn Feagan

Publications Sales – Jim Thompson

Contributors

Richard Taylor • Mark Winston • Clarence Collison

Ann Harman • James E. Tew • Malcolm T. Sanford

MAILBOX

KEEP IN TOUCH

Write: Editor, 623 W. Liberty St., Medina, OH 44256
FAX: 330-725-5624
EMAIL: KIM@AIROOT.COM

Swarm didn't read the book

I agree completely with Lee Larson's comments about Richard Taylor in the June issue. His article is the first one I turn to when *Bee Culture* arrives. My complaint about unhappy experiences with beekeepers who scorn small hobbyists was certainly not intended to criticize Dr. Taylor's immense contribution to apiculture. It just happened that at the time I read his article, I was feeling particularly resentful towards those "big beekeepers" who had not responded to my requests for help, and that triggered my grumpy letter.

Dr. Taylor's fascinating and very helpful article on swarms, also in the June issue, coincided with a happier experience of mine, which nevertheless is still puzzling me. Two of my hives are in my backyard, and I looked out one morning last week to see a veritable tornado of bees spiraling round in the middle of the yard. Swarm! I had just added deep supers to both hives a couple of days before, so I must confess I felt somewhat offended a the bees' ingratitude! Hadn't I done what I was supposed to do, giving them plenty of expansion room? Apparently that was not the problem.

Fortunately, they settled nearby on a fairly low branch. Quickly preparing a spare hive, I climbed a stepladder, cut the branch free, and hived them. They rushed in and within the hour were busy on the frames. Congratulating myself on good fortune (while still mystified about why they had swarmed in the first place) I left for a couple of hours. When I returned, however, I was surprised – to put it mildly – to see them pouring out of their new home. Were they swarming again? No, *they were returning to the hive they had left earlier!* There was a lot of confusion and overcrowding at the hive entrance, but eventually they were all admitted by the guard bees.

I left them to calm down, and later inspected the frames in the hive. There were three partly built queen cells, which I cut out. A careful search persuaded me that there was only one queen present, the original marked queen I put in this spring. Two inspections since then show that she is working well, and there is still no sign of any other queens. And the workers are not building more queen cells – at least not yet.

This was a "witnessed" swarm. I am certain about which hive the swarm left, and equally certain that they then returned to it. It is at times like this that I feel the need for an experienced beekeeper to come and look at my hives and help me sort out this puzzle. But maybe this is just one of those mysteries that the bees like to use to challenge us ignorant humans. I wish they could have read Richard Taylor's article, because then they would know that they are not supposed to behave like that.

Peter Garnham
Amagansett, New York

A Fed Bear Is A Dead Bear

In response to Jim Hagemeyer's letter in the June 2001 issue, I too live next door to a Bear Sancturary, and although I haven't had a problem with bears yet, it's just a matter of time before I do as my other neighbors at the golf course just love to feed them.

I have never had bear steak but have had plenty of bear roasts, and when prepared properly are indistinguishable from beef.

Just as harvesting the excess honey from a hive does not hurt the bees, so does harvesting excess bear that find their way out of the sacnturary not hurt their population. In fact, you may be doing them a favor by keeping the numbers at a sustainable level.

So do yourself, your bees and the bear a favor and go hunting this Fall, or call someone who does. And remember, A Fed Bear Is A Dead Bear.

Gail Loftis
Burnsville, North Carolina

Mad Bees, Imidacloprid and the AIA

The Apiary Inspectors of America (AIA) have been concerned about possible serious problems to pollinating insects, particularly honey bees, due to the use of the insecticide imidacloprid. A phenomena known as "Mad Bee Disease" has been publicized in France and Canada with strong evidence that imidacloprid is the cause of behavioral ailments of honey bees that have resulted in the demise of the many colonies. Currently, the U.S. Environmental Protection Agency (EPA) is working on setting a tolerance for imidacloprid on several crops (beans, blueberries, citrus, corn, cranberries, etc.) in the U.S..

During the AIA annual conference in January, 2001, a resolution regarding our concerns about imidacloprid was approved and forwarded to the EPA. (See attached resolution.) During May, the EPA responded to our resolution. Based on their letter, they

Continued on next page

MAILBOX

seem to understand the issues.

The AIA thought your readers may be interested in our work on the above issue.

I. Barton Smith, Jr.
Secretary, AIA

Charcoal Cure

I have found (actually my wife found) that a paste or poultice made from activated charcoal powder and water put on a bee sting for a number of hours or over night prevents the site from swelling. I cover it with gauze and kitchen clear plastic wrap and keep it all in place with first aid tape. I began keeping bees three years ago and have been stung many times even through protective clothing. I react to the sting with fairly severe swelling which starts about three hours after the sting. I have been stung on my hand, for instance, and my entire arm will swell up. I have tried various remedies, including homeopathy. The activated charcoal works like a charm and works immediately. Activated charcoal can be found in health food stores. It is *not* the same as burnt toast.

Dag Kundsen
Lake City, MN

INNER COVER

I was talking to one of our candle production people here recently and the discussion turned to raw materials and support material. The raw stuff consists of a whole list of different formulations, forms and formulas of paraffin wax, fragrances, dyes and wicks to make the candle. The supporting material is all the packaging, individual boxes, cartons and master cartons, and labels and more labels. These all have to come together at the right place and on time. If anyone of these is missing the assembly line stops and the person who was supposed to have anticipated this and ordered on time is going to have a very difficult day. The difference between 'just-in-time' and 'not-quite-in-time' is the difference, as Mark Twain alluded to once, between light and lightening.

I started thinking of other raw materials, and recalled something Elbert Jaycox once wrote or told me (I think it was him). It takes a cell of pollen, a cell of honey and a cell of water to build a bee. Let's look at that a bit closer.

Cells. How many cells are there on a deep frame? Well, it depends. I pulled a two-year old wax foundation frame, fully drawn with hardly any dings and counted. There were 2550 per side or 5100 per frame (in his article Mike Burgett says about 7000, go figure). I also counted a new sheet and got 5620. Figure, then, about a 10% drop due to edges. A sheet of plastic foundation had 6800 cells, but minus the edge effect you get about 6100 cells per frame. The new small cell foundation had 8000 cells, but would finish with about 7200 or so.

Then I pulled another 20 frames and (fairly) carefully counted the cells on the corners with honey stored, and the ring of pollen (actually, I measured the area these filled on the frame and extrapolated that to a number of cells). The numbers went from none to about 20% or so of the area. That shakes out to about 4100 cells available for brood rearing for wax, 5400 for plastic and 5800 for small cell foundation.

If you have 10 frames in a super, you have, in theory, about 41,000 cells available for brood if you use wax. More, if you use something else. Take this the next step. According to my guru, that means that at any one time you will need four cells for every bee you want to raise. Or, looking at it another way, for every cell with brood in it, you need three more to feed it.

You can already see that I'm working in an ideal hive here, and bees seldom read books or magazine articles, but bear with me a bit further.

To produce the most bees for overwintering, a task that is already ongoing in your colonies, you will need, depending on the race of bees you have, between three and five pounds of bees early on. These will slowly die off and only be replaced at a fraction of the early population.

But right now, to get, say four pounds of bees (about 12-15,000 bees ready, your brood area will need 50-60,000 available cells. That's about 10 frames in the mobile mode, not used for long term storage for Winter, but volatile in that they will be filled and emptied and filled and emptied several times in the next several weeks.

Ten frames doesn't sound like a lot, but how many do you have now, not tied up in long term storage? Any barriers, like a honey ring, way too much pollen, lots of drone comb, missing frames or the like can, and will begin to take a toll on your colony's ability to raise brood at this critical time.

Now, add to the space thing the other components that have to come together in the right amounts, at the right time. For instance...

You have, at sometime in the past, found a colony that was absolutely bent on collecting all the pollen in the world. Frames of it. Frames and frames of it. Packed in so tight, in so many colors that, had it not been a nuisance it would have been a treat to examine. This pollen had probably been stored, however, in less than ideal places from a just-in-time fall brood rearing perspective. Too much pollen, too little space to spread nectar out to cure, to store honey, to rear brood.

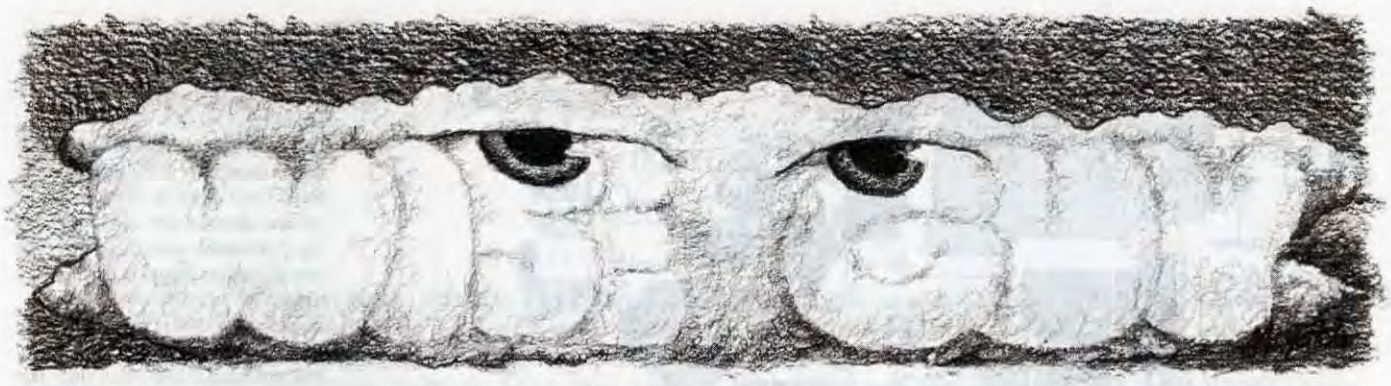
Moving this around in a colony or sharing with other colonies, much like spreading out brood in the Spring, will keep space available for those other necessary space-requiring activities.

Honey, too can get in the way if there is too much of it in the wrong place. And, like pollen, honey can also be moved, shared or stored to accommodate the bees and the room they will need.

Next time, look carefully at how much space your bees have, really, and if there's not enough, make some room. You can adjust back later, when brood rearing slows and that

Continued on pg. 38

Raw Materials; and Pre-label Plans



In February next year there is another referendum to keep or disband the National Honey Board. Most producers, I believe, will not continue to support the Board as is. Now a new slant to the vote rears it head. The Honey Packers and Dealers want to start a National Honey Board of their own if the current one goes away in February. In fact, some packers want to see the current board go away and, since a few importers belong to their organization, they may also vote to dissolve the current Board. Just to clear up how the vote is handled, Producers vote "yes" or "no" and have a weighted vote because pounds produced are also voted yes or no. Importers also vote "yes" or "no" plus their poundage is voted yes or no also. The U.S. imported almost as much honey as we produced last year, so the import vote will be critical.

An interesting side bar is how will the American Beekeeping Federation play their hand. Their Board has, and continues to support the National Honey Board in its current form. Their support has been admirable. But now a portion of their membership, some of those honey packers and importers I mentioned, appear to want a change. Now, it seems, the Packers and Dealers want to have their own Honey Promotion Board and if the current one is voted out in February they will start their own to promote honey. How will the ABF leadership resolve this? As it is now there is bound to be some serious internal discussions on who, or what to support. The Federation could see some membership erosion if the Packers and Importers split off, but then the ABF would be a beekeeper's organization.

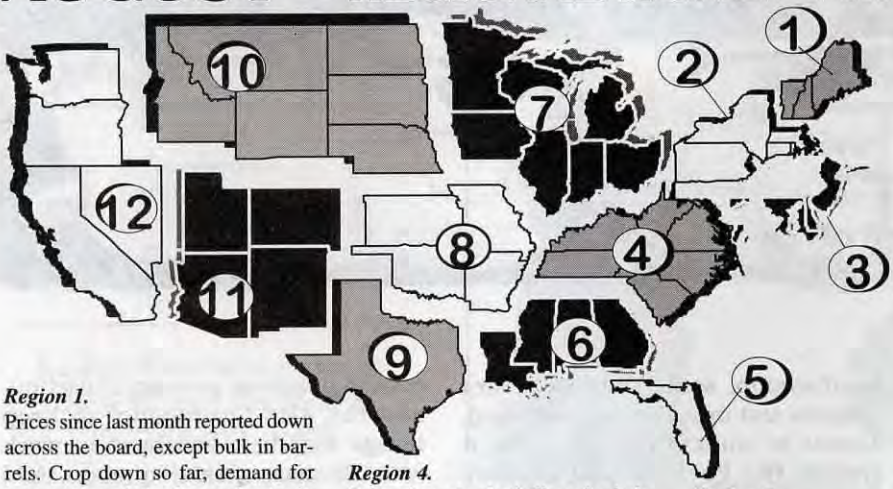
The natural division between packers and producers is becoming more pronounced as this vote gets close. I think over 190,000,000 lbs. of imported honey is being used by American packers, while only buying 60% to 65% of our quality domestically-produced crop. They offer domestic producers prices at or below imported prices so they can sell the blend at a better price.

Producers have won another anti-dumping suit which has driven up the price of both domestic honey and imported honey. This, too has caused a certain amount of friction, and the ABF Leadership, to keep things together, will have to work with all sides of this equation. Add to this the formation, perhaps, of a new Honey Promotion Board and the possibility of the ABF becoming a beekeeper's only organization rises even further.

As you can see there is a delicate balancing act going on in our industry again. But there are some bright spots, and, in my opinion, one of them is Sioux Honey. Tune in next month and see how their game plan is working.

Wise Guy

AUGUST - REGIONAL HONEY PRICE REPORT



Region 1.
Prices since last month reported down across the board, except bulk in barrels. Crop down so far, demand for new crop up, but prices only steady to down. Queen problems minimal this season so far.

Region 2.
Bulk and wholesale prices reorted down, but retail up for a change. This year's crop below expectations, but demand for new, and in gerneral, promising. Queens doing well. Pollination business increasing.

Region 3.
Prices steady since last month across the board. Crop about average so far. New crop demand high, but overall demand steady. Prices rumored to be increasing due to antidumping. Pollination business strong. Queens fine.

Region 4.
Pail prices steady, bulk and wholesale up and retail steady since last month. Crop down so far and demand only moderate, with increases not on the hoizon. About 50% or our reporters pollinate, and queens only average so far this summer.

Region 5.
Prices steady since last month at all levels. An average crops so far due to weather, but demand weak overall. Queens seem ot be doing O.K.

Region 6.
Prices steady, but retail up a bit since last month. An average crop so far, but demand way, way down. Indications of price increases due to antidumping on the horizon. Pollination business steady, and queens looking good this season.

Region 7.
Prices pretty much unchaged since last month, but the amount of honey sold has decreased in many large outlets, and the shelf space has decreased correspondingly. Smaller, niche markets are picking up the slack however, and local honey is popular. Crop about average so far to down a bit. Prices seem to be heading up as antidumping takes ahold. Queens doing O.K. so far.

Region 8.
Prices rock steady since last month across the board. Crop down a lot early in the season, and demand, for either new or any at best only modeate. Pollination business slow, queens good to average, so far.

Region 9.
Prices up across the board since last month especially at the bulk and pail level. Crop down to ony average so far, and demand average to increasing. Pollination specialized here, but overall queens doing, at best, poorly so far.

Region 10.
Pail and retail prices down since last month but bulk and wholesale up. Go figure. Crop average so far and demand only steady. Pollination not common with our reporters here, maybe because over 80% having lots of trouble with queens.

Region 11.
Prices down for everything except wholesale since last month. Demand is steady, which is good, and interest in new crop increasing. Average crop so far, and queens the same.

Region 12.
Prices down here also, but more pronounced than anywhere. Average to good crop so far, especially up north. Demnd only steady though, as lots of honey stored. Niche markets doing well and getting better,. Queens on,y average at best.

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12			Last	Last
Extracted honey sold bulk to Packers or Processors													**Range**	**Avg.**	**Month**	**Yr.**
Wholesale Bulk																
60# Light (retail)	65.23	66.00	74.00	75.25	75.00	64.67	69.71	64.25	78.43	83.00	80.00	60.00	45.00-93.00	67.29	71.50	70.26
60# Amber (retail)	65.26	61.92	68.00	73.25	60.00	64.50	61.00	58.00	70.00	77.20	70.00	55.00	45.00-120.00	66.60	68.99	68.10
55 gal. Light	0.61	0.70	0.66	0.66	0.65	0.65	0.60	0.62	0.66	0.70	0.72	0.83	0.50-0.83	0.65	0.64	0.64
55 gal. Amber	0.58	0.68	0.61	0.68	0.60	0.59	0.54	0.70	0.58	0.61	0.60	0.75	0.46-0.75	0.61	0.58	0.61
Wholesale - Case Lots																
1/2# 24's	27.11	25.18	28.73	32.36	28.73	25.83	27.77	28.73	30.00	28.73	28.73	25.00	20.40-37.20	28.59	30.02	29.65
1# 24's	41.58	38.55	48.00	45.08	40.35	44.50	39.43	44.46	44.40	43.80	54.00	46.20	24.00-54.00	43.04	43.07	42.82
2# 12's	37.92	44.19	46.80	43.05	40.33	36.30	36.24	41.33	41.38	39.00	40.33	41.00	29.40-52.58	39.02	39.65	39.47
12 oz. Plas. 24's	34.00	33.98	45.60	36.53	33.19	32.20	33.63	34.44	34.20	39.60	30.00	38.20	16.40-48.00	35.17	36.79	36.14
5# 6's	38.97	38.11	47.00	48.25	40.88	42.00	36.12	39.00	48.00	41.00	40.88	36.00	25.00-57.00	40.63	43.59	42.52
Retail Honey Prices																
1/2#	1.63	1.51	2.83	2.17	1.99	1.83	1.60	1.69	1.70	2.83	2.83	1.69	0.99-2.39	1.69	1.81	1.79
12 oz. Plastic	2.14	2.20	2.90	2.39	1.69	2.74	1.82	2.19	2.32	2.25	1.89	2.14	1.19-2.95	2.20	2.26	2.25
1 lb. Glass	2.59	2.35	3.00	3.21	2.69	2.89	2.21	2.61	3.26	2.25	2.99	2.54	1.45-4.00	2.65	2.81	2.80
2 lb. Glass	4.36	3.92	4.80	5.92	3.69	4.30	3.78	4.63	5.09	4.50	3.29	4.63	2.20-7.00	4.46	4.49	4.54
3 lb. Glass	6.09	6.47	7.80	7.00	6.79	7.90	6.10	6.25	6.56	6.39	6.00	5.99	5.09-9.79	6.29	6.20	6.67
4 lb. Glass	7.29	6.60	8.21	10.48	8.21	7.03	7.33	6.50	7.00	8.50	8.21	8.20	5.00-12.00	7.63	7.56	7.43
5 lb. Glass	9.16	8.74	11.00	10.90	10.42	8.00	8.49	10.99	9.00	8.95	7.89	8.25	7.89-14.00	9.38	9.79	9.46
1# Cream	3.28	3.05	3.60	3.78	4.18	3.26	2.70	2.98	6.99	4.18	4.00	2.97	2.25-6.99	3.30	3.26	3.25
1# Comb	3.93	3.69	3.60	4.53	3.70	4.33	4.23	4.12	3.70	3.70	3.70	4.50	1.95-5.00	4.15	4.47	4.34
Round Plastic	3.52	3.11	3.60	5.00	3.87	3.50	3.30	3.66	3.76	3.87	5.00	3.85	2.95-5.00	3.67	3.84	3.79
Wax (Light)	1.53	2.30	3.00	2.80	2.90	3.00	2.61	2.50	1.53	1.60	1.80	1.50	1.10-5.00	2.59	2.58	1.64
Wax (Dark)	1.40	1.58	2.75	1.90	2.81	2.83	1.45	2.81	1.05	1.01	1.00	1.25	0.95-5.00	2.47	2.15	1.39
Poll. Fee/Col.	36.77	39.60	35.00	36.50	37.69	37.33	40.00	40.00	30.00	37.69	37.69	38.50	20.00-55.00	38.07	38.33	39.44

?DO YOU KNOW?

Fundamentals

Clarence Collison
Mississippi State University

Inexperienced beekeepers as well as the general public often look to experienced beekeepers as experts in all aspects of the industry. Being able to handle all of these inquiries requires an individual to have a broad working knowledge in many different areas of apiculture, entomology and botany. Beekeepers need to be keen observers and good naturalist or be in tune with nature. A large part of this knowledge base is derived from personal experiences (learning from your own mistakes). In addition, beekeepers learn from reading a vast assortment of beekeeping literature, by attending beekeeper meetings and short courses as well as sharing experiences and ideas with other beekeepers. One quickly learns that there are many different ways of keeping honey bees.

Please take a few minutes and answer the following questions to determine how familiar you are with the various aspects of beekeeping, bee behavior, anatomy and bee botany.

The first nine questions are true and false. Place a T in front of the statement if entirely true and a F if any part of the statement is incorrect.

1. ____ Bees seek revenge when humans disturb a colony.
2. ____ Adult and larval honey bees have the same number of abdominal segments.
3. ____ Drones and queens are sexually mature when they emerge from their brood cells.
4. ____ Honey bee workers forage for food according to their own needs.
5. ____ Adult worker bees consume similar amounts of pollen throughout their life.
6. ____ Expansion and contraction of the parts making up the proboscis provides the suction that the bee needs to suck up fluids.
7. ____ Food masses within the ventriculus (true stomach) are surrounded by a thin, non-cellular membrane known as the pericardial membrane.
8. ____ Honeystix, a heat sealed, biodegradable plastic micro-package of cold-processed honey was invented by Glen Peters.
9. ____ When burr comb is built between supers and connects the top bars of one super with the bottom bars of another, it is an indication that the hive has too much ventilation.

(Multiple Choice Questions, 1 point each)

10. ____ In a visitor- flower relationship, which describes the association of pollen, nectar, floral attractiveness and pollination, the honey bee is described as being:
    A. Oligophilic
    B. Polytropic
    C. Oligotropic
    D. Monophilic
    E. Monotropic
11. ____ A colony that has a good brood pattern with brood in all stages, particularly eggs, has a queen which has been there within the last ____ days.
    A. Five
    B. Four
    C. Two
    D. Three
    E. One
12. Explain why *Varroa mites cause less damage to Apis cerana* in comparison to *Apis mellifera.* (2 points)
13. Name two materials that honey bee foragers carry back to the hive internally. (2 points)

Please match the following floral sources and floral characteristics with the appropriate response.

A. Safflower B. Vetch C. Purple Loosestrife D. Catkins E. Florets F. Fireweed G. Canola H. Sunflower I. Mangrove

14. ____ The red clover flower, like almost all clovers is made up of individual flowers called _____.
15. ____ Argentine rape is also known as _____.
16. ____ Trailing or tendril-bearing herbs belonging to the pea family (Leguminosae). Some species produce large quantities of quality honey, are cultivated for forage or plowed under for green manure. Flowers are borne in loose clusters and range in color from shades of blue or purple to rose colored to white depending, on the species.
17. ____ Belongs to the composite family, is a thistle-like annual, 15-30 inches in height and is grown for oil, meal and birdseed. Blossoms are initially yellow in color, changing to red as they mature. Where large acreages are grown, significant honey surpluses are possible.
18. ____ Also known as willow herb. A perennial herb, two to eight feet tall with long lance-shaped leaves with red-purple flowers. The honey is water white of the finest quality. Abundant in Alaska, Canada and northwestern United States.
19. Please explain why honey and beeswax should never be heated with a direct source of heat. (2 points)
20. Name three types of food fed to worker larvae. (3 points)

ANSWERS ON PAGE 40

Mark Winston

Wild Colonies

"I took many lessons away from years of wild colony hunting. One was the adaptability of bees to survive in the wild"

I miss wild colonies. I and my research colleagues from the University of Kansas spent the better part of the 1970's cutting open feral honey bee colonies in South America while studying Africanized bees, but also back home just for fun. We tore into their nests with ax and chain saw, seeking the mysteries of how honey bees survive in the wild. Our quest was for data, but as a byproduct of research we transferred a few hundred colonies into boxes in Peru, Venezuela, French Guiana, and Kansas.

I moved to Vancouver, British Columbia in 1980, leaving behind Gard Otis, Chip Taylor, and other members of the killer bee team. I fully expected to enlighten my own students with the mysteries revealed in wild colonies, but it has not worked out that way. To my surprise, there were and are few feral honey bee nests in the area, and for natural rather than man-made reasons. It is not pesticides or *varroa* that keep wild colonies from surviving here. Rather, it is too warm in the winter and the flowering season too short in the summer to support feral nests.

Our summer honeyflow lasts only until the end of July, and unmanaged colonies do not accumulate enough stores to survive through the winter. Vancouver's mild coastal climate results in the bees' being too active in the winter and they quickly use up their paltry honey stores before the first spring flows. I'm sure many colonies begin every spring and summer from swarms that issue from managed hives, but almost none persist. I have found only one wild colony in twenty two years of working in this area, and that one in a house that was being torn down the next day.

My memories of wild colonies are still vivid, because dissecting their nests left me with a profound impression of what life is like for wild bees. Their nests can be chaotic, with comb tucked into the many nooks and crannies found in irregularly shaped feral cavities, an impression quite different from the well-ordered and systematic way bees live in managed hives.

Feral nests may be anywhere, and bees will use any cavity even remotely of the proper size. We cut bees out of tree holes, dug them out of underground cavities, and collected them from open nests just hanging from branches. Many of the wild nests we attacked came from man-made structures, in open sewer manholes, rusting and abandoned cars, and especially behind walls of homes and barns, in between the outer and inner walls.

It was never difficult to find feral nests, mostly by word-of-mouth. We did spend many hours beelining colonies, trapping foraging workers on flowers, sighting their flight back to their nests like surveyors, and moving on to another angle until enough flight lines intersected to follow to the nest.

However, that was the hard way; farmers and other rural dwellers know the locations of wild colonies, and could take us there in minutes while beelining could take days. In Kansas, we received tens of calls each summer from homeowners wanting to get rid of swarms that had colonized their homes, and the local police, fire departments, and city workers knew to forward any colony calls to us.

The different arrangements of comb that we would find in feral nests were startling. Some colonies had up to a hundred small pieces of comb arrayed along the tops of tube-shaped cavities. Another I recall had only one humongous piece of comb, many feet tall, revealed when we tore the side off an old barn. We frequently found colonies hanging between wooden studs, subdivided in many parts separated by each wooden partition.

Wild colonies can vary tremendously in size, with some barely taking up the volume of a basketball and others growing to comb areas and populations as large as a well-supered managed hive. Some of this size difference is genetic, with tropically-evolved Africanized bees showing small average colony sizes and the temperate-evolved European descendants having larger colonies needed to store honey during the winter. Colony size is serendipitous as well, depending on what size cavities were found by scout bees and how many choices they discovered before their swarm settled on its final home.

We worked out many methods to transfer wild nests into hives, initially to continue our research but eventually to donate to local beekeepers. Transferring nests is

Continued On Next Page

" A picture of you and your crew removing a nest from the mayor's house is almost guaranteed to be front page news in your local paper, part of building up the network of customers and bee aficionados that make beekeeping an integrated part of community life."

among the most absorbing of tasks, taking many pleasurable hours to do properly but feeling as if only minutes had passed. We meticulously would cut out pieces of comb, secure them carefully into frames by suspending the combs in slings made of strapping tape hung around the top bars, and then put the frames delicately into boxes. After a few days, the bees would secure the comb to the top bars and we could remove the tape.

Finding the queen was a big help, because tricking the workers to move into their new home was considerably easier if they could orient to their sovereign. Without the queen, we would use synthetic pheromones to attract at least some of the workers, adding our own queen later once we determined that the original queen had vanished. After the old nest had been cleaned out, and any remaining comb transported away to squeeze out honey and render into wax, the new hive would be placed near the original nest, giving the remaining disoriented workers no options but to join their reconstituted hive.

I took many lessons away from these years of wild colony hunting. One was the adaptability of bees to survive in the wild. Honey bees are unusual livestock in maintaining feral populations that are quite similar to their managed relatives. I find it remarkable that swarms can issue from the well-ordered, fed, and tended hives of beekeepers and establish nests with no assistance from us. I know of no other managed farm animal that would be as successful at establishing a wild home as bees; certainly cows, pigs, and sheep do poorly when escaped from their pastures and pens.

One question that I ponder from years of bee-catching is whether research on managed honey bees in boxes really provides a true interpretation of how bees exist in the wild. We assume that bees in a nicely arranged box with parallel combs maintained in good condition will dance, forage, show age-related division of labor, and perform all their other tasks pretty much the way wild bees might do in the more chaotic arrangements found in the wild. Probably so, but a comparison of bee behavior in feral and managed situations might reveal some unexpected findings about bees.

Wild nests also demonstrated the feasibility of using bees as tools for economic development. Our work in South America was particularly satisfying in this way, because we often would trade information about nest locations for the hives themselves when we were done transferring and measuring them. Local farmers would take us to nests, provide a rudimentary box to put them in, and then collect the box a few days later when we were done, the bees settled, and the comb well-fastened by the bees to their frames. The farmers would carry their new hives home, using them to start beekeeping and hopefully bring in a bit of income.

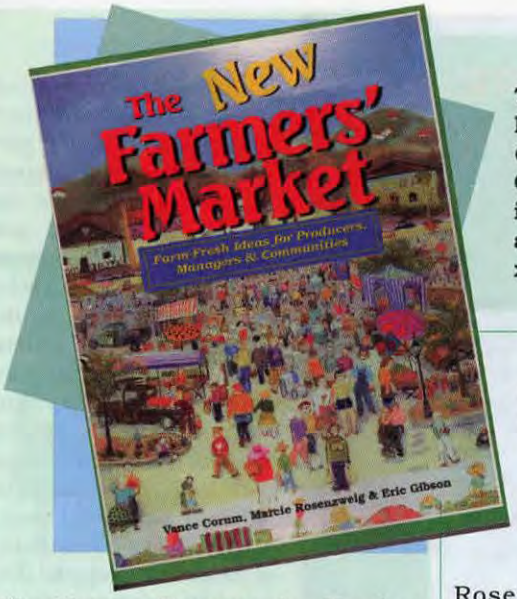
Collecting wild nests had some other benefits as well. For one thing, we found quite a few customers for our honey, particularly in Kansas. We often saw appreciative homeowners at harvest time, buckets in hand, since we had talked up our crop while taking out their nests. Wild colony capturing also is a fine way to become well-known in your local community. A picture of you and your crew removing a nest from the mayor's house is almost guaranteed to be front page news in your local paper, part of building up the network of customers and bee aficionados that make beekeeping an integrated part of community life.

Although I don't do wild nests any more, I nostalgically have kept my old nest-collecting backpack, full of everything needed to reel in a feral colony just in case I get one of those phone calls. In my pack is a small jar of attractive pheromones to lure the bees in, a cage to plunk the queen in if I'm lucky enough to find her, lots of strapping tape, a small notebook and ruler to measure everything for posterity, and the usual matches, smoker fuel, hive tool, bee suit, gloves, veil, and bee brush that any beekeeping kit might contain.

I learned something else capturing bees, and that was the importance of teamwork and the pleasures of beekeeping alongside old friends. We passed many a fine hour conversing about everything imaginable while doing our work, and many more hours remembering and telling stories about each nest even years later. Capturing wild nests has lived on for me in that way, and also in providing insights into the complex social life that bees participated in long before there was any beekeeping, and continue side by side with the hives we manage.

For more information on how to capture wild nests, and some tricks-of-the-trade tips, see an article in the 1984 *American Bee Journal* (Otis, Taylor, and Winston, volume 124, pages 372-374). Yes, it's an older "heritage" piece, but then capturing honey bees is an ancient occupation that has not changed much for millennia, except perhaps for the invention of strapping tape. BC

Mark Winston is a Professor and researcher at Simon Fraser University, Burnaby, B.C. Canada, and is still looking for wild colonies.

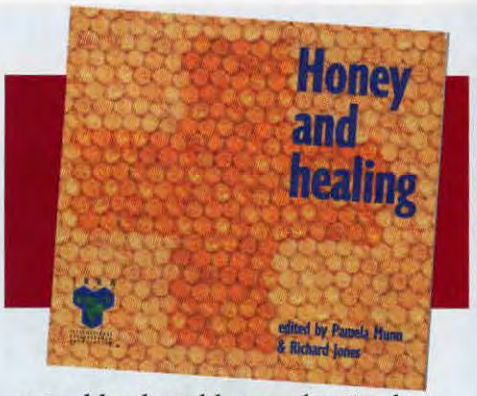


The New Farmers' Market (ISBN 0963281429) Soft cover, B&W, 260 pgs. 8x10 inches.

If you want to succeed at farmers' markets, this is the book for you! Find out the latest tips & trends from leading-edge sellers & managers all over the country!

SELLING AT THE MARKET
Preparing for Market
Advantages/disadvantages
Best products to sell
Checking out the markets
Display
Booth design & structure
Canopy, display boxes, table coverings
Booth Signs & banners
Product display
Merchandising
Cash handling, scales
Sampling: what to, how to, where
Price signs, labels & name tags
Salesmanship
Selling tips and styles,
Dealing with difficult customers
Educating customers
Recipes: best format, where to find
Business/Pricing
Figuring the bottom line
Recordkeeping
Pricing: setting prices, strategies
Appendices
Insurance, customer surveys, market profitability
I had to leave out nearly double the chapters I've included here due to space. This book has more information for anybody, and beekeepers especially, than any I've ever seen. You will pay for it the first time you go out and use what you read here.

The New Farmers' Market is available from *Bee Culture's* Book Store, Cat. # X92, for $29.95 includes domestic postage. Call 800.289.7668 x 3255



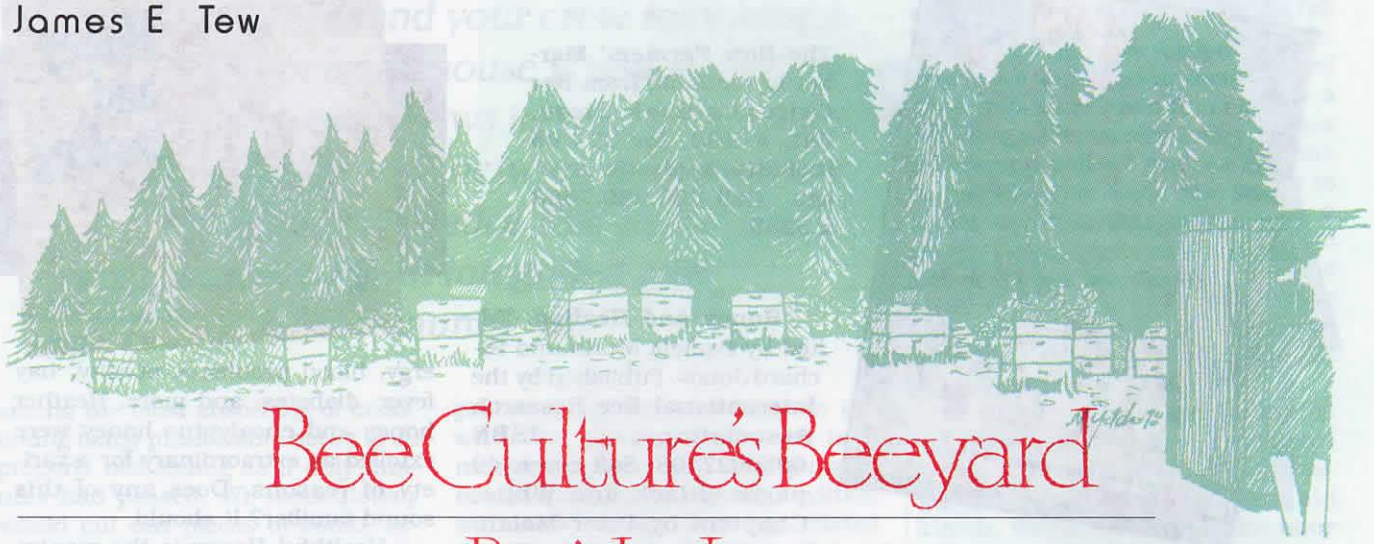
Honey and Healing. Edited by Pamela Munn and Richard Jones. Published by the International Bee Research Association. ISBN 0850922408. Soft cover, 49 pages, Black and White. Chapters by Peter Molan, Rose Cooper, Ken Jones, Theo Postmes and others.

In 1938 Bodog F Beck, MD authored *Honey and Health*. It contained chapters on Honey, sugars, the medicinal value of honey, honey in surgery, and a variety of other topics dealing with cooking with honey, honey's history and the like. The chapters on honey and medicine deserve note, however, because not much has changed in the 63 years since this work came out. Honcy was used for kidney and bladder ailments, throat and bronchial problems, pulmonary infections, digestive disturbances, muscular energy, blood problems, obesity, hay fever, diabetes, and more. Heather honey and eucalyptus honey were extolled as extraordinary for a variety of reasons. Does any of this sound familiar? It should.

Healthful Honey is the mantra of the modern beekeeper, the modern alternative medical field, and the marketing miracle of the National Honey Board. And, though not a new subject certainly, the science of why it works the way it does, and new discoveries of what it is capable of are brought to light in this small, but informative book. Rich with references and up-to-date studies, the information in this book will reinforce continued studies and, it is hoped, initiate new research.

Available from IBRA for $10.00 US which includes shipping. 18 N. Road, Cardiff, CF10 3DT, UK or email at: mail@ibra.org.uk

James E Tew



Bee Culture's Beeyard

Besides honey

Andy Rooney of "60 Minutes" Fame

Andy Rooney, a commentator from 60 Minutes was the commencement speaker at the 2001 graduation ceremony for the College of Wooster here in Wooster, Ohio. Mr. Rooney was predictably enjoyable and enlightening. If anything, he was probably more enlightening than he intended to be.

During his amicable comments, he developed the theme for his presentation that most great discoveries and inventions have already been made during the past few hundred years. There would be no more fundamental finds comparable to understanding the concept of gravity or the fundamentals of powered flight. A space flight is only taking the Wright brother's achievements to the extreme. With his presentation, Mr. Rooney did me a great favor – he forced me to think. He presented me with the conundrum – if something is undiscovered, then how is someone sure that it doesn't exist? Secondly, as Mr. Rooney extolled humankind's achievements over the past several hundred years, I wondered why the use of fire or farming, which happened thousands of years ago, did not make the list. It seems to me that human understanding of the use of fire was a greater development than our understanding of the fundamentals of gravity. And farming – I certainly needed to eat before I needed to fly. I would argue that our evolution has been a long series of achievements and setbacks. I see no reason to think that we have somehow reached the pinnacle of our finds and will now spend the next millennia tweaking what we already know.

Actually, I am drifting toward a beekeeping point here. Mr. Rooney is a renowned reporter, commentator, thinker – he is even a woodworker. Yet, I disagreed with him. But while disagreeing with him,

he made me think. I have **no** illusions of being in Mr. Rooney's league, but each time I am a speaker at a meeting, my comments are supported by some while being rejected by others. As I write these articles for you, some of you agree with some of my comments while others completely disagree. You can't please all the people all the time. I do hope that by pushing you to decide if you support of reject a particular point, at least you have been challenged to think, formulate and defend your ideas.

SPECIAL COLONIES NEEDED TO PRODUCE HONEY BEE QUEENS

1. *A BREEDER COLONY, OR COLONIES — My best colony. I would like all my colonies to be as good as this one. It provides larvae for grafting.*

2. *A CELL STARTING COLONY — a strong, queenless colony. It starts queen cells from the breeder colony in response to the emergency queen replacement stimulus.*

3. *A CELL FINISHING COLONY — a strong, queenright colony. Nurse bees finish raising the cells that the starter colony began.*

4. *NUCLEUS HIVES, SOMETIMES CALLED MATING NUCS — Small mating colonies that are given mature (ripe) queen cells from the cell finishing colony.*

Plastic Frames

Not exactly an area of heated controversy, but still a topic on which many of you are still undecided is the use of plastic frames. As recently as this morning, I received an email message from Joe D. asking what the consensus was on plastic frames and foundation. Peter S. went a step farther asking what could be done with diseased plastic frames. We are presently in two frame worlds – wood and plastic. I suspect plastic is here to stay. With Mr. Rooney in mind, some of you will disagree with me when I will say that overall I like plastic frames – even though they are not perfect. They are more difficult to disinfect and probably should not be burned as a way of discarding them. They twist (rack) more than wood frames when filled with honey. I don't care for that characteristic. However, they are so fast to use. They come completely assembled. If time is short, use plastic frames. If you are keeping bees as a relaxing hobby and are not particularly concerned about time, take the time to assemble frames and install foundation. I feel that wood frames result in a better comb, but again, plastic frames result in good combs and are pre-assembled. Some of you don't like them. Some of you do like them. Some of you are undecided.

What Really Happens Inside that Hive??

As I was listening to Mr. Rooney's comments, I considered how much is still unknown inside the hot, dark hive. Even though I don't foresee groundbreaking discoveries for general humankind coming from the future elucidation of beehive mysteries, beekeeping principles can only advance as we understand more of the inner hive's workings. That will make future beekeepers better than we.

It was rainy as I took a walk through the yard yesterday. Even though I have the colonies supered, there were still bees packed into the entrances – waiting for a break in the weather I suppose. Look at the first photo below. I simply cannot imagine what life must be like inside the hive. I have flashes of claustrophobia just thinking of how tight it must be in the upper levels of the colony far from the entrance.

On other colonies, ventilating bees were fanning furiously at the colony entrance. Last month, I mentioned how difficult it was to describe and photograph various hive occurrences. The warm, moist, blast of air coming from the hive cannot be photographed. It was startling to feel how much hot air the bees were moving from the hive.

Comb Building Bees

Deep inside the colony there were comb-building bees working on new combs and refurbishing old ones. The next photograph in was taken in bright light with a flash. It's difficult for me to imagine bees doing their work in pitch-blackness.

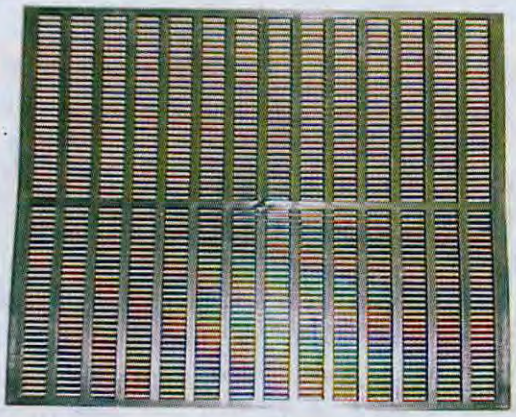
The Pollen Trap

Last month, I put on a pollen trap on a medium strength colony. Like producing too much honey, I have no real need for hundreds of pounds of pollen. I get a pound or so every other day. Some days, I open the trap grid in order to let the pollen foragers pass into the colony. It's one of the ways I have diversified the yard.

The Propolis Trap

I don't really know what to do with the propolis I trap but collecting propolis is another diversified hive product. I've tried to

make a simple varnish from it, but after being applied, my homemade varnish was still drying about two months later. Even so – whatever reason – propolis is fairly easy to collect during the spring of the year.



The trap goes on top of the colony where the inner cover normally goes. Bees don't like all the small openings and will fill them with propolis. After the trap has been filled, chill it in a freezer, twist it and small pieces of propolis are reported to drop out. I have put one on one of my colonies. I will report later.

Honey Bee Queens in the BC Yard

For the first time ever in the BC Yard, I intend to use one of the plastic queen rearing contraptions to produce a few queens from the yard. I suppose I will use the Jenter Device though several similar devices are available from various bee supply companies and all work in similar fashion.

Essentially all queens produced by beekeepers are produced by the emergency stimulus as opposed to the swarming or supersedure stimulus. G. M. Doolittle is commonly given credit for first describing the process that is still used today to produce thousands and thousands of honey bee queens. The most tedious part of the procedure is transferring[1] very young larvae to beeswax cups. Good vision and skill are required. The Jenter-type device circumvents the need to graft larvae. I have ordered a complete new kit to replace my tired one. I will present a photographic follow-up in future articles.

After queens emerge in mating nuclei, they take nuptial flights and after a couple of weeks, they begin to lay eggs in the small combs of the mating nuclei. Shortly thereafter, the queens can be removed, caged and used to begin a new hive.

Honey bee queens can be produced as long as there are drone bees for mating or until about the first or second killing frost.

There are all kinds of variations on the Doolittle theme. A beekeeper may produce many queens or only just enough to meet the needs of the season. In all cases, either commercial or hobby beekeeper, the end results are new queens produced from your best colony (your breeder colony).

Purple Loosestrife as a Nectar Plant

Do no propagate this plant! Beekeepers are always looking for the ultimate, dependable nectar plant – the one that brings in the big crop every year. Purple Loosestrife (*Lythrum salicaria* L.) is a good nectar-producing plant but it is an exotic plant of European origin. Since the early nineteenth century it has spread across the continental US. The plant was intentionally introduced as a medicinal herb and probably unintentionally introduced as a ship ballast contaminant.

The problem with the plant is that it is a very aggressive, invasive plant. It essentially takes over wetlands and crowds out native species of plants and animals. It is nearly impossible to eradicate. I recently heard that a beekeeper has been credited with propagating this plant in Illinois some years ago. We don't need this kind of nectar-producing plant nor do we, as beekeepers, need this kind of publicity. No doubt early beekeepers planted the plant innocently, but we now know better.

It is a shame. It is a pretty plant and apparently a good general nectar plant, but its negative attributes far outweigh the advantages. ***Don't propagate this plant!***

Chalkbrood

I have chalkbrood (*Ascosphaera apis*) in a few of my colonies. It is a fungal infection about which we can do nothing (except to requeen). I am not surprised. I say I am not surprised because it seems to rain every other day – but I'm not complaining. That's far better than no rain at all. Chalkbrood is one of those diseases that doesn't normally do much damage, but I still don't want it around. It has also been called rattle brood and occasionally stone brood (though some would argue that stone brood is a different infection.) It usually clears up on its own. If the colonies are still struggling with it later in the summer, I suppose I will requeen.

For the Next Few Months

For most of the summer, I will plan to collect some pollen, some propolis, and raise a few queens. I'm just playing. I suppose I could still get on some comb honey supers, but I covered that pretty well last year. In the meantime, it is still raining so I can only plan. BC

Dr. James E. Tew, State Specialist, Beekeeping, The Ohio State University, Wooster, OH 44691, 330.263.3684, Tew.1@osu.edu

1 In the beekeeping literature, transferring the larvae is commonly incorrectly called "grafting" Either term will work.

Antique Honey House

Roger Morse

There is, in Roger Morse's apiary a portable antique honey house built in about 1800 by W. L. Coggshall (1852-1926), a world-famous beekeeper who once kept about 4,000 colonies in central upstate New York. There was a similar building in each of Coggshall's bee yards. It was used for extracting in the summer and honey and super storage in the Fall and Winter.

The combs of honey were harvested by brushing the bees from them. Brushing angers bees, and the harvesters were thoroughly stung just as one would be using the same technique today. The combs of honey without the clinging bees were placed back into the supers and taken to the honey house on a wheelbarrow where they were uncapped by hand with a cold knife.

Each honey house had its own boy-powered, four-frame reversible extractor. There was a hole, approximately two feet square, in the wooden floor that held a large pail into which the honey ran from the extractor. The pailsful of honey from the extractor were poured into a straining and storage tank, and then the honey flowed into wooden barrels that held about 120 pounds each. The barrels of honey were picked up in the Fall by bobsled after the first snowfall when the honey had granulated.

The wooden barrels full of honey were sold to grocery stores, where the proprietor would hammer out one end and sell the honey by the scoopful or, if the honey was firmly granulated, it was cut into blocks with a sharp knife. This was truly raw honey and fermentation was a problem as it usually is when granulated honey is not pasteurized.

The honey house is portable and comes apart in sections. The wooden floor was removed and replaced with one of poured concrete to eliminate a place where rats, mice, woodchucks, skunks and other pests might nest. Our ancestors were forced to live with and tolerate a number of pests that can be eliminated by building cement floors and buildings.

The Coggshall building is 12 by 16 feet with one two-foot-square window and one door. Unfortunately, the original door on this building had been replaced by one made of plywood before it was acquired. On the insides of the doors of other old Coggshall buildings 50 or more years ago, there was a board on which was written the year and the number of barrels of honey harvested in that year.

The building comes apart in 10 pieces. The two side pieces are 16 feet long and seven feet high. The ends are made up of two pieces, each six feet wide. The two edges where the end pieces join with the sides are seven feet tall and rise to a height of 12 feet in the center so as to make a peaked roof. The roof is made-up of four pieces; each covered with corrugated iron. The corrugated pieces overlapped on the center sides, and it is necessary to use a long cap the length of the peak of the roof to keep water from leaking through the joint. There is a half-inch diameter, 12-foot-long rod in the middle of the building a little over six feet above the floor to hold the two side pieces in place.

This building is covered with six-inch-wide tongue-and-groove boards that have never been painted. The boards are in reasonably good condition considering their age. Now that the building has a solid concrete floor that is about six inches above the ground, it should last another100 years.

Visiting this antique building is a good reminder of the progress we have made in agriculture and beekeeping in the past century. It is recorded that when Coggshall visited his bee yards, he left home Monday mornings with a wagon and a team of horses and his helpers on bicycles behind. They returned home Saturday night. Coggshall arranged for meals with farmers along the route, and he and his men slept in barns along the way. It made a good workweek. BC

MOLDED CANDLES MADE EASY

Gerhard K. Guth

Tips and tricks from an experienced candle maker

I started making candles back in the days when I could get my choice of wax color at $1.59 per pound. My choice always was a golden color. I have also worked for others and was paid in beeswax. Since my time isn't worth much, I thought that was a good deal.

Wax tube fasteners

If you buy wax, all you have to do is look at the wax cake underneath to see if it is dirty. Even the cleanest wax gets dirty. I guess that is why you think of "The Whole Ball of Wax' as something dirty.

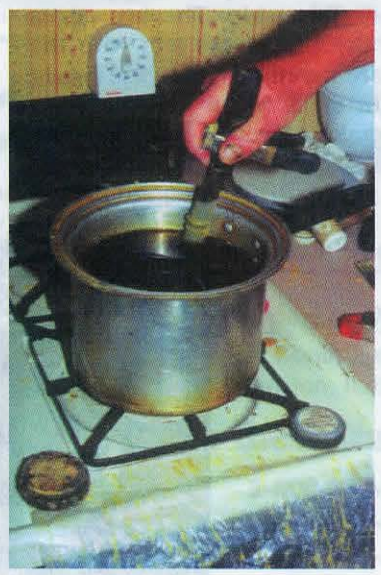
To start I take the top and bottom off a metal fruit can, cut the end off a nylon stocking, insert this as a filter into the can and tie it with a rubber band around the side. Good paint shops have quart and gallon strainers if you don't find any nylons around. Next, I take two flat sticks, lay them on top of a pot, stand the can/filter/funnel on top and pour already melted wax through the filter and into the pot. After awhile, the wax left in it will set up, then I push the nylon out the end, and heat it up in warm wax. I kind of don't like the word hot, since you need to heat wax gently. I want to look into the pot and see no commotion in it, no bubbles.

A home made candle mold maker. Oil well before placing the plaster in to set.

I always have a fire extinguisher around but haven't needed it yet. You hold the flame of a Bernzomatic torch against a cake of wax—it will melt but not burn. Wax paper is much more dangerous.

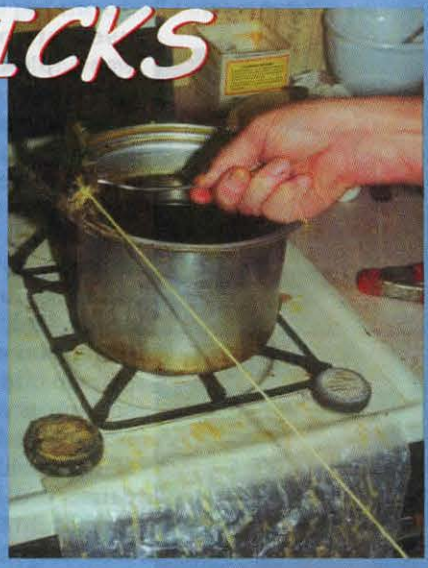
I have also heard about beeswax exploding when being reheated after it was cold which means someone heated it up too fast.

When you need a tool for candle making, look in the bee house first.



Keep the tube off the bottom of the pot where the debris will collect, and use it for any number of tasks. Seal leaks, fill cavities...it is an indispensible tool for making molded candles.

WAXING WICKS



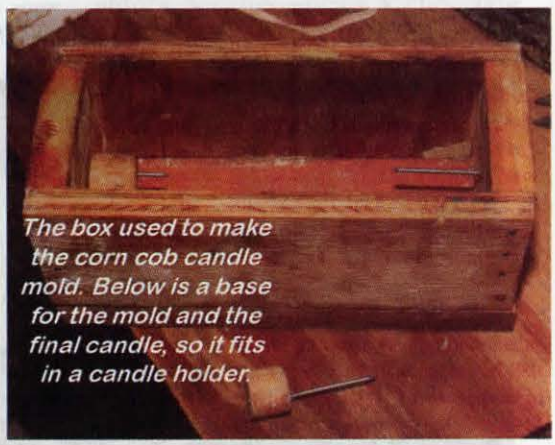
Before I make my candles I always dip the wick. These photos show the pot of wax I use to put my wick in. On the side of the pot I attach a clamp with the rubber taken off the tip. I keep an unmelted piece of wax on the bottom of the (unheated) pot because I use a fork that has to stay hot. I dip the wick into the melted wax and then I stick one end of the (now-waxed) wick between the tines and twist the fork for a little for tension. Then I take the already-dipped end and pull it over the pony clamp between the metal and the spring. The fork adds tension and running it between the clamp cleans off excess wax. This is a job that has to be done slowly or the strings of wicking will stick together. I pull an arm length of wicking through the pony clamp, pick it up at the pony clamp, and drop it, the next length I hold, and do that several times, then cut the wick and hang the "spaghetti" on a nail. I drape wax paper over the front of the stove and hold it with magnets. After a few weeks you can take the accumulation of wax and take it off the cold wax paper. Also, make sure you wear at least an apron to prevent burns on your skin. A helper maybe would be good for the job, but I can never catch one when I need one.

I would not like to pour candles without a wax tube fastener. Most beekeepers have one around and don't know what it is. It consists of a wooden handle and a metal tube. I show them separated because I adjust them, because I suspend it on top of the beeswax pot, and I *don't want it to touch the bottom of the pot.* That is where the impurities collect. I suspend the tool with a clamp, and I can pick it up blindfolded with the finger on that little hole in the handle. Yes, I forgot to mention that there is a little hole at the tip of the handle and another on the wooden handle. When the tube stands in the beeswax, it fills up to the level of wax in the pot.

Note the repaired crack, and the dowels and dowel holes to keep the two sides of the mold from sliding when being poured.

Poured candles are poured upside down, and as the wax contracts you will have to add more wax and I don't think there is a better way to do that than with a wax tube fastener. The most difficult candles to add to are the tapered candles in the eight-pack molds. I add wax with that wax tube fastener. Never fill the tubes up to the top. It is much easier to judge if you need to add wax. At the end of filling I actually use a toothpick and rip the end open to be sure there is no cavity left.

When I started I had only a few chocolate molds from Germany and one eight-pack mold. I drilled a little hole in the metal molds to get a wick through. Then I met someone who wanted 400 Santas so the search was on. How do I get more molds without paying $40.00 per mold? I asked people versed in ceramics if it was possible to make a mold from a mold. The answer was no. But, I don't always take no for an answer. So I build some wooden boxes to hold the molds, tried the rubber that they sell in craft stores to make molds. I was not satisfied with the results,



The box used to make the corn cob candle mold. Below is a base for the mold and the final candle, so it fits in a candle holder.

beside it being expensive. I talked about it with a neighbor who suggested plaster of Paris, available in every hardware store. So I was on my way. Since there is a problem with getting the new plaster mold out of a wooden box, even if it is oiled, I made the boxes wider and

Continued on next page.

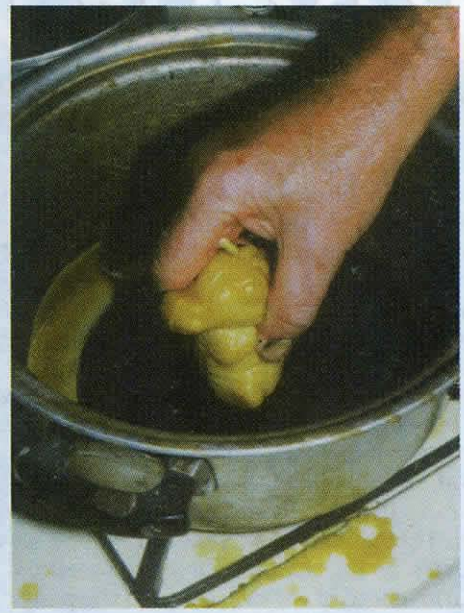
These are the corn cob candles made to hang together. They didn't sell as well as expected.

Trim the mold edge when the candle is still warm and the trimming is easier and leaves less of a scar.

used strips of wood, plywood, paneling, and nails. The photo shows the arrangement Once you take out the nail wedges everything comes apart. The first thing you need to do is to scratch a number on the back of the mold because you have to match them and keep them together. With matching, I mean that you have to take a file and file down the high spot. Being a dentist would be helpful.

If you get a big order it is easier to make a mold every hour first, and then it makes candle making easier. What surprised me at first was that the plaster of Paris would pull all the heat out of the wax, and when you take the candle out early, you can cut the barely visible seam, which every molded candle has.

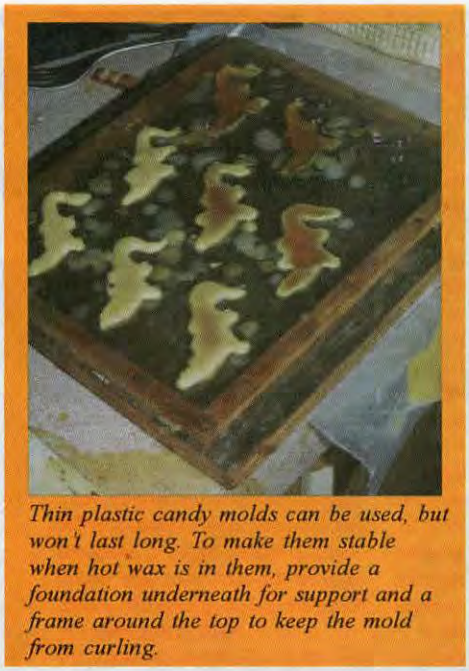
When you pour wax into a plaster mold and the wax runs out, it means that the wax is too hot. The photo shows you how to cheat by holding the mold up to the light If you see light—a leak—take the wax tube fastener and let



An old pan is used to finish the bottom. With a raised center, excess wax runs to the sides and isn't in the way, and shouldn't burn.

one drop roll down the side. Most molds made out of plaster need a kerf cut for the wick. A hacksaw is the right size. If you have a mold

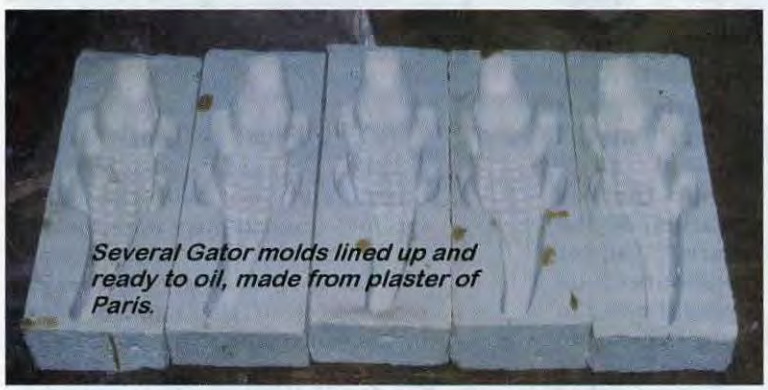
This is the box made to make a Gator mold. It comes apart easily, and the final product is shown on the opposite page.



Thin plastic candy molds can be used, but won't last long. To make them stable when hot wax is in them, provide a foundation underneath for support and a frame around the top to keep the mold from curling.

where there is only room for a short wick dip the wick into melted wax and push it in. After I put the mold halves together I use a metal rod to add support for the size 64 rubber bands that hold it all together.

You can also see in the spiral mold photo where the mold broke and a little household cement fixed it. You can also see where I put some wooden dowels in the molds, and drilled corresponding holes into the other half so that the mold halves cannot slide apart while you fill them.



Several Gator molds lined up and ready to oil, made from plaster of Paris.

When you take candles out while they are hot, remember that there is still hot liquid wax inside the candle. One time I was looking for a mold for corncob candles. The commercial mold was much too big. So, I bought some small ears of green corn, made a wooden box, put a nail in from the top to hold the ear, and at the other end I put a nail into a wooden dowel so you have a way to put the candle into a candle holder.

I tried one wick for two candles that tied two molds together and cast them at the same time. People can hang them up that way like dipped candles. Sales were not as good as I had expected.

For the corn mold cast only halfway up (one half of the ear, the long way). Let the plaster dry. Then coat the surfaces where the molds meet with "green soap" as someone in ceramics told me, meaning of course dish detergent. If you don't the mold halves will not come apart. I oil the boxes and wooden pieces with vegetable oil. I also brush the plaster molds liberally with vegetable oil until they are not thirsty anymore. A trace of vegetable oil is better. When you cast the corn mold you don't have to have the first layer exactly even. In fact it is better if they aren't. Then the two halves will not slide a part. Commercial corn molds have the rows of corn all straight, while a candle made from real corn has natural rows, and it is difficult to tell it from the real thing.

How To Find And Select Molds

You will have to look for small molds. I have had luck in places like cake-finishing schools. The molds are made for chocolate which is poured at much lower temperature than wax and these molds will not stand up to beeswax very long which is another reason to cast them in plaster. You also have to look for detail on the molds, and the more the better.

After you trim the wick you need to finish the bottom of the candle. I use a wide pot some four inches deep. All my pots come from flea markets. Before I used this one, I turned it upside down and gave the center a few whacks with a big hammer so that when you turn it right side up, the center is raised. I put the gas on very low, just under the center. Then I set the candle in the center, and in two seconds the bottom of the candle is smooth. The surplus wax runs to the side of the pot and does not burn.

When pouring small molds a tin can, with a pinched nose makes an inexpensive container. Keep it warm, but not so warm you burn your fingers.

Of course you can make things that are not candles. I got into alligators because I live in Florida, near Gainesville home of the University of Florida and the mascot is a Gator. You have to keep your eyes open. In the tourist traps around here they sell chocolate alligators made and kept in a plastic mold.

I discard the rancid chocolate and keep the mold. The photo shows a box ready for casting the plaster gators Another shows a chocolate mold ready for pouring the smallest 'gator. How else to pour them than with the wax tube fastener? A mold made of flimsy plastic will warp when the wax gets into it. So I took a piece of plywood, nailed a flat stick on it

Use a paint brush to oil the molds before you pour, or you won't be able to remove the finished candles. Keep applying oil until the plaster won't absorb any more.

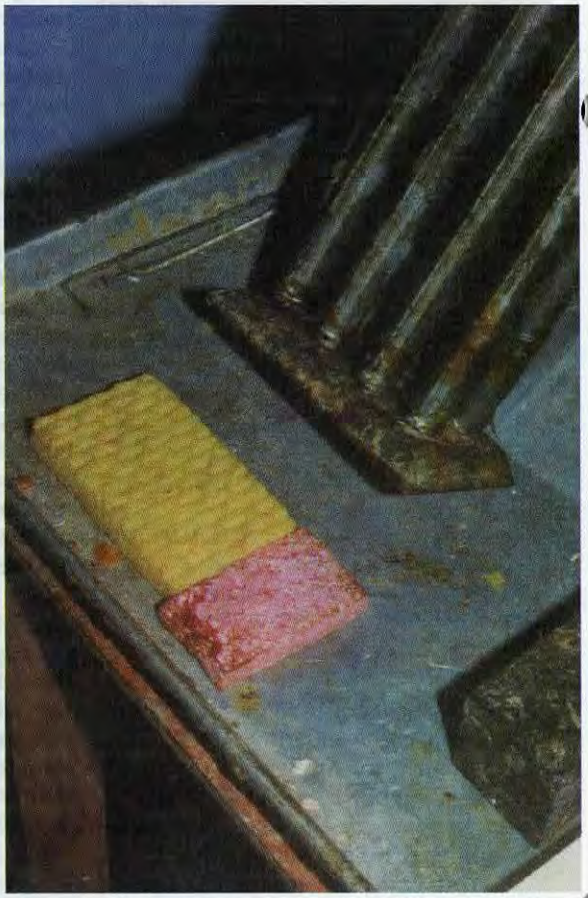
Continued on next page.

Frame wire, when wrapped around the waxed wick and twisted so it is in line with the wick will make threading the wick from the large end of the mold through the small end much, much easier.

An evenly waxed wick, with no spots without wax, threads easily. Miss a spot and the wick will bend and twist and be nearly impossible to thread.

and then nailed the mold on it. Unless the mold is exactly level you will have to put a wedge underneath it or you will end up with 'gators with a big head and no tail. You can also see the five gator molds need oiling badly. All plaster molds need oil after a few batches and use a paint brush to apply the oil. For the next smaller size mold I pour wax from a small vegetable can with one side squeezed to a spout. Both the can and the wax tube fastener have to be in the warm wax before you pour the wax. I try to have the can floating about ¾ full of wax or the top of the can is too hot to touch. I can fill four tubes of an eight-pack from one can.

I always had beeswax for sale by the pound. I cut milk or orange juice cartons down to 3-1/2" oil them lightly, put them on a postal scale (from the flea market) set the tare, about one-ounce, and pour the wax in until the scale reacted. Do not pour wax that is too hot or you will not be able to take the wax out. I tried to sell beeswax in chunks, properly weighted, put people would not buy it that way Filling cartons is a good way to get your pots



Once threaded, place the mold on a sponge, a soaked sponge, to keep it from leaking. Weigh it down with something to keep it secure.

empty at the end of the day.

When you buy an eight-pack mold, the first thing you want to do is to drill holes in the metal lip on the bottom for metal rods like the photo shows. The holes for the metal rods (clothes hangers are the nearest place to find the rods) have to be off center or the wick will be off center. And you definitely want the wick in the center. Note in the picture that the rods allow the wick to be in the center of the candle. Many molds now come with the holes already in them.

Now you are ready to put in the wick. I use a single piece of dipped wick for an eight-pack. I measure it roughly the length of the tube, plus an inch on either side, times eight. The opening on the small end is not wide enough to pull through a double wick but dipped wick works well and there is no difficulty pushing it through from the first small end and pulling it all through until you have enough and tape it to the outside of the mold with some masking tape. Now you need to pull the wick

through from the large end. Get a piece of foundation wire some 12 inches long and attach a clamp to one end. Then put the other end of the wire through the next small opening of the mold. There are several reasons for the clamp—you can't pull the wire through, and you can't lose the wire (it disappears fast), and if the wire comes out on the wrong side of the metal rod you pull the wire back and turn the clamp 180 degrees. Then when you push on the wire it is likely to come out the right way. Then wrap the end of the wire around the end of the wick, but bend it so it looks like the wire is coming out of the end of the wick. That way it will come through the opening smoothly. When you push the dipped wick into the small opening you will learn how important it is to dip the wick smoothly. Any spot that isn't covered makes it more difficult to push the wick through. Also note that I have bent one end of the metal rods so I can tape them to the mold which stops the rods from sliding back and forth. The other end of the rods will be protruding and you have to consider that You want them out of your way and you want the mold handle on the top. Using only one wick makes it possible to put tension on the wick. You don't want the wick hanging down into the mold like a corkscrew.

When you have the mold ready to pour, you want to put a sponge soaked in water down, exactly the size of the inside of the mold. I put this in a pan in case of a spill. On the pan you also see the end of one of my little helpers. They are two pieces of rectangular steel weighing ten pounds each. I use them to hold the molds down securely. If you see wax leaking you either have the wax too hot or a tube not covered by the sponge. In either case stop pouring and correct your mistake.

As soon as the candles cool be ready to top them off with wax. They rapidly develop cavities and you want to prevent that. Have the wax tube fastener ready. You also have to allow for the time that the fastener has to go back into the pot to refill and stay hot. Your finger on the top hole can regulate the rate of wax coming out from a drop to a stream.

This brings us to the point where we take the tapered candle out. A clue I got from Dr. Berthold says to push the candle down in the mold first. This works If you let the candles set for three days. I am in more of a hurry than that, so after I remove all rods and tape and cut all the wicks I put the mold down on a huge rubber sponge. Then I take a wooden dowel just a tad smaller than the diameter of the candle, sit it on top of the candle and whack the dowel with a hammer once or twice until the candle goes down. This works almost every time, and is a lot faster than waiting for freezing, or cooling other ways.

I offer my customers any color candles they want, as long as it is golden yellow. I found that dye infects everything you have—mold, pots, and tools. One time I used a block of wax that was too dark and my customer was somewhat unhappy. Then she found out that a lot of people actually wanted darker candles. Maybe grandmother used dark wax to make candles. I had one customer accuse me of putting dye into my candles but I guess she had never seen capping wax before. I didn't argue with her since—I knew it wasn't dyed. BC

Gerhard Guth is an experienced candle maker from Micanopy, Florida. All photos in the article are by Klaus Nowottnick.

A Hygienic Screened Bottom Board

Dick Chapin

Last Spring (2000) I purchased a nifty screened bottom board from one of my favorite suppliers, making a number of copies for myself and a few to give away to friends who are new beekeepers. I reversed my old bottom boards so that I could insert and check my sticky boards from behind, retired my old slatted racks, and installed the new screened bottom boards with the new entrance facing forward. It was really worth the effort; all Summer I had a handle on the *Varroa* mite population. I was able to hold off on Fall treatment until our NE Pennsylvania goldenrod harvest.

Early Spring of this year I was impressed with the fact that there were no mites evident. Of course, in later Winter I had as usual scooped out a number of dead bees through the front entrance with a very long screwdriver. However, when lifting off the brood chambers to clean the new screened bottom boards, I found a major problem with the new equipment. To my surprise, I found that the screened bottomboard, despite my efforts to scoop them out, was piled high with a natural accumulation of dead bees. The analogy of trying to drag a cat backward across a carpet is appropriate; the screen did not readily give up its dead. The result, of course, was an unhealthy hive environment and an inability to monitor the mite count.

The second observation during the Winter was that since we customarily tilt our hives slightly forward to keep water from entering the bottomboard, the new arrangement meant that water wand snow were entering the back entrance of the old board. A piece of aluminum flashing stapled just above the opening temporarily solved that problem.

A completed unit, the sloped back stops rain from entering the the back, where the sticky board is inserted.

In an attempt to find a practical solution to both problems, I contacted several suppliers and checked the catalogs of others to no avail. It was obvious that a removable screen was needed, and an extended frame would provide rain and snow protection for the rear entrance of the old bottom board. The following screened bottom board should solve both problems and is fairly east to construct if you have a small table saw and a few tools. The screen is inserted and checked from the front, being necessary very seldom during the Summer and more frequently in Winter. The frame is extra long with a rain shed on the back, which should protect the old B. B. opening.

It is possible to cut the fixed screen on your already purchased units and install a narrow rail on each side to support your new screen. That leaves you with the problem of water entering the old reversed bottomboard, but a piece of aluminum will suffice.

Parts needed are:
From 1 inch pine or other softwood (actually measures ¾")
2- sides at 1-1/2x 24, cut to accommodate landing board with 45 degree cut at back to accommodate rain shed
1- landing board at 5x 16-1/4"
2- screen supports at ¾" 18-1/8"
1- back/rain shed at 3x 16-1/4", 45 degree cut along top
8- 1-1/2" decking screws for landing board & rain shed
6- 1-1/4" deck screws for screen supports or a power nailer and glue
1- 1/8" hardware cloth, cut to 14-1/4" X 18-1/2"

The only problem is that the hardware cloth will not lie flat, so it needs a frame. My local sheet metal shop made ten for me at $12.00 each. However, you could make a thin plywood frame, which is what I did on the first trial.

Penn State sells a good simplified *Varroa* counting card which can be placed below the screen, but works better if laid on top of a piece of white wall paneling. The Crisco, Vaseline, or cooking spray will keep it attached to the panel. BC

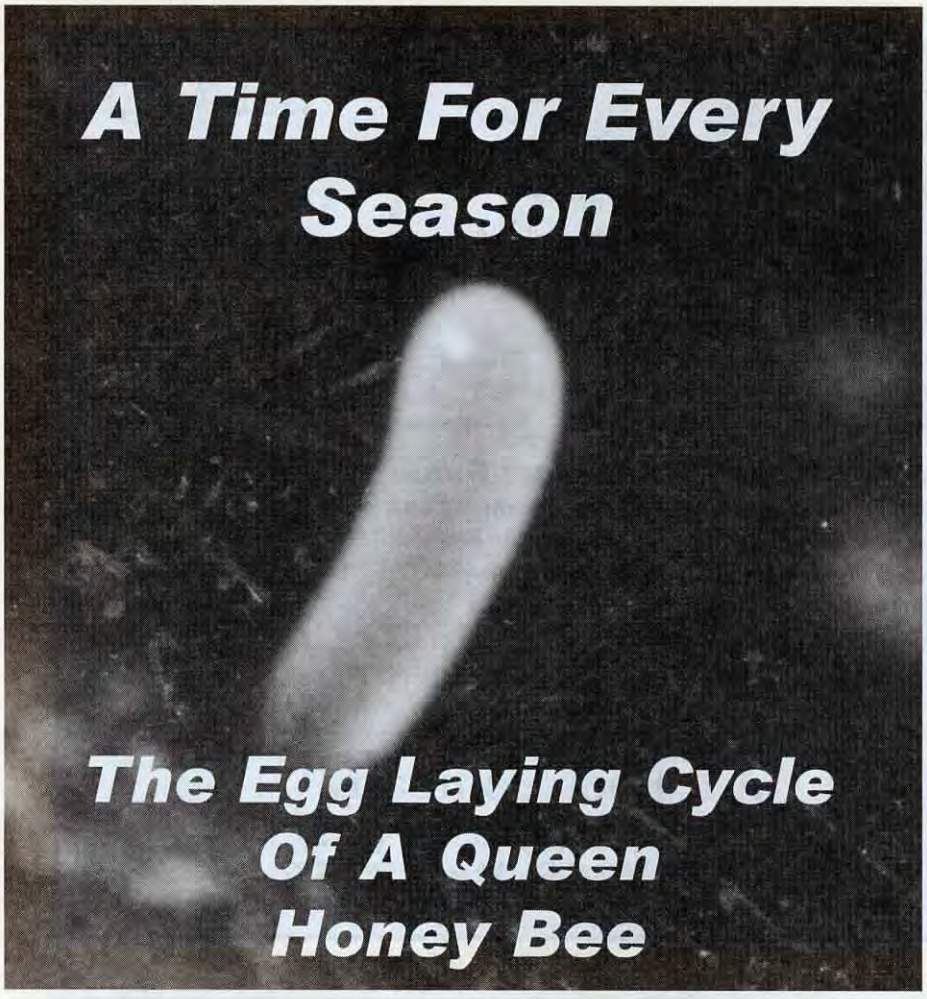
The varroa detection board is available from Great Lakes IPM, 10220 Church Road, Vestaburg, MI 48891, 517.268.5693, or www.greatlakesipm.com

---

Dick Chapin is an EAS Master Beekeeper and the group's Historian. He lives in Pennslyvania.

Without the super. Left: entrance to the left. Shows the metal frame for the screen and the sticky board. Unit sits on a regular bottom board. Right: removing sticky board from rear, bee entrance to the top of the photo.

A Time For Every Season



The Egg Laying Cycle Of A Queen Honey Bee

Michael Burgett

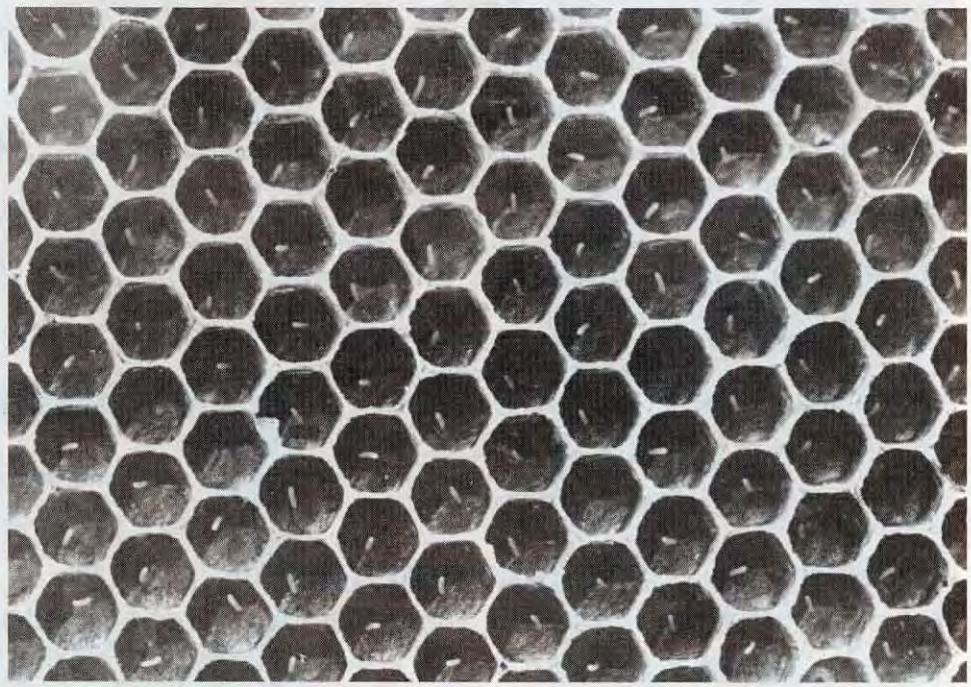
Oregon State University
Honey Bee Laboratory
Corvallis, Oregon

Oregon is not tropical! This statement can hardly come as a surprise. One of the many environmental classifications for Oregon is that it has a temperate climate, which means we experience defined seasons, with major temperature and precipitation variations between seasons. We should therefore expect that the "behavior" of a honey bee colony will not be the same in summer as it is in winter, in spring as it is in fall.

One reflection of the cycle of the bee year is seen in the number of eggs a queen honey bee will produce on a monthly basis. A queen honey bee has two primary functions in a colony: 1) to produce the necessary pheromones that promote what scientists sometimes call "social adhesion" and, 2) to produce the eggs necessary to maintain the adult bee population. In her lifetime a queen will produce about one-half million eggs, and these eggs are normally laid over a two-year life span. Yes, certainly, queens can live longer than two years, but the average life span, which really means egg laying duration, works out to be about 24 months.

About seven years ago I had a graduate student working on a Masters degree and we decided that a good "problem" for him to investigate was the seasonal variation in queen egg laying. So he set about to do this. How does one accurately count the number of eggs a queen produces? His method was to establish four-frame observation colonies and visually observe queens for 15

Seeing honey bee eggs is a challenge for many new beekeepers. The egg is laid so it stands on end thus it has a very small profile. It is shaped like, but smaller than a grain of rice. Dark comb contrasts well with the white egg, while new foundation contrasts little. Be certain that the available light is shining over your sholder, down into the cell when looking for eggs. Tipping the frame just a tiny bit, when the light is to the bottom may help by casting a shadow from the egg unto the cell wall or even onto the bottom of the cell.

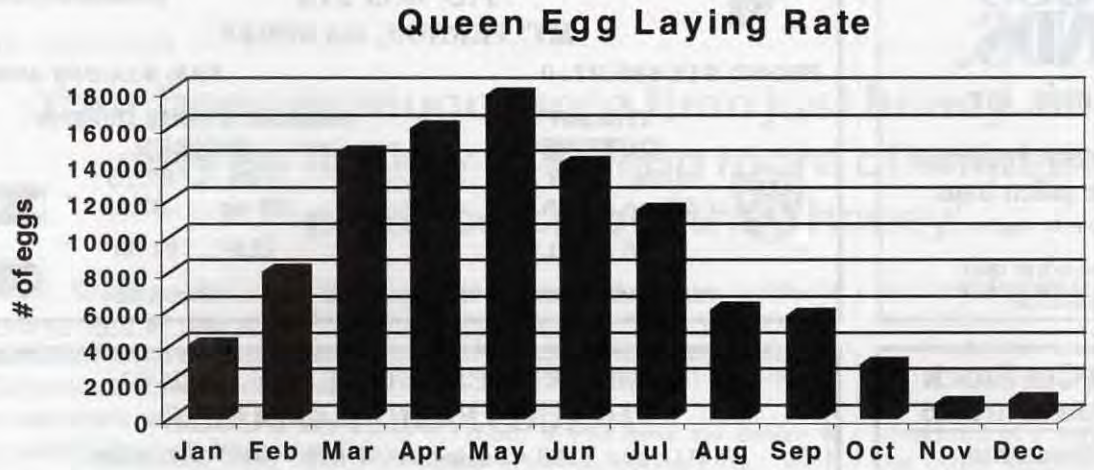


minute periods throughout the day, counting each egg as she deposited it in a cell. In this manner he was able to compute the average number of eggs laid in a 15 minute period for that given day and thereby calculate the average number of eggs per day. By repeating this with multiple observation colonies, through several calendar years, he was able to accurately describe the egg production cycle as observed in the mid-Willamette Valley.

The figure that accompanies this article is the summary of his work. It is a fascinating visual that has much to teach us. One of the most obvious features is the cyclic nature of egg laying, peaking in the late spring and then declining to a low in November and December, thereafter climbing again. A second observation is that the queen produces eggs every month, obviously with some big differences between months, but no complete cessation of egg laying. This is a little contrary to what many text books tell us, which is that queens supposedly have a short period of no egg laying; such is not the case, at least in western Oregon, with its relatively mild climate that is moderated by the nearness of the Pacific Ocean.

His work also tells us how important late winter/early spring management is to the future productivity of a colony. The steepest increase in the egg laying cycle takes place from January through April, which translates to the period of greatest colony growth. This is the time when a queen requires an adequate brood nest within which to place her eggs. This emphasizes why reversing brood chambers (supers) is so important in early March because it allows a queen to continue her egg laying uninterrupted. The natural pattern of queen oviposition (egg laying) is in an upward spiral, and by early to mid-March queens are normally found "upstairs" in a hive and they will slowdown their egg laying when the upper brood chamber becomes congested. The colonies look to have two brood chambers (hive bodies), but the biological reality is that the queen and her brood nest are "confined" to the upper chamber.

It is important not to place too much emphasis on the actual number of eggs laid per month as shown in figure 1. Please remember that for this research the queens were limited to four deep combs in a vertical configuration. A well drawn deep comb (both sides) will have about 7,000 cells. This, multiplied by four, gives a total cell count of 28,000 for the experimental observation hives. If all cells were available to a queen during the peak egg laying period, this would represent about four weeks of "available" space and she could produce eggs at a "standard" rate of about 1,000 per day. (Actually in the "perfect" hive, with "perfect" queen laying patterns, 21,000 available cells would be enough to support a colony). Such is never the case especially with observation colonies which are vertical slices of a normal hive. Observation hives do not possess multiple combs in the horizontal plane. For the four-frame observation hives used in these trials, a practical estimate of actual cells available for a queen to lay in would be around 14,000. This would mean a queen would be restricted to an egg production of about 500 to 600 per day, and that is just about what the "average" queen depicted in figure 1 achieved in May, the month of highest egg production. This also suggests to us that a deep hive body with 9 or ten combs, if efficiently used by the queen, will nicely accommodate the space requirement necessary for optimal egg laying. But by the nature of the combs, and because of individual differences between queens, it is wise for the beekeeper to provide two deep chambers to insure adequate space for egg laying. BC



Michael Burgett is State Extension Specialist, Apiculture for Oregon. This article was originally printed in The BeeLine, *the newsletter for the Oregon State Beekeeper's Association and is reprinted here with permission of the author.*

More Than Honey Much, Much More

Ann Harman

Your bees produce more than just honey, and that may be the key to selling more of what they produce...more than honey.

"No. That's not the sort of thing we carry here at this shop." **This answer reminds me of the episodes of Dagwood Bumstead confronting the salesman who has a wonderfully wacky gadget. Dagwood has absolutely no need for the gadget and doesn't want it. But the cheerful salesman really wants to sell it to him.**

Have you ever felt like that salesman when you have entered a shop with your wonderful honey and expected them to add it to their merchandise? Yes, your honey is wonderful – clean, delicious – just beautiful. But the shopkeeper sees no need for it.

So you take "no" for an answer and go home. So where does that get you?

Not very far. No honey sales there. Well, don't just limit your honey sales to shops that sell something to eat. In my nearby small town my favorite hardware store sells honey at the checkout counter. I know a beekeeper who sells honey in an auto parts store that sells mostly to the trade.

Let's take another look at one of those shops. This one does not sell jams, jellies, tea or pickles. Nothing there to eat or drink. It's time for you to walk around that shop looking at the merchandise. A few questions may come to mind. Go ahead and ask. Compliment the shop owner on the remarkable assortment of stained glass window hangings and inquire if those are popular with his customers. Make a mental note of his answer – suppose it's "yes." Now go home and order some molds for beeswax ornaments. If the customers like to hang things up, perhaps they would like seasonal beeswax ornaments to hang up.

What if you have no desire to make beeswax ornaments? Well, there are beekeepers out there who do. Now is the time to give the ornament artist a phone call. What can you buy? How much will the ornaments cost? What sort of profit can you expect? How soon in advance of an occasion (Thanksgiving, Christmas, Valentine's Day) does the artist need an order? Arrange for samples—your own or the artist's.

Wait – you are not quite ready to visit the shop. You need packaging.

Perhaps a small label on the back of the ornament will suffice. The label will identify you as a beekeeper whose products include fine honey, local to that region. Perhaps your ornaments need to be presented in a simple but attractive box. A small tag hung on the ornament can give the important information. Now go back to the shop. This time you are not selling honey – yet – but are selling something the shopkeeper may view as interesting and different, an addition to his line of merchandise.

No guarantees, but as time goes by the shopkeeper may view honey as an addition, particularly if it is presented in a way compatible with the other merchandise. You may wish to consider buying some of the attractive tiny sample jars, just a few ounces each. Yes, you need to make an attractive, tiny label for them. Now, attach with a ribbon the sample jar to the wax ornament. Explain to the shopkeeper that with the purchase of an ornament the customer receives a free sample of your specialty honey. Slowly but surely you may just win the shopkeeper around to stocking your jars of honey.

"Where" you sell "What" you sell can make all the difference in the world. Don't limit yourself to "just" food stores and don't carry "just" honey.

It is worth the time to snoop around at shops in what are called "strip malls," a small collection of shops where the overhead is not as steep as in big shopping malls. Here one finds interesting specialty shops. You are looking for one that sells cosmetics, hair and skin care items. No, this shop will not want your honey—right now. But it might be interested in hand cream and lip

Continued on next page

More Than Honey...from page 35

balm. Quite a few recipes for these exist and they are not difficult to make. Experiment with some of the recipes to see which one you like the best.

Suitable containers are available from several bee equipment suppliers. Again you will need a label. Give the shopkeeper samples to try and emphasize the purity of the ingredients.One beekeeper I know now sells more hand cream than honey! And it is very profitable.

OK, so you don't want to make hand cream. You can, however, get in touch with Beehive Botanicals who produce top quality body care products in well-designed packaging. You can certainly use their products as a way to interest the shopkeeper in honey and hive products. You see, many do not know that bees produce more than just honey to put on toast. It is up to you to educate the shopkeeper.

Perhaps you can design a gift pack that combines a body care product with a jar of your honey. You will want to promote the healthful aspect of bee products, whether they are for hair and skin or for internal health. Although organic standards do not yet exist for honey, you can say that your bees are kept in areas of organic farms and your honey is produced under organic principles.

You may well encounter a shopkeeper who says the last honey he tried to sell was horrible. It crystallized and looked really nasty and they had to throw out a bunch of it. Nobody wanted the "spoiled" stuff. Don't stand there and argue You will get nowhere. Instead go home and start perfecting making creamed honey. Pay attention to the water content of the liquid honey, the fineness of the seed crystals and the temperatures involved. You may find that creamed honey suits your honey operation better than liquid.

Now go back to the shop and present the shopkeeper, and anyone else working there, each with a jar of your creamed honey. At this time you can explain that you understand all about nasty-looking liquid honey and that it is really not very suitable. But your creamed honey is a stable product, a pleasure to use on toast or in tea, and furthermore can be obtained flavored with cinnamon or fruits.

Some shops that do not sell food do have counter space for "old-time candy." You may be unsuccessful with your initial approach for honey sales. But had you thought about packaging honey stix and selling those? You can buy plastic sleeve material in different diameters (some beekeepers use it for packaging beeswax candles). Use it to package an assortment of flavors of honey stix.

Here again, staple a label to the top of the packet. The label can say that you hope the customer enjoys honey and that honey can be purchased directly from the beekeeper. So give your name, address, phone if you wish. The next step could be a small squeeze bear packaged in with the honey stix. The bear can have a Christmas-colored bow or other seasonal decoration.

Catering meals is a fairly popular these days. Do you know anyone who does this type of thing? It does not have to be a big business. Many women with school-age children operate a small catering business. Have you ever approached them to use honey in any of their recipes? If not, why not? Perhaps you can provide them with a small brochure describing the advantages of using honey in baking and other foods. The nice brochure can accompany the meals that the caterer delivers.

Another way of approaching a caterer is to ask them to include a jar of your honey with the meal, especially if a hot bread is part of it. If not hot bread, then perhaps they are preparing a fruit bowl that could be enhanced with honey instead of sugar. If the meal is to include hot tea or ice tea as a beverage, then honey would be the perfect sweetener. Work with the caterer to develop ways to promote your honey while at the same time promoting the healthy aspect of the caterer's foods.

The National Honey Board can supply you with recipes for the caterer, as well as information about the healthy aspects of honey.

While we are on that subject, research has shown the advantages of honey for athletes. Could this information help you interest a sporting goods store to stock your honey? Perhaps the local high school track or football coach would also benefit from this information, plus some samples of your honey.

It's time for you to take a look around you. Discover the opportunities your area, whether rural or suburban. Link honey up with some product that may help you get that foot in the door for your future honey sales.

I wonder if the salesman in the comic strip would have better luck with Dagwood if the remarkable gadget was accompanied by a jar of honey? BC

PLACES TO SELL

..gift shops
..beauty shops
..caterers
..auto supply stores
..sports outlets
..hardware stores

PRODUCTS TO SELL

..ornaments
..candles
..hand creams
..lotions
..cremed honey
..gift packs
..honey stix
..flavored honey
..varietal honey

Ann Harman is a sideline beekeeper, and an international marketing consultant.

Inner Cover, continued

much space isn't needed. But right now, space can be as critical for overwintering success as it is in the spring for population building...only for a very different reason.

•

I was recently at a flea market in a midsize town out west. There were all manner of things for sale...everything from guns to butter. One of the most entertaining was an outlet run by the local Master Gardeners. They packaged Cheerios (the breakfast cereal) in small plastic see-through pouches and put a "Doughnut Seeds" label on them. You could buy a bag for a buck as a fund raiser. Cute. I bought a bag.

Of the probably 50 or so sellers there was only one beekeeper selling honey. He had some one and two pound jars of a couple varieties. The jars were on a card table so they were hard to see unless you leaned over or picked one up (hard to do if there are several people in front of you). The label on the jar was homemade, and the variety was written directly on the label with a pen. It was a low-tech way to do it, but it worked for the market I guess, because he sold out before the morning was over. Or, his expectations were low and he didn't bring many. I don't know which.

Anyway, this got me to thinking about markets, and selling honey, and what we do with it. Many of us put honey in a jar, put the least-work, least-cost label on it and sell it if we can, or give it away if we can't. Often that's all we need to do because we don't have much and we aren't in it for the money...it's a hobby after all. Who cares? People don't put anything on sweet corn sold by the side of the road. And there are as many varieties of sweet corn as there are honey, and which one are you buying by the side of the road this week and is it the same as the one you got last week? And does it make a difference? If you find one you like, can you find it again? Why should honey be so different? Good question.

If you aren't in the "Gotta sell to keep going" group this attitude works just fine. You don't need much, aren't expecting much, and won't get much. However, if you are in the "Gotta sell" bunch, being able to tell people what's in the jar, so they can get it again next time, will pay off.

So, what's in the jar? Honey. Maybe it's clover every year, or blackberry, sumac, trefoil, goldenrod, locust, smartweed, bamboo, sourwood, cotton, soybean or whatever.

But it may not be the same. Not the same color as last year, not as sweet, or maybe sweeter, or milder or stronger, with some aftertaste or no aftertaste, with a strong aroma or no aroma or a sweet aroma or a pungent aroma. Pretty much every year can be different for most of us because our bees forage in such a varied environment.

Both of these offer a marketing opportunity, but they aren't the same, and you have to approach them differently.

If you have, say, locust every year, you should be capitalizing on that fact for a couple of reasons. Yes, some customers don't like it. OK. So what? Some do. But they need to know that you have locust, when you have locust. It needs to be identified. Like the sweet corn by the side of the road...it all ain't the same.

Your label should reflect that. It should say Locust, better, 2001 Locust. Even better, Local 2001 Locust.

But there's so much more to this than just what your label says. And, yes, labels cost money. Figure a dime for a good one. That's 6% to 7% of the cost of a wholesale bottle. Unless you buy them by the million, which most of us don't...

But, if you are going to develop a new or revised label this season, here are some things to think about before you spend hundreds or thousands of dollars, and live to regret it for months or even years.

Who are you selling to?

..Bulk, in pails or barrels. No label needed.

..Impulse buyers in stores, farm markets, flea markets, where?

..Gift givers who want a local, expensive gift to take back.

..Snobs. I don't know any, personally, but they tend to overspend if it looks expensive.

..Your regular customers.

..Gourmet honey buyers, looking for the exotic flavor of the month.

..Moms, with kids.

..Seniors, with particular ethnic backgrounds rich in honey.

..Or don't you know who buys your honey?

Where your honey is sold, and seen, will determine to some degree what the label should be doing for you.

..Selling from home.

..Permanent farmer's market

..Seasonal farmer's market.

..A mom and pop grocery store.

..A Seven/Eleven type store.

..A large grocery store.

..A chain grocery store.

..Gift Stores.

..Speciality stores, organic or the like.

And, of course, **what you are selling your honey in** will determine not only the content of the label, but size and shape.

..Standard glass queenline jar.

..Plastic queenline jar.

..Bear, tube, angel, or bee plastic squeeze bottles.

..A decorator jar—hex, Muth, other shape and lid type.

..Mason or canning jar.

..A used jar.

And what about an additional label. Additional cost, certainly, but additional sales?

..Neck tags.

..A back label with bar code, nutritional info, about your business, variety.

..Top label. When your honey is sitting on a table at a show, what do people see—the *top* of the jar.

There's plenty to think about before you begin to design your label. It is the salesman you have on staff, working 24/7/365 for you. Get your money's worth.

Next month is National Honey Month, and if you hurry, you can have your new labels in place by Labor day. Until then, keep your brood chamber roomy, your hive tool sharp, and your smoker lit.

Kim Flottum

?Do You Know? Answers

1. **False** Stinging behavior is not a form of aggression but rather a defensive behavior. Bees do not get "angry" or seek revenge because of human disturbance to a colony. They merely react in a definite pattern of behavior to specific stimuli associated with the intruder.
2. **False** The honey bee larva has 10 abdominal segments but in the adult bee the abdomen is reduced to nine segments. During the pupal stage, the first larval segment is transferred to the thorax and is called the propodeum.
3. **False** Neither drones or queens are sexually mature when they emerge from their brood cells. In queens sexual maturity is reached at 5-6 days of age and drones are sexually mature at approximately 10 days of age.
4. **False** Honey bee workers forage for food not according to their own needs, but in response to the needs of the colony.
5. **False** Worker honey bees begin consuming pollen within 1-2 hours after emergence. Mass consumption begins when the bees are 42 to 52 hours old and they consume large quantities of pollen in the first two weeks of adult life. Nursing duties are normally finished and field duties are undertaken when bees are 10 to 14 days old. At that time the requirement for pollen decreases and the chief dietary constituent becomes carbohydrates which are obtained from nectar and honey.
6. **False** The sucking apparatus of the bee is a large, muscle-walled sac lying in the head known as the cibarium. The parts of the proboscis fit together tightly to form a seal and the tongue works like a piston in a pump. The tongue begins a rapid back-and-forth movement and apparently draws liquids into the proboscis. The cibarial pump then draws the liquid from the proboscis into the mouth opening.
7. **False** Inside the stomach is a very thin, non-cellular membrane called the peritrophic membrane. This membrane forms a delicate cylindrical covering around the food mass and prevents abrasion of the stomach wall. The membrane is continually being produced and cast off. It is completely pervious to water and digestive enzymes.
8. **True** Glen Peters of Salem, Oregon was the inventor of the Honeystix. Seven years of independent research and development lead to the heat-sealed, biodegradable plastic micropackage of cold-processed, full flavored honey.
9. **False** When burr comb is built between supers, it is an indication that bee space (1/4-3/8 inches) was not properly constructed. The gap between the top bars of the lower super and bottom bars of the upper super is greater than 3/8 inches.
10. B) Polytropic (Visiting many different species of flowering plants)
11. D) Three
12. *Varroa* mites were originally found parasitizing the Indian honey bee, *Apis cerana*. The association between *varroa* mites and *Apis mellifera* is a relatively new host-parasite relationship. The mutual adaptations over a long period of time that occurred between the mite and *Apis cerana* have not had time to develop yet with Apis mellifera. In an established host-parasite relationship, it is not advantageous for a parasite to kill its host.
13. Nectar/Honey
    Water
14. E) Florets
15. G) Canola
16. B) Vetch
17. A) Safflower
18. F) Fireweed
19. Both honey and beeswax should never be heated with a direct source of heat. Honey is extremely heat sensitive and is normally heated in a water jacketed tank or with dry heat when it remains in a container. The fine flavor and delicate bouquet of honey are particularly vulnerable to heat. In addition to the loss of more volatile aromas, excessive heat can change some flavors and induce off-flavors from its effect on the sugars, acids and protein materials. Beeswax, in addition to being highly flammable, it can be easily damaged by overheating. The use of a hot water bath gives an added margin of safety from the standpoint of fire and does not cause appreciable darkening of the wax which can occur with direct heat or higher temperatures.
20. **Royal Jelly**- brood food produced by the hypopharyngeal (60-80%) and mandibular (20 to 40%) glands of nurse bees during the first two days of larval life.
21. **Worker Jelly**- On the third day the amount of mandibular gland secretion fed to developing larvae decreases and the brood food originates mostly from the hypopharyngeal glands.
22. **Pollen and Honey**- some pollen and honey are fed directly to larvae on the fourth and fifth day of larval development.

There were a possible 25 points in the test this month. Check the table below to determine how well you did. If you scored less than 12 points, do not be discouraged. Keep reading and studying- you will do better in the future.

Number Of Points Correct
25-18 Excellent
17-15 Good
14-12 Fair

Clarence Collison is a Professor of Entomology and Head of the Department of Entomology and Pathology at Mississippi State University, Mississippi State, MS.

GLEANINGS

AUGUST, 2001 • ALL THE NEWS THAT FITS

Third Year Out, and gaining

RUSSIAN BEES PROGRESSING

America's domestic and feral honey bees have taken a beating this year from a combination of parasitic mites and a bitter 2000-2001 winter. But asturdy new Russian honey bee is helping fortify the ranks of this helpful insect whose pollination is worth $14.6 billion to U.S. agriculture each year.

Results emerging from commercial evaluations of the Russian bee point not only to mite resistance, but also to exceptional winter hardiness and other traits. So say apiarists in Mississippi, Louisiana and Iowa, who've been testing the breed since 1999 in cooperation with Agricultural Research Service scientists at the Honey Bee Breeding, Genetics and Physiology Research Laboratory, Baton Rouge, La.

The tests are part of the ARS lab's 5- to 8-year goal of providing U.S. apiarists with 36 to 40 elite lines of breeder queens derived from eastern Russia's Primorsky Territory. There, prolonged winters and heavy mite selection pressures allow only the sturdiest bees to survive.

Through a cooperative agreement with ARS, Bernard's Apiaries, Inc., of Breaux Bridge, La., raises and sells both pure-Russian breeder queens, for $500 each, and Russian-American hybrids, for $12.

Data from test yard evaluations by Manley Bigalk of Cresco, Iowa, and Hubert Tubas of Webb, Miss., show the Russian bee is a true winter warrior. Of the 1,200 to 1,400 domestic colonies Tubas lost this past winter, only two Russian-bred colonies didn't survive. Manley credits that winter hardiness to efficient use of honey and resistance to tracheal mites, which stress winter-weakened hives. The breed also resists varroa mites, another menace. In tests, varroa mite reproduction on Russian bees was two to three times lower than domestic breeds. Indications are this will mean lower miticide control costs, less stress on bees, timelier honey harvests and less chance for mite resistance to pesticide compounds, notes Thomas Rinderer, an ARS supervisory geneticist at Baton Rouge. In Tubbs' evaluations, each hive averaged 130-150 pounds of honey.

Bright Side To..

FOOT AND MOUTH

LONDON - British beekeepers are expecting to see the steady decline in their honey harvest reversed at least temporarily because the foot and mouth disease outbreak has seen three million animals slaughtered.

In an ironic consequence to the FMD disaster and its accompanying animal eradication program, wild flowers are flourishing in fields without stock in numbers not seen in a century.

In the last five years Britain's honey harvest has fallen to 2,600 tonnes from 3,500 tonnes. The decline has been blamed on the arrival of the varroa mite and the intensive farming system encouraged by European Union policies.

Beekeepers now are reporting the best conditions for honey production in 30 years and the early in the season are reporting increasing amounts of honey harvested.

The British Beekeepers' Association has recommended strict guidelines to ensure members do not accidentally spread the stil lingering FMD as they place their hives.

"Obviously the situation will vary from county to county but we owe it to the farmers who allow us on their land to take all necessary safety precautions and to respect their decisions," the advisory said.

MANUKA HONEY PULLED

AUCKLAND - A New Zealand company was forced to wiuthdrtaw a new manuka honey-based wound-healing cream from the market because its label claimed the product kills bacteria.

The company, Comvita, said 5,000 tubes of Woundcare would be recalled from pharmacies and health shops six weeks after its launch. It was expected to take a month to relabel the product.

New Zealand law prohibits labels claiming natural products have therapeutic value. Breaches of the law can draw a maximum NZ$100,000 fine.

Company chairman Bill Bracks told reporters the law was an ass.

"I am prohibited from telling New Zealand consumers what a product can or cannot do, yet I can sell it," he said. "This is a unique New Zealand product which works so magnificently overseas, yet in its country of origin we cannot talk about it."

USDA Eats Someone's Mistake

STARLINK CORN PURCHASED

The U.S. Department of Agriculture recently announced that it has completed purchase of over 322,000 hybrid seed corn units containing the protein Cry9C from 63 small- and medium-size seed companies.

USDA is making these purchases, currently estimated at $12.9 million, to ensure a safe supply of corn for human use and so that seed companies are not adversely affected by the presence of Cry9C in their seed corn. The vast majority of seed corn produced in the United States was not affected as the number of seed corn kernels that contained Cry9C was less than one percent of the entire 2001 supply of hybrid seed corn.

USDA is still reviewing applications from eight companies. The total additional quantity of hybrid seed units that could be purchased if all of these applications were approved would be approximately 125,000 units.

Accordingly, total USDA purchases would be slightly less than 450,000 units (a unit is 88,000 kernels a bag, or bushels for bulk seed) at an expenditure of no more than $18 million.

Corn containing Cry9C may be fed to animals; it is not approved for use as food for human consumption. In March, after conducting extensive tests under USDA recommended procedures, some seed companies found isolated occurrences of extremely low levels of Cry9C in seed originally intended for sale this year.

To help limit the production of corn containing this protein so that it would not be planted and then later enter the human food supply, USDA announced on March 7 that it would purchase seed corn containing Cry9C and also contacted 288 seed companies. To participate in this purchase, the seller must destroy Cry9C affected seed. Companies licensed by Aventis, the registrant of StarLink, to grow hybrid seed corn containing Cry9C protein are not eligible to participate in thisprogram.

Because USDA is purchasing a relatively small amount of seed, this action did not affect the price or the availability of seed corn this year. All seed corn companies will continue to follow USDA recommended testing procedures designed to detect the presence of Cry9C.

Poor Pollination Not Bees' Fault

POLLEN POPS

How is a cotton field like a bowl of crispy rice cereal? Answer: When cotton pollen grains get wet, they react much like crispy cereal in milk—the grains swell up and pop open. They dump their contents, resulting in the death of the pollen grain. That means there's no pollen available to pollinate the cotton flower, and that's why sprinkler water or rain can quietly slash a farmer's annual cotton yield.

This lost potential all happens in a single day, because that is all the time a cotton flower has to pollinate. When enough pollen gets wet and explodes, it leaves behind a sterile flower that soon falls off, with no chance of forming a boll loaded with precious cotton fibers.

Agricultural Research Service plant physiologist John J. Burke has peered through a microscope and seen pollen grains literally explode within 30 to 60 seconds of being wet by a drop of water. He also has seen yields of greenhouse cotton plants reduced by 55 percent from just one squirt of water per flower. Burke is with the ARS Plant Stress and Germplasm Development Research Unit in Lubbock, Texas.

With funding from Cotton, Inc., Memphis, Tenn., Burke compared conventional overhead sprinkler-irrigated fields with fields watered by "drop socks" attached to sprinklers close to the ground. Drop socks minimize water sprayed onto plants. Burke found that plants watered by overhead sprinklers lost cotton flowers, resulting in yield reductions of 25 to 36 percent. The solution Burke offers is to water plants from below, through drip, furrow or drop-sock irrigation.

Burke made the discovery of the exploding pollen grains when he tried to cultivate cotton pollen in a liquid solution, to aid his search for genes for more heat-tolerant pollen. The discovery of water's effects led Burke to develop and patent a way to grow pollen on a solid medium.

AMBROSE RETIRES

Dr. John Amborse came to North Carolina State University in 1975 and was soon appointed Extension Apiculturist. In 1977 he became the North Carolina State Beekeeper's Association Executive Secretary. In that position he developed the NCSBA from five to almost 65 chapters, and grew the membership from several hundred to several thousand.

Using the North Carolina Master Beekeeper's program, which he started, and his office of Extension Dr. Ambrose has advised North Carolina beekeepers of the honey bee's importance in pollination, the bumblebee's importance in pollination, the correct treatment of honey bee colonies for pests, predators and diseases, and the safe and efficient use of pesticides.

Dr. Ambrose has received numerous awards from North Carolina State University, including Outstanding Teacher, Outstanding Extension Worker, The Distinguished Teaching Award and from the North Carolina State Beekeeper's Association the McIver-Hass Lifetime Achievement Award. Dr. Ambrose is moving to another position in NCSU. He graduated from Cornell Univ.

OBITUARIES

George Hohman, 1916 -2001, took a beekeeping class at U.C. Davis in the late 40s. From there he set up an agricultural foster care program at the Redwood Boy's ranch from '49 - 53. He went on to be an inspectors for a couple of years, bgut settled in Royal Jelly production in Napa. For nearly 30 years he and his family produced Royal Jelly, diversifying into honey and pollination. He served as president of Valley Honey Co-op for 15 years and was president of CA Beekeeper;s Assnin 1976. Elbert Jaycox labeled him the Royal Jelly King.

Homer Pugh died June 9, 2001, at the age of 77 after a short illness. Homer, well known in Southeastern Michigan was a SEMBA Life Member. Since the early 1980's he assisted with the Michigan State Fair beekeeping booth. He was elected for several terms as District 3 Representative for the State Association. In that capacity, he served on the MBA Board-of-Directors. He, along with Roger and Mary Sutherland, created and published the MBA Activity Calendar. He worked for the Detroit school system for 22 years as a teacher, counselor and administrator.

Favors Independant Producers

PORK MARKETING

New PorkPayback hog marketing program delivers packer and consumer dollars to producers AMES, Iowa (June 19, 2001) -A New Generation Ag Marketing program for America's pork producers was introduced across the country today. Branded PorkPayback, the new value-added venture is designed to provide higher hog producer premiums from packer/processors and a share of profits from retail sales. "Success-oriented producers are constantly looking for ways to sharpen their competitive edge, and PorkPayback is designed to deliver higher premiums, based on consumer prices," said National Farmers Director of Livestock Brian Harris. "It's about time independent pork producers re-captured their share of the consumer pork dollar, and PorkPayback does just that." Through the new pork marketing program, producers deliver directly to the packer, or a National Farmers Organization marketing center in its livestock network. Producers receive rewards on a grade and yield basis, and their high quality cuts display the American Family Farms"TM" brand meats label, from Confederated Swine Producers. After the product is shipped to supermarkets across the country, producers can receive extra premiums from grocery store sales. The National Farmers value-added hog marketing program is specifically designed for independent producers, and is made possible in cooperation with TiBeck and Confederated Swine Producers. "PorkPayback is advanced marketing, superior genetics, and a bigger share of the consumer dollar, all rolled into one," said Harris. "This value-added, high quality pork marketing program should enhance producer income, and help secure a better future for independent producers." Producers are encouraged to learn more about the new program by calling 800-247-2122 or pointing their web browser to www.nfo.org and clicking on the PorkPayback icon.

Inspectors Speak Out Against Gaucho

RESOLUTION

Resolution Approved at the 2001 Apiary Inspectors of America Annual Conference, McAllen, Texas January 8-12, 2001.

Resolution No. 3

Imidacloprid Toxicity to Honey Bees

(Mad Bee Disease)

Author: Harry Fulton

Evidence is being published from Europe that the pesticide imidacloprid, in the seed treatment Gaucho®, is causing adverse effects on honey bees. This product has the potential to cause problems for bees in the U.S.

Be it resolved that Apiary Inspectors of America is concerned about imidacloprid toxicity to honey bees in the U. S. and requests that EPA review the bee toxicity data for Gaucho® seed treatment products. The AIA would appreciate a response in writing to this request for comment on these data to demonstrate to the apiculture community that this pesticide formulation does not adversely effect the biology and behavior of honey bees.

Audience, Jim Jones, EPA Director of Pesticides

FIRST WINNERS

Winners in the first international honey bee photography contest, with a host of international judges, based in Spain, were announced in May, 2001. First prize, of a honey bee on a willow blossom, went to Frank Sivic, from Slovenia. Second prize went to Lucca Mazzocchi, from Italy. It shows a honey bee in mid-festoon. Other prizes were awarded.

my assistant left to take a position in the laboratory of some multinational corporation and I went back to being just the typical sideline beekeeper, though I still had a great interest in rearing a superior, if not perfect, line of queens. But, having sold all that high-tech equipment at a considerable loss, just to make ends meet, I had relegated queen rearing to a less important level.

Then, come Spring, I found the perfect queen I had been looking for. A swarm from somewhere took up residence in one of my bait hives. And they turned out to be just the sort of bees' beekeepers dream of. They had all the virtues. They were gentle, prolific, wintered well, produced grand crops of honey, were hygienic, all that and a beautiful golden color, too. The irony of all of this was not lost upon me. What I had been searching for, the perfect queen just turned up on day, seemingly by chance. There may be a moral in the tale here, but I'm not sure just what it is if there is one. At any rate, I've turned my attention elsewhere now. Now that I have the perfect queen, I want to create the perfect hive. BC

Reader Assistance

To subscribe to *Bee Culture* remove or copy the form below, fill it in and return it and your remittance to the address at the bottom. Please allow 3 - 5 weeks for your first copy to arrive. And Thank You!

☐ Please Renew ☐ New Subscription

☐ Sample

☐ **2 Years (24 iss.) - $38**

☐ **1 Year (12 iss.) - $20**

☐ **1 Year (Foreign) -$30**

☐ **2 Years (Foreign) - $58**

Airmail on Foreign Subscriptions Available on Request. Find my enclosed check, or charge to my Credit Card. Call for information on back-dated subscriptions.

Name _____

Address _____

City _____

State _____ Zip _____

Phone # _____

Please check one

☐ Visa ☐ MasterCard ☐ Discover

Card # _____

Exp. Date _____

ADDRESS CHANGE

If you are moving, please fill in the form below so we can process the change without delay. Also, if you have 2 addresses during the year (i.e., winters in FL and summers in CT), let us know which months you spend where and we can pre-program your address change so you won't miss any issues.

FOR PERMANENT CHANGE:

Name: _____

Old Address: Street _____

City _____ State ____ Zip _____

New Address: Street _____

City _____ State ____ Zip _____

FOR TEMPORARY CHANGE:

Name: _____

Address No. 1: Street _____

City _____ State ____ Zip _____

Circle Appropriate Months: J F M A M J J A S O N D

Address No. 2: Street _____

City _____ State ____ Zip _____

Circle Appropriate Months: J F M A M J J A S O N D

Send to: The A.I. Root Co., 623 W. Liberty St., Medina, OH 44256

Available on microfilm from: University Microfilms, Inc., 300 N. Zeeb Rd., Ann Arbor, MI 48103

Display Advertisers

The Perfect Queen

Richard Dalby

It started innocently enough. All I wanted to do, and it seemed a laudable desire, was to develop a perfect queen. Once I had such a queen, I could stock all my hives with her progeny and find complete beekeeping bliss. Such were my reams in those days. How little I really knew.

Everyone talks of the virtues of hygienic behavior, so I began my experiments hoping to produce a truly hygienic queen. I ignored all other qualities to pursue my goal. And I was, to say the least, very successful. I soon had queens whose daughters would not tolerate American foulbrood, not to mention chalkbrood. And as for Varroa mites, they didn't stand a chance with those hygienic bees. As soon as a mite was located, it was so long Mr. Mite.

Thus it went for a time. And then the trouble started. First off, those hygienic hives began to insist that I wash my hands before handling them. Soon afterward they decided that pollen is too dusty to deal with and they stopped gathering it. Much easier to keep the hive immaculate without pollen all over the place. From there it was but a short step to eliminate the rearing brood. After all, as one hive confided to me, those developing bees are rather messy little creatures, never cleaning up after themselves. Without them, they could achieve their genetic destiny of a perfectly clean and miteless hive.

It was at about this point that I realized the limits of hygienic behavior. So I turned my attention to breeding queens for gentleness. Gentle bees are, after all, wonderful to work with. Using Caucasian and Carniolan lines I soon had developed a bee that was so to speak, gentleness personified. I seldom needed a smoker when working a hive of these bees. At first they seemed a pure delight. But, as it turned out, they were too gentle for their own good. The gathered little honey preferring to stay at home to discuss world peace. They voted to give up the use of their stingers, no matter what the provocation. They had, it seemed, a happy Summer. But when autumn came, their stinger-wielding neighbors soon robbed their meager stores. And that was the end of that. I must admit, for a time, I missed my hives of gentle bees. But I had learned that gentleness by itself is not enough. Perfect bees need more. So I turned my attention to selecting for rapid spring buildup. This is a trait well loved by northern beekeepers, myself included.

By now I had become quite skilled in rearing queens and breeding for this or that characteristic. Soon I had queens whose spring build up ability was something to behold. I should have been satisfied at this point, but I wanted perfection so I kept selecting queens from my best hives. Before long I had a strain of bees that reached full strength in the midst of Winter. Come a warm January afternoon those bees would fly out expectantly and find nothing but an expanse of snow. By the time Spring actually came, they had lost all interest in gathering honey and were so strong they immediately swarmed, every hive of them. I let them go. By now they have probably made it all the way to Florida.

It was becoming clear to me that developing a perfect queen by conventional means was not an easy task. But the goal still seemed a worthy one. So I hired an assistant skilled and schooled in genesplicing, bought the necessary (and expensive) equipment and entered the brave new world of genetically modified organisms, in this case queen honey bees. I was, it seemed to me, on to something grand – the melding of cutting edge technology with good old common-sense beekeeping. Anything seemed possible.

For our initial experiment, we spliced in some genetic material from yellow sweet clover and raised a queen whose progeny had nectaries on their abdomens. Thus, they had the amazing ability to produce honey without ever leaving the hive. But, as we soon discovered, they had to be fed sugar syrup in order to do this, and the honey they produced in this fashion was pretty bland stuff. Moreover, these bees soon lost their ability to fly, having little need to, and their wings began to atrophy. It was soon obvious that this experiment, though interesting enough in its own right, had produced nothing of any real value to a real beekeeper in the real world.

Next, we added some genetic material from a house cat to a line of queens and soon had several hives filled with bees much given to licking themselves and lying about the hive napping. Sometimes, under the right conditions, they would, strange as it seems, purr contentedly. And they favored milk over any type of nectar given them. In fact, they showed little interest in any of the pursuits of a normal hive of bees, and we soon abandoned this line of investigation. In their defense, I should point out that these particular bees absolutely would not tolerate a mouse anywhere near their hives.

For our last venture into genesplicing, we took genetic material from a Rambouillet sheep with a beautiful fleece. We were amazed to find that the resulting queen produced bees that could Winter under northern conditions on less than 10 pounds of honey. My assistant and I were delighted. But shearing all those bees twice a year proved to be a bit of a job. And a bee covered with wool, though well adapted to cold weather, became rather lethargic in warmer weather and hence gathered little honey. So this experiment could hardly be deemed a success.

Who knows what other amazing types of bees we might have produced had we had the funds to continue. But by now I was almost out of money. So

Continued on page 46

BOTTOM BOARD