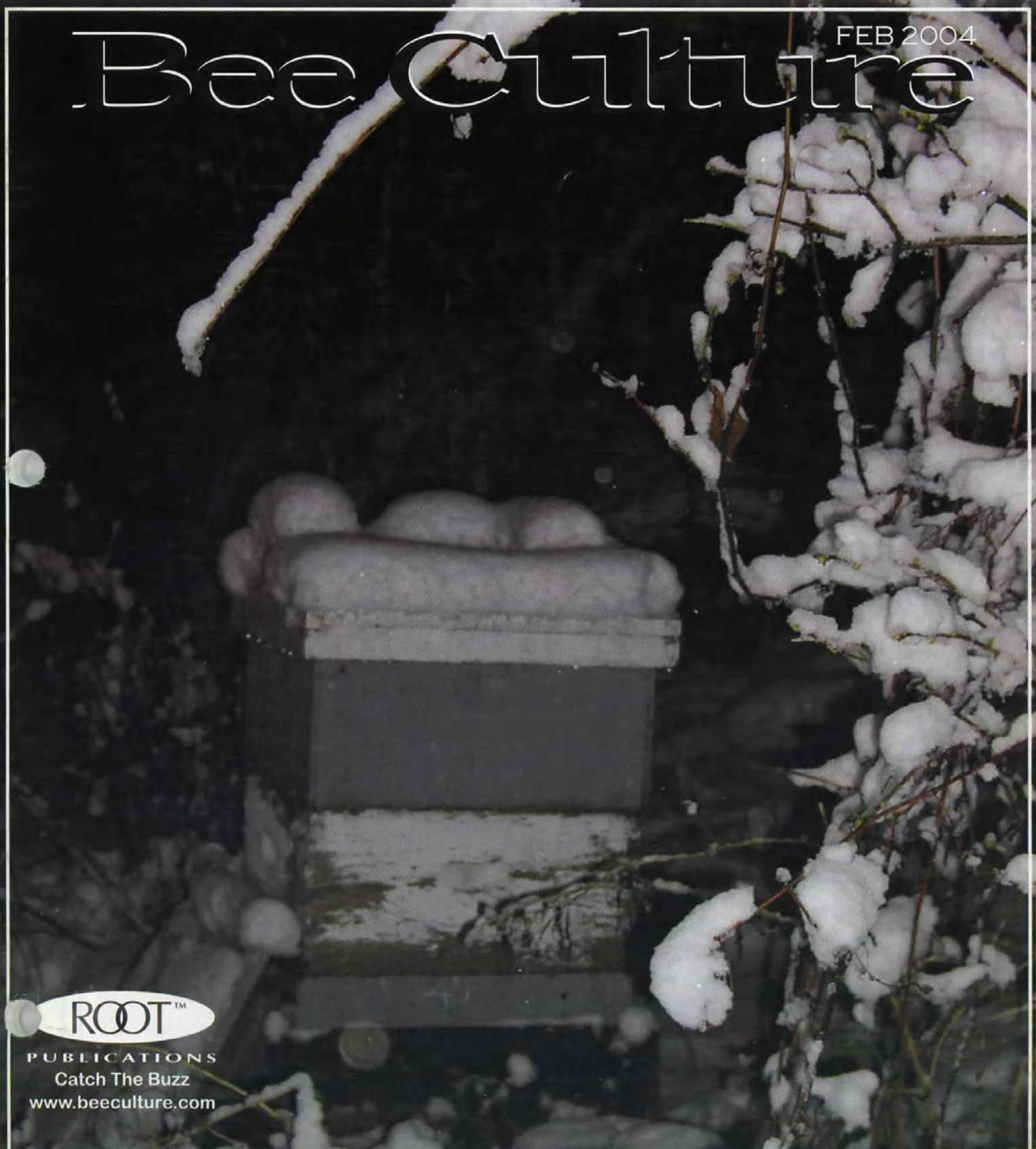
Bee Culture

FEB 2004



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Bee Culture

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It was a dark and snowy night
photo by Kim Flottum

FEATURES

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MAILBOX

No More Doubts!

Thank you! Any doubts I may have had about subscribing were removed after reading a few of your web site's archived articles from previous issues. I subscribed to *American Bee Journal* last year and wish I had discovered your magazine then. You seem to have more articles (than *ABJ*) dealing with selling honey at markets, which is what my wife and I are getting into. I would also like to see articles dealing with beeswax processing and making products like candles, soap, and other wax-related items. We are new beekeepers and appreciate both your beginning and experienced articles on beekeeping.

Mark Johns
Carnation, WA

Grammar - I, Me, My

Five of the articles in the November 2003 issue of the *Bee Culture* had a preponderance of the use of the words me, my and I in the first three paragraphs.

Page 13: 2 – me; 4 – my; 8 – I
Page 15: 3 – me; 8 – my; 3 – I
Page 23: 2 – me; 5 – my; 20 – I
Page 35: 2 – me; 2 – my; 10 – I
Page 40: 0 – me; 1 – my; 9 – I

Readers would prefer more of you, we, they and us. When the writer wants to talk about his experiences, the word I usually does not need to be used.

Richard Brewster
Andover, NH

Commercial & Non

How many have ever considered the great differences between these two. Time has come for periodicals to realize that they both have bees, this is their only commonality.

The commercial individual or corporation has many hives, expensive equipment for extracting, bottling, packaging and shipping. Large buildings, several workers and vehicles. He eagerly reads about honey markets, pollination contracts, imports and exports. He never has hives in the city. Kids, even family children are really child labor. He's in it for profit; costs and taxes are important.

The non-comm individual or family with up to three hives, just enjoy keeping a few bees and any amount of chunk comb they may get. Taking the Summer's production is often a family endeavor with the kids learning a life-long skill. They have a warm, friendly feeling for their bees and are depressed if a hive dies. They may belong to a local bee club.

Their investment in hives, veils and maybe beesuits is minimal. The chunk comb is put in wide-mouth peanut butter or canning jars in the kitchen for delicious Winter eating. They sell nothing, but may give to family, friends or neighbors. They could live in suburbia.

So it seems obvious Mr Beekeeping Editor that one periodical serves all poorly and a new format is badly needed.

Commercial management finds certain articles and information intensely interesting and will keep subscribing if you focus on his interests.

And those producing the costly things he needs will buy ads, some full-page display, to reach him.

The magazine for the small non-comm person or family will be entirely different. It would be read for enjoyment and would be the choice for bee clubs or new comers to this interesting world.

And those producing goods and services could cost efficiently reach this niche market.

Dave Kelley
Gainesboro, TN

The 2 Rs

I was thrilled to see the article in the October 2003 issue, "The Two R's: a Paradigm Shift in Beekeeping" by Malcolm Sanford. It has become clear to me in my five years of beekeeping that pesticides are not a long-term solution to the *Varroa* mite problem. I have spent the last three years incorporating integrated pest management and improved genetics in my apiary with the goal of becoming a pesticide-free operation. Along the way, I have talked about my plan with everyone who would listen, honey customers and fellow beekeepers alike. My customers sometimes appear more appreciative. I am frequently rebutted by beekeepers that talk about giving up their Checkmite strips like a three-pack-a-day smoker might surrender his cigarettes. I understand that some of these beekeepers have lived through a beekeeping tragedy caused by *Varroa* mites and that pesticides played an integral role in the survival of businesses and hobbies alike. But now, we struggle with mite resistance to a potent and toxic organophosphate and we know a lot more about *Varroa*.

As beekeepers, we all struggle with hive health issues. I am perplexed when conversations turn to hives collapsing from *Varroa* infestation and what the appropriate treatment entails. I hear little of IPM tools and genetic counseling. Some IPM aids are referred to individually and new beekeepers are told they don't work. This advice totally misses the mark.

All industries that deal with pest-host situations deal with resistance of the pest to the control be it a chemical control or a physical, trap-like control. The author of the October article spent way too much time analyzing how resistance comes about

Continued on Next Page

MAILBOX

and what to do about it. No control is 100% effective and the pests that survive have resistance.

Again, I was disappointed that the author of the "Two R's" article thinks that if IPM techniques don't work then pesticides are the safety net for infested colonies. This was also the most confusing point in Kim Flottum's article "Organic Honey" in the September's issue. In one paragraph, Mr. Flottum makes the point that antibiotics and pesticides are not to be used in the production of organic honey. IPM gets one sentence. Even worse is the statement at the bottom of the column that sick colonies must receive traditional treatment. (***Editor's Note:*** *A beekeeper cannot willingly let a colony perish when infested with* Varroa, *or any other pest. The NOB, and the article clearly state that colonies must be removed from the production of organic honey and be treated conventionally so it does not perish.*)

Dr Sanford makes another subtle, yet disappointing point in his article. He mentions briefly that pesticides get the most attention in research because of economics and ease of application in the final product. Unfortunately this may be true but I doubt the honey consuming public would be happy about this reality any more than I.

Is everyone so concerned with short-term losses from hive collapse to consider long-term gain from improved overall health and genetics?

Overall, I am pleased that *Bee Culture* and the authors mentioned are finally broaching the sustainable/organic subject along with raising questions about the appropriate use of chemicals in apiculture.

How about advocating IPM and improved genetics because it's good for the bees, the beekeepers, the consumer, the environment, and the people in the environment? Did I leave anyone out?

Cathy Halm
Campbell, NY

Raise Your Own

I was reading the *Inner Cover* about angels unawares. It was interesting to see that there is going to be a shortage of bees this Spring. (O.K. poor connection here, I am a beekeeper by profession, not a writer!)

When border closure came to Canada the beekeepers in Ontario had to promise to make nucs and packages to replace the orders that would have normally come from the south. It was an interesting Spring to say the least. None of us had any extensive experience in this area. The comparison to your article comes at this point. We were blessed with the gift right researchers, government policy that was ready to help in a crisis, a provincial apiarist (Doug McRory) and beekeepers who wanted to survive. We started with a program of teaching queen rearing to all the beekeepers who were interested. We can thank some of our American cousins for teachers they made available. As a result we have now over 20 queen and nuc producers in Ontario from a small industry of 250 commercial and sideline beekeepers. There are others that are hobby and sideline also producing good quality queens.

We have had devastating years. On a personal side we lost over 60 percent one year and by the time Fall came we were up to 95 percent of what we had. Last year we lost 20 percent of our700 hives and I am still not sure why. (I have a few thoughts but it was not to mites or disease.) We then sold 100 hives, 130 nucs and several hundred queens. Come Fall we had 739 colonies and a good crop.

This has been the experience of others too. It is important from the observations that I have made that beekeepers learn to raise their own queens. Acquire good stock that is resistant and is a survivor in your area. I have found that it is better to split the hive in two or three units with a queen cell. An artificial swarm has just been created. Have you not seen how good a swarm can do? Besides that I hate chasing swarms out of trees.

Beekeepers are a resilient lot and given the tools and know how they can survive.

Ferguson Apiaries
Hensall, ON

Guest Editorial

BIOTERRORISM, THE FDA & YOU

Jim Fischer

I read the brochures on the new FDA requirement to register food facilities, because I'm a beekeeper, and I was not sure if I needed to comply or not. The brochures can be found on the FDA website at: www.cfsan.fda.gov/~acrobat/fsbtreg.pdf; www.cfsan.fda.gov/~acrobat/fsbtpn.pdf

I noticed that these brochures included disclaimers at the bottom of the inside covers.

I thought I'd translate and explain the disclaimer for other beekeepers from the point of view of one who pronounces "government" as "gummit," as I KNOW it can get very sticky at times:

The brochures say:

"This guidance document is a restatement of the Food and Drug Administration's (FDA's) current requirements for registration of food facilities presented in simplified format and language."

TRANSLATION The wording of the law is complete gibberish, so we thought we'd try to explain it in plain English.

"As guidance, it is not binding on either FDA or the public."

TRANSLATION But don't hold us to anything we say here.

The law itself, even though an incomprehensible muddle of jargon and legalese, is the law, and it must somehow be obeyed, even if no one ever successfully translates it into plain English.

"FDA notes, however, that the regulation that is the basis for this pamphlet establishes requirements for all covered activities."

TRANSLATION So, no matter who you are, you have to stop what you are doing and make a choice: either (A) read this, do what it says, and hope that what we say is accurate, or (B) hire a team of lawyers, and hope that THEY can understand it and explain it to you. Either way it is a gamble, and you are betting your livelihood.

"For this reason, FDA strongly recommends that affected parties consult the regulation at 21 CFR Part 1, Subpart H, in addition to reading this pamphlet."

TRANSLATION On second thought, don't believe a single word we say in this fancy color brochure, printed at taxpayer expense. This brochure is useless, as only the language of the law itself is "the law." Never mind that you can't understand it, the law says what it says, and it will certainly be explained in detail through enforcement actions, court rulings, fines, and other processes that we use to inform you if you don't comply with any of the laws you don't understand.

(If it is any consolation, we here at the FDA think that even Congress itself does not understand this law. Think about it! How could anyone "poison" a large number of people unless they poison a LARGE food supply? Any random reservoir would be a more effective target for poisoning a large group. Why bother tracking small-scale operations at all? We kinda like our existing recall process, and we know it works, but we have to do as we are told.)

"The Food and Drug Administration has prepared this guidance to restate the legal requirements set forth in 21 CFR 1.225 through 1.243 concerning registration of food facilities under the Public Health Security and Bioterrorism Preparedness and Response Act of 2002."

TRANSLATION We had better give you a citation to the actual wording of the law. We've only written two paragraphs so far, but we have realized that we are wasting our time, and maybe mis-informing people who could be fined, criminally prosecuted, and maybe even have their inventory confiscated.

"This guide is intended to help..."

TRANSLATION Yeah, 'help. That's the ticket! We are 'helping.

"...any entity, regardless of size, to comply with the regulations..."

TRANSLATION The immigrant street-corner hot dog and ice cream vendors who have yet to master English beyond 'You want onions? let alone hear of this new regulation, will be easy to arrest, hold without due process, and/or deport. This may be the actual fear over at Homeland Security – a low-yield battlefield tactical nuclear device, bought from a rouge supply Sergeant in a breakaway Soviet republic, smuggled in via Canada in a 55-gallon drum of maple syrup, and deployed in an ice cream vendor's cart in Lafayette Park, right across Pennsylvania Avenue from the White House. (We here at the FDA think that those guys at Homeland Security have been reading far too much Tom Clancy, but we aren't going to argue with John Ashcroft. We don't want to be held without due process as 'enemy combatants' either. We have families too, ya know.)

"...that require domestic and foreign facilities that manufacture/process, pack, or hold food for human or animal consumption in the United States to register with FDA."

TRANSLATION Yes, we are imposing requirements even on people who are governed by the laws of other countries, not even citizens or residents of the USofA. Don't like it? Then don't try and ship us any food. Did you really think that we were going to comply with any of those "World Trade" agreements, and submit our biosecurity and health concerns to the WTO's 'Office International des Epizooties' (OIE) for their consideration? Come on! Even their name is in French, for Pete's sake!

"This document also serves as FDA's Small Entity Compliance Guide (SECG), in accordance with section 212 of the Small Business Regulatory Enforcement Fairness Act (Public Law 104-121)."

TRANSLATION This is all you are gonna get from us, so don't try to complain that you are a small business, and can't afford to spend the money required to figure out if you have to comply with this law, or are exempt. Yes, we know that we are required by law to make life easier for small businesses like beekeepers, bakers, and hot dog vendors, but the bottom line is that we can't clearly explain something that we ourselves don't understand. BC

INNER COVER

Food safety has risen to the top of the pile recently. Mad cow disease, brought here, apparently, from an imported Canadian cow has the headlines at the moment, and the spotlight on testing beef is getting brighter Currently, only 0.001% of slaughtered beef (20,000 of 35 million) are tested each year Previous to this the National Cattleman's Beef Association said that testing every animal was a waste of resources (about $.06-$.10/lb. additional cost). According to a Purdue Ag economist, even if there is only one animal found infected, the cost to the U.S. economy will be about $2 billion because of temporary export restrictions and reduced domestic consumption. If more are found the cost goes up. Ask beef producers in the U.K. or Canada about that.

Not long ago scallions brought here from Mexico were laden with Hepititus and spread out neatly from a restaurant in Pennsylvania. People died because of this incursion.

Closer to home, honey from China contained minute amounts of chloramphenocol, an antibiotic not allowed in any food anywhere. And more recently honey from Argentina had another antibiotic in it. These contaminated sources were identified in countries that routinely test their food. The U.S. found it only after somebody said we better be looking. We weren't before that.

A couple of years ago, the FDA began their food processing facility registration and for many beekeepers that bill came due at the end of 2003. Now, apparently, they know where everybody is who processes food. Big Brother is watching some of us. For free at the moment.

Even closer to my home, the Ohio Department of Agriculture, the food police we have to deal with, has revamped processing facility regulations for beekeepers and maple syrup producers to insure minimum sanitation for the end product. Depending on how much you sell and where you sell it those regulations may be voluntary. For the moment.

The trend here is obvious. Testing has a cost. Processors don't want to spend any more than they have to, so tests are minimal, or even non-existent. Something happens, somebody dies (people who only get sick normally don't count because people are always getting sick). The event receives incredible media attention. Rules get changed. Maybe more than they need, maybe not.

Honey isn't going to escape this scrutiny. We hit the radar screen and people will be watching. Cost? Sure. Who pays? Well, there's the question, isn't it. The obvious place is the person who puts it in the final container – the packer Just like the slaughter house owner

But far more important is the quality of the product *you* send to the packer Or that you pack (yes, honey jars are still pulled off grocery shelves, farm market stands, and in Ohio right out of your home stand).

Big Brother is watching. And now he has help.

•

A probable outcome from all this is that those who buy honey will want some verification of its purity. They don't want to have to clean up a mess they didn't create, and they don't want the P.R. nightmare Smuckers et al had with the dirty stuff they got from China. So it will have to be both consistant in color and flavor, have a well defined delivery schedule, and be clean.

Moreover, those buying honey are becoming fewer, and getting bigger, and becoming more demanding in their purchase requirements. Food industry experts predict that within a few short years, only five or six conglomerates will control a huge percent of the retail and food service food sold in the U.S. Think Wal-Mart here. Or Ahold, K-Mart, or Target.

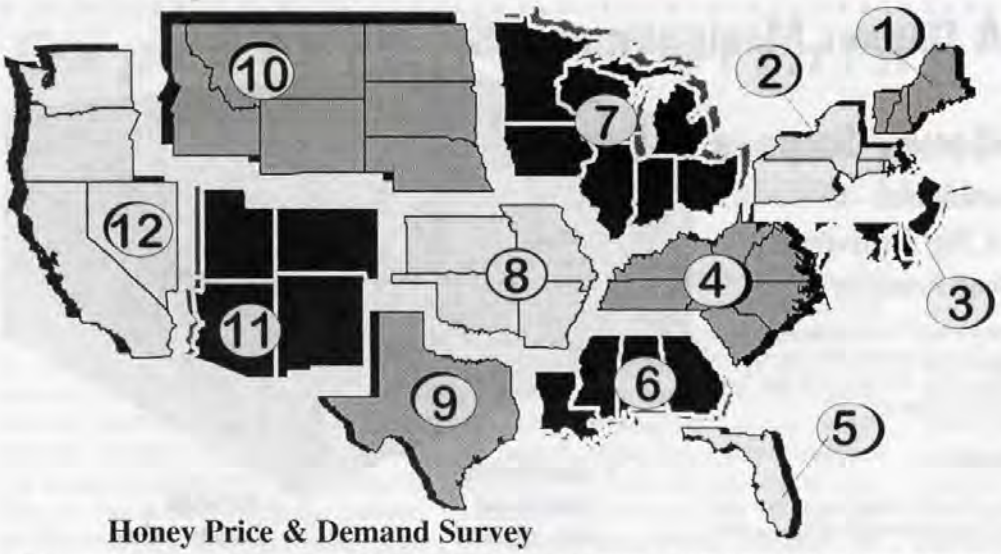
To sell to these monsters, suppliers will have to be appropriately huge. The urge to merge is rapidly becoming strive to survive.

Honey packers will feel the same pressure. Some already have. Can you imagine how big you have to be to supply Sam's Club? Soon, you'll have to have RFID chips on every pallet. Every bottle has to be identical, delivered on time, every time, and be clean as a whistle. That urge to merge in our industry is on the horizon. Can you see it?

Kim Flottum

Food Safety & Big Business

FEBRUARY – REGIONAL HONEY PRICE REPORT



Honey Price & Demand Survey

We surveyed our reporters in late December on their take on then current honey prices and what they anticipated prices to be in the next few months. We also queried them on this past season's demand for their honey, given the extreme increase in prices that were in effect for the whole of last year, the second season with antidumping and restricted imports in palce.

Compared to December 2002, 63% said prices were higher. But 37% reported that their prices had not changed during the year.

What products were holding their price the best? Pretty much all of them it seems. Of those who sell bulk in barrels, 79% said prices were holding strong. For pails, however (and this is the exception), only 20% selling honey in pails saw prices holding last year.

Meanwhile, 77% of those who sell wholesale said those prices were staying strong, and a similar 76% of those who sell retail direct felt the same. (Look at the box for a more detailed breakdown of what our reporters sell.)

Are any products dropping price? Yes. 52% of those selling in barrels see reduced offerings during the next year. The outlook for pails is less distressing, but 37% feel those prices will decline further. Only 11% of those who sell wholesale anticipate reduced prices. Optimistically, retail sellers see absolutely no decline in those prices next year.

Overall prices next year? Fully 41% see prices declining, but 59% see them increasing next year.

What about demand, considering the price changes in the past year? 46% saw no change, neither up or down. Of the 54% that saw increased demand last year 5% saw an increase in demand for barrels, 34% saw pail sales go up, 36% selling wholesale had increased sales, and, surprisingly, fully 44% had increased demand for their retail products.

Customer base was also measured for all products. 65% saw an increase in customers for at least some products last year. 88% had no change in customer numbers, while 15% had customer numbers drop last year.

Reporters Who Sell:

- Bulk in Barrels – 31%
- 60 lb. Pails – 47%
- Wholesale In Cases – 71%
- Retail Direct – 95%

	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																
55 gal. Light	1.00	1.50	1.36	1.25	1.40	1.38	1.55	1.36	1.36	1.50	1.25	1.50	1.00-1.55	1.37	1.47	1.23
55 gal. Amber	0.85	1.25	1.26	1.23	1.10	1.33	1.42	1.26	1.00	1.26	1.45	1.30	0.85-1.45	1.23	1.31	1.13
60# Light (retail)	97.50	96.77	100.19	91.83	110.00	105.00	108.67	99.10	120.00	75.00	110.00	107.50	75.00-120.00	101.80	101.83	92.09
60# Amber (retail)	85.33	87.60	93.43	92.05	93.43	95.00	110.00	95.00	100.00	80.00	110.00	95.00	80.00-110.00	94.74	95.55	81.34
Wholesale Case Lots																
1/2# 24's	38.73	32.25	38.99	38.11	38.99	39.50	40.75	38.99	38.99	35.76	24.00	38.99	24.00-40.75	37.00	35.53	32.23
1# 24's	46.35	47.38	58.21	50.84	57.11	56.00	60.13	66.00	49.92	69.00	60.00	66.00	46.35-69.00	57.24	58.41	51.16
2# 12's	41.00	42.55	48.03	44.70	48.03	48.00	53.28	48.03	45.20	57.84	59.75	58.50	41.00-59.75	49.57	51.49	47.85
12 oz. Plas. 24's	42.96	40.62	44.59	42.21	44.59	48.00	48.03	47.52	42.96	47.76	39.50	49.80	39.50-49.80	44.88	48.59	42.08
5# 6's	45.90	46.81	47.43	50.33	47.43	54.00	58.48	47.43	54.60	56.43	50.00	62.00	45.90-62.00	51.74	53.86	49.63
Quarts 12's	65.25	73.32	80.43	63.23	80.43	90.00	79.47	77.10	70.00	100.00	70.00	84.00	63.23-100.00	77.77	76.76	67.00
Pints 12's	37.50	38.95	50.42	38.80	50.42	54.00	52.34	42.06	40.00	58.80	45.00	51.00	37.50-58.80	46.61	45.33	39.92
Retail Honey Prices																
1/2#	2.15	2.25	2.53	2.48	2.29	2.85	2.19	2.53	2.18	2.79	2.77	2.53	2.15-2.85	2.46	2.43	2.39
12 oz. Plastic	2.65	2.63	3.23	2.94	3.20	3.25	2.65	3.08	3.08	3.17	3.45	2.95	2.63-3.45	3.02	3.15	2.77
1 lb. Glass	3.23	3.06	3.63	3.60	3.25	3.87	3.53	3.91	4.11	4.20	4.05	3.95	3.06-4.20	3.70	3.75	3.38
2 lb. Glass	5.63	5.20	5.85	5.33	6.49	5.99	6.01	4.75	6.23	7.02	5.42	7.15	4.75-7.15	5.92	6.13	5.34
Pint	5.63	4.95	5.78	5.38	5.49	5.00	5.52	5.12	4.67	8.00	4.30	6.00	4.30-8.00	5.48	6.46	5.10
Quart	8.88	7.25	10.78	7 18	7.29	8.00	9.04	8.06	8.00	14.00	7.15	10.00	7 15-14.00	8.80	8.71	8.27
5 lb. Glass	12.42	11.31	12.89	12.42	11.15	12.25	13.47	12.89	12.59	5.20	12.66	13.95	5.20-13.95	11.93	12.58	11.65
1# Cream	4.25	4.28	4.46	4.30	4.46	3.75	4.31	4.91	5.00	5.33	5.25	3.95	3.75-5.33	4.52	4.32	4.19
1# Comb	3.95	4.13	4.79	5.03	4.79	4.00	4.79	4.25	4.79	5.75	6.20	5.00	3.95-6.20	4.79	4.13	4.71
Ross Round	3.63	3.52	4.46	4.38	4.46	3.75	5.33	4.46	5.00	1.25	5.13	4.46	1.25-5.33	4.15	4.54	4.05
Wax (Light)	1.19	1.05	1.19	1.73	1.19	1.00	1.33	1.19	1.83	1.48	1.00	1.00	0.73-1.79	1.33	1.60	2.72
Wax (Dark)	1.25	1.23	1.30	1.73	1.48	1.93	1.38	1.48	1.00	2.48	0.96	1.00	0.96-1.60	1.25	1.65	6.26
Poll. Fee/Col.	40.67	41.00	35.00	33.00	40.00	44.00	41.00	40.81	30.00	40.81	55.00	42.50	30.00-55.00	40.32	38.84	38.31

RESEARCH REVIEWED

Explaining • Defining • Using

Steve Sheppard

"Read on . . . and some other tidbits.

This issue marks the second issue of my third year writing "Research Reviewed" At the beginning of the second year, I took a brief detour to discuss a common thread among scientific papers (the controlled experiment) and why it was an important concept. This time, I'd like to take a portion of the column to discuss something common to beekeepers. Most of us could fill in that blank with content (flattering or otherwise) pertaining to a particular beekeeper we might know, but I am talking about something else. I am talking about scientific curiosity. In my experience, almost all beekeepers share a genuine interest in learning as much as possible about the biology of the bees that live inside their hives Early on in their training, these beekeepers develop an appreciation for honey bees as a remarkable example of the group known as social insects. Imagine...a sterile caste (workers) working together to construct and provision a nest and help their mother (the queen) rear offspring that lead to the production of more workers (sisters!). Oh yeah...they help Mom make a few brothers too

As beekeepers develop proficiency in the *art of beekeeping*, they invariably delve deeper into the *biology of honey bees*. They study foraging (honey production), colony reproduction (swarming), thermoregulation (overwintering), pathology (bee diseases and parasites) and many more topics. Years go by... the more the inquisitive beekeeper learns, the more that same beekeeper realizes there is to learn. To their peers, these highly proficient beekeepers are walking talking gold mines of information on bee biology. They have the ability to answer the why questions... as in "why" certain beekeeping manipulations are done. In fact, attainment of beekeeping proficiency and knowledge of bee biology would probably be highly correlated, if someone bothered to conduct the proper set of experiments. The point here is to encourage anyone who reads this column to continue their own education, both in the apiary and in quiet moments with books Don't forget that bee books, both old and new, usually can be found in your public library or can be borrowed from a fellow beekeeper (similarly afflicted as yourself). If you are fortunate enough to have access to a university library – you can find a much larger collection of books on bee biology and scientific journals to explore. Happy reading in the New Year.

The following reviews are gleaned from abstracts presented at the 50th meeting of the Association of Institutes for Bee Research in Schmitten-Arnoldshain Germany in March 2003. This is a meeting where authors share results from ongoing research and provides us an interesting outlook on current European areas of interest.

The effect of propolis on larval development and pupal metamorphosis of *Galleria mellonella* (A. Garedew). The author describes experiments whereby wax moth larvae of various ages were treated by dipping them into different concentrations of propolis diluted in 55% ethanol. Untreated larvae, larvae treated with 55% ethanol alone and larvae treated with water alone were used as controls. The author reported complete mortality of older larvae treated with 8-10% propolis, while younger larvae were susceptible to treatments of 4% propolis. Non-lethal lower doses of propolis reduced the time the moths required to develop in the pupal stage. The conclusion was that propolis can serve as an insect growth regulator at low doses and a possible insecticidal agent at the higher dosages. The author notes that the use of propolis for wax moth control should not present a residue problem as propolis occurs naturally in the beehive.

Do honey bee workers infested with *Varroa destructor* have difficulties coming home? (J. Kralj, S. Fuchs) The authors used a video system to monitor exiting and returning foragers and marked honey bees that were either infested or uninfested with the parasitic mite *Varroa destructor*. They report the results of three experiments. In the first, infested and uninfested workers of the same age were removed from the colony and released five to 50 m from the hive. The time required for them to return was monitored and the authors reported that the infested workers required three times as much time to return to the hive (median 92 seconds vs. 32 seconds). In the second experiment, the authors re-

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RESEARCH ... Cont. From Pg. 13

leased 22 groups, each containing 33 workers of the same age. Within the group of bees that did not return during the 15 minute "observation period", the proportion of infested bees was significantly higher Finally, the authors had returning bees choose between the real entrance and a "visually identical dummy entrance." The dummy entrance was approached 2.5 times more often by infested foragers than non-infested foragers. Thus, infested foragers need more time to return to the hive and have more difficulty in orienting to the colony entrance. The authors suggest that extended periods spent outside the hive and "impaired homing ability" could increase the loss of infested foragers (relative to non-infested foragers) and thereby decrease colony infestation and serve as a defense mechanism against *V destructor* Answer to the question posed in the title? Yes.

***Varroa destructor* infestation of adult bees, worker brood and drone brood during the season and consequences for treatment concepts** (P Rosenkranz, M. Renz) The authors investigated the distribution of mite populations on adult bees and within sealed brood cells, using data from 58 colonies sampled over two years. They reported that in Spring and Summer (March-July), 58% to 91% of the mites were found within sealed brood cells. During this period, the infestation rate for drone brood was 9.7 times higher than worker brood. As a consequence, from March-June the drone brood contained from 27% to 41% of all the mites in the colonies. Based on these numbers, the authors conclude that drone brood removal (aka drone trapping) was an important component of a "treatment concept" During late Summer and Fall, 52% to 74% of the *V. destructor* population was found in worker brood. The authors suggest that acaricide treatment during this period should be limited to those compounds known to be effective when mites are in the brood. BC

Reference: Association of Institutes for Bee Research, Report of the 50th seminar in Schmitten-Arnoldshain. 2003. *Apidologie* 34:473-511.

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Mark Winston

Two Bottles Of Mead

"It simply is not that easy to produce a superior honey wine."

A big drinker I'm not. I enjoy the occasional pint of beer, and appreciate a glass of wine when dining out with friends, but hops and grapes are not a central focus of my day or night.

Since I don't imbibe much, I try hard not to have plonk when I do drink. None of your Bud Lite or silver bullet Coors for me, and wine without a cork is not my style. My taste in beer is designer microbrewery, and in wine I gravitate to the snob end of the spectrum, although to claim I know anything about either beer or wine would be quite a stretch.

One thing I do know is bad mead, as in most mead I've ever consumed. One of the occupational hazards of being a bee expert is that people are always asking me to sample their honey and homemade mead. I have had a lot of pretty good honey, but haven't been so fortunate in the mead department.

Mead can be pretty tough to quaff, whether store-bought or homemade. It simply is not that easy to produce a superior honey wine. Those of us who are invariably polite tremble when the bottle of homemade is brought up from the basement by our hosts, concerned by past experiences that we are about to enter the undrinkable zone.

The rarity of a good bottle of mead makes those exceptional experiences memorable. I remember two bottles of mead, both for their quality and the unusually rich backdrops in which they were uncorked.

My first really good bottle of mead happened towards the end of a particularly uncomfortable week, while the second surprised me at my own table, surrounded by friends.

The first bottle was actually quite a few bottles of diverse varieties, sampled at one of the most unusual bee businesses I've encountered in my extensive search for novel ways to make money out of bees. I was in the Canadian province of Quebéc one Winter, attending the annual Canadian Honey Council meetings just outside of Montréal. The enterprise we visited was a destination business called Intermiel, located in the small town of Saint-Benoît Mirabel, just outside of Montréal.

The meeting was both memorable and tiring. It was memorable because eastern Canada had experienced a phenomenally destructive ice storm a few weeks before, which had knocked over innumerable trees and shut down the electrical grid for weeks in a region where the temperature routinely drops well below zero. Quebéc was still reeling, and traveling around the streets remained difficult.

The meeting was tiring because, like too many beekeeping meetings, it was held in a cheap hotel at the far outskirts of town, with only a nearby shopping mall to visit and tour. It remains a mystery to me why beekeepers hold meetings in suburban shopping mall hotels when nearby cities like Montréal are lively and interesting tourist destinations. The rationale to hold this meeting in such a nondescript location was particularly obscure because Montréal was in the midst of a serious economic downturn, and hoteliers were pretty much giving away downtown rooms.

I was desperate to get out by the end of the week, and jumped at the chance to sign up for an arranged tour to Intermiel, a multifaceted tourist destination focused on educational groups and bee products. The business has about 25 employees who manage their thousand or so colonies, process their honey, pollen, royal jelly, propolis, and mead, and run the store and educational displays.

Intermiel attracts a stream of school, corporate, and social groups interested in learning more about bees and in sampling their products. A tour of Intermiel includes what I think may be the world's largest observation hive, extending across an entire room and up to the ceiling. Also included on the tour are opportunities to watch through a window as beekeepers work colonies, and a chance to view honey being extracted in their honey house.

The highlight, though, is a mead tasting party, at which the owners uncork bottles of their eight varieties and allow their guests to drink till they drop. They call their mead factory a "hydromellerie," and there they produce eight varieties of fermented honey, each with a unique bouquet referred to as the "pure extract of the flower's soul." One variety may come from goldenrod, another have the aroma and flavour of the apple blossom, and all are distinctive and delicious.

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"I kept putting off opening Boone's mead. I knew that a precious bit of beekeeping history lay in my basement . . ."

And Intermiel is clever enough to describe each mead in ways that appeal to unknowledgeable wine snobs like myself. My favorite was *From the Honeyful Gardens*, a mix of honey and raspberries. The label describes its characteristics as light, fruity, and dainty, good as a refreshment, apéritif or in cocktails. Of course, it should be served as a dessert wine, preferably with raspberry sherbet, fruit pies, or pastries with a raspberry sauce. For a special treat, you can create a dish called *The Summer Delight* by macerating some raspberries or blueberries in *From the Honeyful Gardens* for about 12 hours, and then serving it chilled.

My second memorable mead happened at my own table, poured from a bottle that had been in my basement for over ten years, and looked it. Covered with dust, discolored with a dirty brown patina, a bit of mold seeping out the top of the cork, a layer of turgid sediment at the bottom, labeled with a peeling piece of masking tape exclaiming that this was "Atkinson Mead by HARVEY BOONE 1968," it was not a promising sight.

I had feared uncorking this bottle since the moment it was given to me as a gift, because the giver was John Boone, one of the nicest gentleman I have had the pleasure to encounter, and the mead maker was his father Harvey, an icon in British Columbia beekeeping.

John is a cardiologist, and had given me this relic of Canadian beekeeping history after attending a meeting at Simon Fraser University. Harvey Boone was a founding father of B.C. beekeeping, one of those rare individuals about whom I have never heard a nasty word spoken. Even today, a few generations after his time, he is still revered by our beekeepers and honored with his name attached to a trust fund that provides funding for research and education. Atkinson, a scientist in the Okanagan Valley fruit growing area, was recognized on the label because he provided Harvey with some apple concentrate to juice up the recipe.

I kept putting off opening Boone's mead. I knew that a precious bit of beekeeping history lay in my basement, and was deeply apprehensive that it would taste pretty much like it looked. Family celebrations came and went, as did innumerable guests from the beekeeping world who often grace our table, and who would have appreciated the history behind the heirloom.

Years passed, the bottle got dustier and dustier, but finally the perfect occasion arrived. It was August 2003, and our close friends Don Dixon and his wife Jamie were staying with us while Don attended the Western Apicultural Society meetings to receive the Outstanding Service to Beekeeping Award. My daughter was home from university, joining us at dinner with her best high school friend Meghan.

Rounding out our table was Michael Young from Northern Ireland, whom I had just visited prior to speaking at the Irish Federation of Beekeepers' meetings the previous month. Michael is a cook of considerable repute who currently oversees a culinary institute at which many of Ireland's finest chefs train.

He also happens to be one of the worlds premier mead experts. I had spent two nights at their home, in a large spare room through which I could barely navigate between the trophies he has garnered for his mead.

Harvey Boone's mead called from the basement. I dusted off the bottle as best I could, passed it over to Michael to open, and waited for my worst fears to be realized. The cork popped quietly, the tawny mead was poured into our best crystal aperitif glasses, the moment had come.

It was sublime. Beyond sublime, it tasted like nothing I had ever experienced. Deep, rich, smooth, with a hint of the fruity honey and concentrate from which it was fermented, this was an exceptional bottle of mead. Humble its container may have looked, but within was a flavorful jewel, an experience worthy of the producer's exemplary reputation.

Boone's mead is gone, but I'm keeping the bottle in my office as a reminder of a special night when good mates raised our glasses and toasted our friendship.

I've decided not to wash the bottle, It still holds the scent of Boone Mead in the residue, an aromatic memory to evoke a moment when beekeeping past and present gathered in our home. BC

Mark Winston is a professor at Simon Fraser University, Burnaby, B.C. Canada.

"I'll keep listening to smart people like Keith Delaplane."

In October, I was lucky enough to hear Keith Delaplane speak at two state conventions.

The first, in North Dakota, piqued my interest. The second time he spoke, in California, I paid attention. He inspired me.

Upon return to the beeyard, I applied some of his recommendations.

For those attending, who were not out snorking coffee and gossiping in the hall, Dr. Delaplane mused about the historical shape and function of the hive. Using the hollow tree as the example, Keith noted how the cluster was then, and now is a circle. That we have placed this round cluster into a square box has been an accommodation to the human, not the honey bee. Among other key observations was this: The hive in the bee tree almost always had an open space beneath the combs. This void accepted the detritus of the hive. Once the hive died, scavengers cleaned out the wax, the remains, and the cavity of the bee tree was once again ready to house the honey bee.

Migratory beekeeping has kept hives on bottom boards for over a century. The bottom board, whether a nailed on bottom, or a bottom board integrated into the pallet itself, remains very close to the bottom bars of the bottom box at all times. This makes sense.

When I returned to the beeyard, I looked at our clip-type pallets. I had four of them altered to mimic the bee tree. I cut holes in the bottom boards. I then stapled quarter-inch hardware cloth to the decks to keep vermin out. I stapled the hardware cloth ABOVE the deck; we use forklifts. These hives had not yet received their fall treatment for *Varroa*.

Immediately, the ideas Dr Keith had painted in my imagination revealed insights to share with you.

We use home made sticky boards to test for effectiveness of *Varroa* strips. These are merely sections of tub enclosure, white side up, smeared with vegetable shortening.

I cut them 24" long, and about 6" wide, so I get a good idea of what is falling out of the brood chamber. I have to lift one side of the hive with a hive tool, so I don't smear the sample when removing the board. The bees don't much care for the 'sticky boards'

After placing the hives on the cut out pallets, we discovered we can no longer put the sticky board in the hive. The hardware cloth put a stop to that. I smeared the sticky board with shortening, and placed it BELOW the hive, above the pallet skid. This worked fine, except the mice liked walking through and licking the shortening.

My man, Michael Angelo is a fountain of good ideas. He went back to the shop, retrieved the cut outs we had tossed in the trash. He then went to the hardware store, bought shelf liner paper, a sturdy staple gun, some quarter inch staples, peeled the paper, stapled it sticky side up to the cut outs, and placed the new improved sticky boards above the pallet skid. Mice don't much like shelf liner paper, sticky side up.

Neither do *Varroa*. Remember how researchers have told us *Varroa*, for all their skills, are rather clumsy. They are. However, if, when you fall, you fall three-eighths of an inch to a sturdy deck or bottom board, all you have to do, as an eight legged *Varroa*, is grab the first dumb bee you see, and ride back up into the cluster If you are a rather clumsy *Varroa*, and you fall from the cluster, and through quarter inch hardware cloth, five full inches to the top of a skid, a cold, wet skid, you might as well have fallen from a twenty-story building. No bees blunder by, looking for a bottom bar to climb on to.

If you are a *Varroa*, you are toast.

The beehive, for all it's ability to clean itself is a messy place. All kinds of debris fall through that hardware cloth, exactly the same as Dr Keith described the bee tree. Pollen falls through. Brood cocoons fall through. The dead fall through, wings, leaf bits, wax bits, all kinds of stuff shows up on the sticky boards. Chalk Brood Mummies show up. Chalk brood mummies

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THINKING BELOW THE BOX

John Miller

BELOW THE BOX ... Cont. From Pg. 17

spume what, ten billion billion spores? If the hive has a closed bottom board, like we all use, these spores blossom up into the very brood chamber the bees are trying to clean. If the mummy falls through the hardware cloth onto the ground below, the mouse finds a tasty treat. This act removes the mummy forever, and raises an entire new bunch of questions about how smart a mouse is, anyway.

Our first holes in the pallet deck were square. We cut them out with a skill saw. Another of our innovators, Ryan Elison, suggested we cut round holes in the pallet decks. Good idea. Simpler, with the right piece of equipment.

What about temperatures? Won't the hive just freeze with a large hole cut in the bottom board? Good question. We have taken temperatures at ground level, inside the bottom board of cut out bottoms, and non-cut out bottoms. Very little difference, less than a degree, between the open bottom boards, and the closed bottom boards. Bear in mind, this is December in Placer County, California. Your experience may be quite different.

What about Spring time? How about when the little hive, assuming we have pulled a nuc from the parent, what about the temperatures of these little nucs? Will the open bottom boards retard the expansion of the brood chamber next Spring? We will have to see.

We have much to learn from the honey bee.

Beekeeping would benefit from research money Recently, $450,000 was appropriated to begin mapping the Rainbow Trout genome. I admire the Rainbow Trout, but I believe the food supply of this nation, and the livelihood of the beekeepers enabling the food supply of this nation is more important than the trout genome. Our retarded little industry is so consumed with the bickering and fighting by these two mental midget 'national' organizations, that we miss, time after time, opportunities to do something good for ourselves.

I'll keep listening to smart people like Keith Delaplane. I know a good idea when I steal it. I encourage other beekeepers to altar 10 or 20 pallets, and test my observations. You too will learn something I have completely overlooked.

Find happiness and fulfillment in your vocation. It's a new season, go learn something. BC

John Miller is a commercial beekeeper in California and North Dakota.

Breeding Better Bees

Dann Purvis

We're bringing together all the good selections so far, and then making something better.

Some of us still remember a time when a child would walk across a lawn barefoot, step on a honey bee, get stung and the family folk medicine that ensued. In those days, it seemed all the clover blossoms were covered with at least one bee and another hovering close by. On most lawns today we could walk barefoot all day long without getting stung. On top of that, if someone other than a beekeeper is stung today stories of "killer bees" and "severe allergic reactions" soon follow. There are some pockets of feral bees out there that are at the levels close to days past but most of them are because of managed bees. The ones that are surviving may be surviving because of natural resistance to their pests, or maybe the pest load is too low to completely overcome these colonies. I believe that feral colonies will come back. How long will it take? Better, how long can we wait?

A breeding program the process of developing a species toward a goal that's considered important. The goal of the Purvis Brothers breeding program is to develop a bee that can survive without the aid of chemicals, which includes good honey production.

Important aspects to our breeding program include genetic potential, standardization, turnover, and evaluations.

Genetic potential or variability forms the foundation of any breeding program. It is simply the collection of all the traits that may, or may not, contribute to a program's goal into a large gene pool from which the breeder will be working. This is a Closed Population Breeding Group (CPBG). It should be well chosen, because if the founding stock does not contain the potential needed to accomplish program's goals then you have to *open* the closed population, which risks bringing in unwanted traits.

Standardization must be met to insure progress. In a perfect program all subjects being evaluated would be exposed to the same environment and conditions. Examples of poor standardization include comparing a colony from one yard to one from another yard; evaluating for a specific trait at different times of the year for different colonies can be misleading also; some results can even be misleading if evaluated in the same manner throughout the same apiary. For instance, hives with the least and most mite fall are identified in an experiment, and colonies with the highest mite count removed from the breeding program. But, what if these colonies are strong for grooming behavior? Would such a colony actually have a higher natural mite fall than those without? Maybe. It is easy to see why it is difficult to evaluate accurately while maintaining a gene pool large enough to hold the gains made.

Turnover is a term I use to describe the amount of genetic combinations in a given amount of time and the rate that they change. Greater turnover equals a greater number of genetic combinations. I like to look at turnover in two different ways, horizontal and vertical. Several years ago I had a business breeding fish. At any time I might have up to 19 different lines going. The particular fish I was breeding would spawn 400 to 600 eggs every seven to 14 days. The fry could be evaluated in one to four weeks. The program wasn't wide (horizontal), because it only had 19 breeder pairs. However, it was very deep (vertical), because there were lots of offspring. In a few weeks I could effectively evaluate several thousand genetic combinations, which of course were the individual fry. Thus my turnover was large. The limiting factor was how many fish I could evaluate effectively for color and markings. I learned that the simpler the evaluation the more effective and faster it is.

Survival is the *only* selection criteria.

Fortunately for us, there are bee researchers and breeders that have produced good 'lines,' like my fish. But their turnover is limited by their available population to evaluate. Most breeding programs are limited to between 50 to 200 colonies. Each of these colonies represents only one genetic variable, the queen. Not only that, evaluation time is a full year, with two years better. Turnover is extremely limited, focused, but useful, because the specific traits others have discovered are useful as building blocks for a bigger picture – *SURVIVAL.*

Is survival a trait? Probably it's a collection of traits. Examples of these traits are: hygienic behavior, suppressed mite reproduction (SMR), Tracheal mite resistance and others. Several questions arise. Are all of these necessary for survival? Can we pull these traits together into one bee without weakening other traits like honey production, gentleness and others?

I have evaluated a few queens that have survived with a measurable mite load for more than two years. These queens were good producers and one was even

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BREEDING ... Cont. From Pg. 21

gentle. I am sure that a true survivor honey bee is possible. I believe that all the necessary genes are available in the United States currently.

How do we gather all these genes and put them together so that this surviving quality surfaces?

Focused breeding programs are no longer useful for the next step. As I said earlier, we have to pull all the good work done thus far into a program that has a much larger turnover The only viable way to increase turnover for selection of survival is to increase our evaluation-population horizontally Specifically, we need to increase the number of queens that we evaluate per cycle (one year). The answer lies with simple, black and white evaluations.

That "simple evaluation" is **Survival**. Most anyone can tell me if a hive is dead or not. Assuming all other things being equal we aren't limited by our ability to evaluate only by our ability to produce the needed stock to evaluate. Instead of 50 200 queens per year we could realistically evaluate several thousand per year

Artificial insemination is not "natural," but it is a useful tool to speed up the process. By inseminating survivor daughters with semen of surviving drone mothers within a CPBG we cut out factors that would slow natural-natural selection.

We will never get rid of mites and other diseases of honey bees, but we will eventually see a balance. Without breeding programs outlined above we will have to wait years for that balance to be achieved. But with a program evaluating for only survival using good foundation traits, and simple evaluations of large turnover without chemical intervention, bringing into play CPBG theory and artificial insemination techniques, we will bring about this balance much quicker. BC

Dann Purvis is managing this breeding program in Georgia.

Evaluating Queens

This season, measure the important things. And get good queens in your colonies.

Richard Fell

If there is one basic principle of good beekeeping, it would be to keep good, young queens in your hives. The queen is the most important individual in the colony and normal colony functioning is dependent upon her presence. Biologically, her role is twofold, egg production and pheromone production. She is responsible for all of the egg laying that results in a strong worker population, and she produces the chemical signals that maintain social order and allow for normal colony activity However, not all queens perform these functions as well as we would like. The variation in quality can be due to a number of factors, from genetics to the conditions under which a queen is reared. If a queen is reared under optimal conditions and from "good" breeding stock, she should have the potential to perform well, providing of course that she also mates well. On the other hand, queens produced from older worker larvae (more than 1-1/2 – 2 days of age), will generally have smaller ovaries and be less productive. Excessive queen cells in a rearing colony can lead to inadequate feeding and care, and small, poor quality queens. This is generally due to too *few* workers to feed them. External conditions during mating can also affect queen quality, and a poorly mated queen may fail early, or develop into a drone-layer Unfortunately, we rarely know much about the conditions under which the queens in our colonies were reared, or about how well they mated unless, that is, you ask before you buy, and do a bit of chasing to see what the weather has been in the producer's locale for the last 30 days or so. The internet has made this very, very easy. But you still need to evaluate what you see in a colony and replace those queens that are not performing well.

Judging the quality of a queen is somewhat subjective and requires both effort and some record keeping. Inspecting a colony can often identify a poor queen, but it is generally more difficult to identify a good queen, since queens should be evaluated on both their individual performance and the overall performance of the colony. Several factors can be used to judge queen quality and different beekeepers may rate these differently, beginning with appearance and queen performance.

Queen appearance is *not* important in judging quality, unless you are attempting to breed queens with certain color characteristics. Beekeepers often comment on how they like to see large, golden-colored queens in their hives, but the more important question is to what extent do size and color affect production? The size of a queen's ovaries is correlated with her body size, but her ability to lay fertile eggs is the key factor. Attempting to evaluate a queen on body size alone can be misleading. Rather judge the performance of your queens with regard to brood production, colony health, and colony temperament.

One indication of colony temperament can be observed as soon as a hive is opened. Do the bees respond well to smoking and do they settle down fairly quickly? Or, are they aggressive? Gentle colonies are a lot easier and more fun to work, and are better in urban areas. Along similar lines, I prefer bees that sit quietly on the comb, and do not run or fly off of the frames when the colony is inspected.

Two factors to which I pay particular attention when inspecting a hive are the brood pattern and the condition of the brood nest. Good queens lay solid brood patterns. The comb should be well filled with few missed or empty cells. The brood should also be of similar age and there should be no cells with pollen or honey mixed in with the brood. During periods of peak egg laying, good queens may fill frames almost to the edges, but the appearance of the pattern is more important than whether the frame is completely filled. Besides, the degree to which a frame is filled will depend on its position in the brood nest and the time of year Poor queens, on the other hand, will produce patterns which contain empty or missed cells that give the pattern a spotty appearance. Intermixed are cells containing pollen or honey. The empty cells may result from a variety of reasons, including brood mortality caused by non-viable eggs,

Queen cell quality can be dependent on the number of cells in a rearing colony. The end cells were produced in a finishing colony with only 20 cells, whereas the middle cell was produced in a finishing colony with over 40 cells, too many for the bees to provide proper care.

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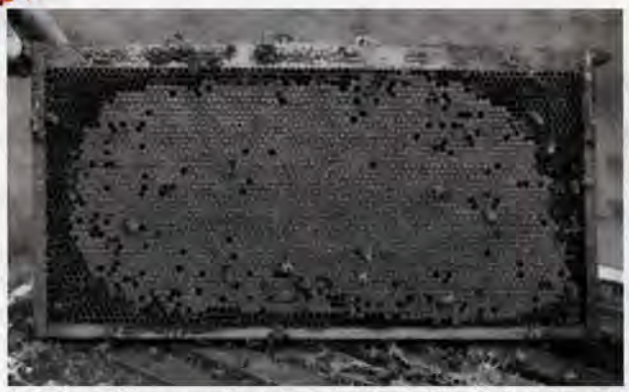

A frame with an excellent brood pattern. The pattern is solid with few missed cells and the brood is of approximately the same age.

A poor brood pattern indicating a failing queen. Note the lack of a solid pattern, the high percentage of empty cells, and the presence of pollen cells intermixed with brood. A close examination of this frame would also show brood of different ages, with some cells containing young larvae and others capped brood.

disease, or an aging or injured queen.

The presence of drone brood intermixed with worker brood is a sure sign of a problem queen. Failing queens may not have sufficient sperm to fertilize the eggs laid in worker cells resulting in a pattern which contains cells that have enlarged caps and developing drone pupae. One or two drone cells in a worker pattern may represent an accidental occurrence, but the consistent presence of intermixed drone brood indicates a problem and a queen needing replacement. Drone-laying in queens can result from a number of causes, including poor mating, age, degeneration of the spermathecal glands, disease, or injury. And sometimes, you never know why.

The last of the brood related characteristics that is helpful in queen evaluation is disease. The presence of brood diseases such as European foulbrood and chalkbrood can indicate a need for queen replacement. A few cells with EFB or chalkbrood in the Spring when colony stress is high do not necessarily indicate a problem, but persistent or high levels of either disease suggest a need for queen replacement. Extreme cases have half of the brood affected. But more than 10-15% is significant. Some honey bees are more susceptible to diseases such as EFB, or have poor colony hygiene, and requeening not only provides for a change of stock, but also breaks the brood rearing cycle and allows the bees time to clean out cells with diseased larvae. The hygienic stock available from queen breeders today offers you an excellent opportunity to reduce disease and mite related problems in your colonies.

The evaluation of queen quality should extend beyond the colony inspection and include colony performance. Productivity, overwintering ability, the tendency toward swarming, how well the colony adjusts brood rearing to nectar flows, and colony temperament should all be considered. Some of these are easy to measure, but others aren't.

For example, determining how well a colony adjusts brood rearing to flow conditions requires an accurate knowledge of both the level of brood rearing and current nectar flow conditions. Scale hives can provide information on whether a colony is bringing in nectar or using stored honey, but the information must be correlated with changes in brood production. A simpler approach is to follow brood rearing after the end of a major flow. Does the colony reduce the level of brood rearing, or is a high level of brood production maintained, requiring the use of stored honey? Ideally a colony should reduce brood production when nectar flows decline, but not always, and not for all races of queens.

There is no question that some colonies do better than others, produce more honey, come through the Winter in better condition, or show no signs of swarming, even when crowded. These traits are related to the quality and type of queen and keeping records can help you decide if the queen is one you would want to keep. Such records can also provide information on the quality of a queen producer's program. Knowing colony performance factors can help you decide whether you want to continue to purchase queens from the same producer or try a different one.

Of course when evaluating the quality of queens from a producer, be sure to test more than one or two queens. A fair evaluation would require the testing of at least four or five queens, 10 better, 100 best. That's not always possible, certainly

The final factor of importance in judging queens is age. In general, colonies headed by young queens are more productive and have fewer problems with swarming than do colonies headed by older queens. A common practice is to mark queens to indicate age, using a small dot of paint (Testers®) on the thorax before introduction into a hive so that her age is readily apparent whenever she is observed during an inspection. (You can follow the international queen marking color code which uses white for queens introduced in years ending in 1 or 6; yellow for years 2 or 7; red for years 3 or 8; green for years 4 or 9; and blue for years 5 or 0. So this year's queen should be green.) Marking also allows you to determine if a queen has been replaced as a result of swarming, supersedure, or accidental loss. As a general rule, colonies should be requeened at least every other year so that no colony is headed by a queen over two years of age, and every year is often recommended.

Good queen management requires the constant evaluation of queen quality and the willingness to replace poor queens whenever they are found. However the benefits of having a good queen in each hive will reward you for the time and effort spent in queen evaluation. Such colonies are not only more productive, but also a pleasure to work. BC

Rick Fell teaches biology and honey bee science at Virginia Tech in Blacksburg, VA.

HEALTHY BEES

The Good Old Days are back!
Russian bees and a dose of mineral oil show more promise than I thought possible.

Bob Brachmann

I started keeping bees as a hobby in 1978. I was immediately attracted to the idea of making my living as a beekeeper. I like a challenge, have never been afraid of hard work (though now, at 50, it is sometimes daunting), and was attracted to the idea of tying my life to the rhythm of the seasons and living more in harmony with nature. The bees and I made a great start. Then came mites.

We've used the hard chemicals to survive as a business but we've been resisting it from the beginning: trying alternative 'soft' treatments, intensive breeding efforts, skipping as many contaminating treatments as we can, and suffering some heavy losses along the way Our outfit is finally back to healthy beekeeping with no 'hard' chemicals.

We had made some progress but the big break came with Russian bees. The earliest data from the Baton Rouge lab looked very good and we pursued this opportunity immediately. I wanted these bees to work and was willing to change my management to work with the Russian bees rather than expecting them to fit exactly into our operation. We purchased pure Russian breeders from the USDA's Cooperative Research and Development partner as soon as they were available (2000).

In the process of switching the operation over to Russian bees we've observed that they are spectacularly resistant, almost immune to, tracheal mites and are very resistant to *Varroa* mites. In the early mixed apiaries Russian colonies sometimes succumbed to *Varroa* mites but were always affected after the non-Russian colonies and would suffer a lower percentage of losses.

A big part of jumping into this with both feet was immediately (2001) saturating our mating yards with Russian drones. Yards established in 2001 made up entirely of Russian stock needed no treatment that year and survived the winter very well. Still, there is the problem of Russian colonies getting inundated with *Varroa* mites from heavily infested non-Russian stock, whether feral or domestic. There are two factors in good health; resistance and exposure. Even very *Varroa* resistant bees can succumb if exposed to high enough levels of *Varroa* mites from outside sources. I'd looked at many of the alternative 'soft' treatments and had tried several. The work being done by Pedro Rodriguez was very intriguing but I didn't see any hard data. Still, it looked so practical. If it worked

Besides keeping my honey crop clean, my experiment would help answer the question 'How much Varroa *presence can Russian Bees handle?'*

In 2002 we had only 50 non-Russian colonies left in the outfit. These were located in five out yards mixed with 80 Russian colonies, 130 colonies total in those five yards. None of our outfit had been given any mite treatment since March of 2001. PMS started to appear in a few non-Russian colonies in late July of 2002. I decided not to treat. Besides keeping my honey crop clean this would help answer the question "How much *Varroa* pressure can Russian bees handle?" By the end of November, 2002 over half of the non-Russian colonies were dead. Only five or six Russian colonies had succumbed but PMS was apparent in the last hatch of brood in many of them. Could these colonies reduce the *Varroa* populations over winter with no treatments? (A sample would have been very helpful at this point. NO TIME. That's farming.)

These five outyards were moved to Virginia in December of 2002 and placed in a single, isolated apiary. The earliest brood hatching in early March did show a little PMS. Non Russian colonies were mostly gone by this time. (Most of them were 'dinks' which were disbanded at this time.) Most of the Russian colonies survived but were not strong. Russian colonies are seldom large at the end of Winter though.

I randomly sampled nine of the remaining 73 colonies on March 22, 2003, using the Wilson wash method. Samples were taken from brood frames. Three of these colonies were not to be treated, providing a control group. Three were treated with coumaphos from 3/22 until 4/6. Three were treated

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CLEAN BEES ... Cont. From Pg. 25

with light, food grade mineral oil (fgmo) in a Burgess propane fogger (as described by Pedro Rodriguez' website and articles). They (as well as all the rest of the hives in the apiary) were 'fogged' on 3/22 and 3/29. The nine selected colonies were then resampled on 4/6. The following table shows the results.

Hive #	Treatment	3/22 sample bees-mites	4/6 sample bees-mites
1	control	66-2	58-1
2	coumaphos	58-2	49-0*1
3	coumaphos	39-5	60-0
4	coumaphos	42-1	72-0*1
5	control	75-0	55-1
6	control*2	41-4	73-2
7	fgmo	64-7	51-0
8	fgmo	42-3	71-2
9	fgmo	52-4	73-1

*1 Went queenless during treatment period.
*2 Mistakenly received one oil treatment on 3/29.

Regarded separately, the fgmo group numbers indicate an 82% mite reduction from the two foggings. (footnote1) I was very pleased with this level of control. Still, this isn't much data. I decided to follow this up with a different kind of evaluation. In August of 2003 I placed screened bottom boards with sticky boards under four colonies, left them on for 48 hours, and then counted the mite drop. We then placed clean sticky boards under the same colonies, immediately fogged once with fgmo,waited 48 hours and again counted the mite drop. See results below.

Hive #	1*	2	3	4
48 hr drop (no fog)	40	8	6	18
48 hr drop (fogged)	80	16	15	24

* - First treatment since March of 2001.

Footnote. This number was arrived at by totaling the number of bees in the fgmo groups' initial sampling, totaling the number of mites in the same, doing the same with the second sampling, expressing them as ratios, and comparing these two ratios to find the percentage of change.

The numbers indicated that a fogging with fgmo essentially doubled the mite drop in Russian colonies over a 48 hour period.

To anyone running a large number of colonies I think it is worth noting that I estimate I can do about eight fgmo treatments in the time it takes me to complete one strip treatment. Furthermore, it looks as though five gallons of light, food grade mineral oil, which cost me $37.00, will provide perhaps 3000 single treatments.

FGMO works well with our Russian bees. Excepting the three colonies in the experiment described, none of our colonies have been treated with anything but fgmo since March, 2001 They look excellent going into the Winter of 2003.

In a follow up article I'll report on our hive health and *Varroa* levels in the Spring, on an attempt to boost the effectiveness of fgmo treatments, and on why this treatment probably works better with Russian stock than with other bees.

I have one caveat in regards to this percentage. When the first samples were taken the brood nests were smaller, as compared to the total number of bees in the hives, than they were in the final sampling. I wonder if a higher percentage of mites in the final sampling were in the brood. If this is the case the treatment may not have been quite as effective as the numbers indicate. We'll get another look at this in the Spring. BC

Thanks are due to Dr. Patti Elzen at the Weslaco bee lab, to Dr. Pedro Rodriguez for his work exploring fgmo treatments and staff and cooperators at the Baton Rouge lab, to Medhat Nasr and the Ontario beekeepers for their work on tracheal mite resistance, to the Really Raw Honey Co. for supplying the screened bottom boards, and to my wife Barbara and son Trevor – for their help – and because they "get it"

Bob Brachmann has worked as a commercial beekeeper in California and New York, operating his own business since 1987 He sells honey, nucs, pollinates, and raises queens for his operation and to sell.

The Perfect Queen

Even if we have all the genetic traits we want in a queen, if she has been produced under poor conditions, or if she has been subjected to stress and abuse before she is installed into the colony, all her genetic programming is wasted.

Larry Connor

Where we have been and were we are going

Previous articles in this series have reviewed the drone's role in the colony and how to produce large numbers of that unique colony member This hit a positive cord with some readers of this magazine and I appreciate the comments from those who have contacted me to ask questions or just to say thank you. Several commercial beekeepers have even become interested in my line of reasoning (and hopefully not just to prove I've gone off the deep end).

Beginning this month, I will concentrate on the issue of queen quality, or as beekeepers see it, The Perfect Queen. It is hard to draw clean lines between the role of the queen, the drones she mated with, and the behavior of the resulting workers, because they are so closely tied together I want to look at a variety of queen problems, including supercedure rates of queens, abnormal numbers of drone brood, and poor colony performance.

The Most Important Characteristic of a Queen

Years ago I was attending a meeting in a southern state where Professor Walter Rothenbuhler of The Ohio State University was speaking to a group of 35-40 queen producers. At a key point, Dr Rothenbuhler asked the queen producers to state "The Most Important Characteristic" which should be directing bee-breeding research. Rothenbuhler was one of a handful of highly respected bee geneticists in the 1970s, and is still frequently cited for his efforts to identify genes that control hygienic bee behavior that provide resistance to American foulbrood (and general hive cleanliness)

Back then I was pretty innocent to the ways beekeepers and queen producers thought. Seated safely at the back of the room, I just 'knew' that the group would offer up just four or five traits on which everyone would agree: items like high honey production, high vigor, excellent wintering and of course, resistance to diseases.

My education was expanded as the hands flew up with suggestions for the 'Most Important' list, which grew rapidly and included a wide range of behaviors and traits. I no longer have my notes but I recall that there were over 30 items these producers felt were "Most Important Characteristics." (I suggest you try this at your next beekeepers meeting. If you are so motivated, email it to me).

Keep in mind that all this took place years before tracheal mites, *Varroa* mites, hive beetles, African bees and high honey prices were part of the U.S. beekeeping industry Not surprisingly, most of the 'Most Important' items were pretty self-serving to the persons making the suggestions:

One southern package bee producer wanted lots of bees so he could shake lots of packages, so his queens needed to produce huge amounts of brood.

A northern beekeeper wanted queens that would withstand the stress of being moved North to South to North and into and out of pollination and nectar flows.

Someone suggested queens that were resistant to pesticides, a widespread problem at the time. But a large honey producer wouldn't hear of such a thing if the honey might become contaminated.

One producer sought bees that kept a clean brood nest and a neat and tidy hive with minimum use of burr comb or propolis. A migratory beekeeper wanted plenty of burr comb and propolis to keep his hives from shaking apart while being handled.

Oh, of course, everyone thought honey production and vigor were important, but rarely not "Most Important." Everyone seemed to have different characteristics they considered more important than vigorous colonies that made lots of honey. That day, I learned that queen perfection was in the eyes of the *bee-holder*.

Vigorous Queens

To understand queen perfection, we must differentiate between genetic perfection and conditions of queen production. During Walter Rotherbuhler's talk, the group discussed the conditions under which queens were produced, and the stresses they experienced before installation. Everyone agreed that queens must withstand the rigors of being mailed to customers, shipped in packages, or moved on trucks. They should not be superceded for at least *two years* and should produce solid blocks of worker brood and very few drones; just enough to mate with the daughter queen. Of course they will never swarm, sting, or consume stores unnecessarily

I knew then we had crossed the line between genetically-controlled traits and ones dependant upon the conditions of queen rearing. It is useful to review queen biology again, to understand the concept of a Perfectly Produced Queen. For

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"It is hard to draw clean lines between the role of the queen, the drones she mated with, and the behavior of the resulting workers, because they are so closely tied together."

even if we have all the genetic traits we want in a queen, if she has been produced under poor conditions, or if she has been subjected to stress and abuse before she is installed into the colony, all her genetic programming is wasted.

Size IS important

Large queens are better queens because they contain more egg-producing structures – call ovarioles – and as a result, they lay more eggs. Queens that lay more eggs produce more bees that will (probably) gather more nectar and thus pollinate more flowers. Queens have two large ovaries, collectively holding between 260 to 373 ovarioles (based on a study of 280 queens by Eckert in 1934). Since all the ovarioles produce five to seven eggs per day, well-fed, vigorous (healthy) queens routinely lay 1200 to 1500 or more eggs *per day* during buildup periods. There are 1440 minutes in a day so we are looking at an egg-laying rate of about one egg per minute! (Reports of 2000 or more eggs per day suggest, to me, a not unusual springtime situation where two queens are laying at the same time, perhaps the hive's mother queen and her newly mated supersedure daughter egg-laying on the same comb!).

Anything – absolutely ANY THING – that interferes with the development and size of the queen and the number of her ovarioles will affect queen performance. Dr. G.H. 'Bud' Cale, developer of the Midnite and Starline hybrid bees, was a strong advocate of large queens, and was frequently critical of queen producers who shipped queens that were smaller than acceptable. These small queens are often quickly superceded soon after introduction. In fact, he and I shared the opinion that 30 to 50% of all commercially reared queens were superceded by the end of their first season. A large part of that premature replacement occurrs during the first month after queen installation.

Since both the Starline and Midnite bees were hybrids, they both demonstrated hybrid vigor and some increase in queen size was a result of this breeding. But the queens initially selected for use to create these hybrids were large queens and they produced large queens, with huge egg-laying rates. (There are limits, as in all things. I must mention that the lines that produced the most brood were not always used in the hybrids due to the presence of other undesirable traits.)

In his book, *Beekeeping for Beginners* (Journal Printing Company for Dadant and Sons, 1964), Bud Cale shows a picture of three queens (page 96), and he evaluates them for size. The smallest was a very poor layer. This stubby type had an engorged abdomen just slightly longer than the forewing of the bee.

The second queen has forewings that cover all but two segments of the queen's abdomen (plus the tip). She is very typical of the queens I now see in many beekeepers' colonies.

The third queen's forewings failed to cover almost three abdominal segments, and those segments are much more swollen, so the length of the forewing was just a little less that half the length of the engorged abdomen. When I worked in Florida, beekeepers would call these "gator" queens because they had a long "tail" Such queens are the result of excellent queen rearing conditions, proper feeding by the nurse bees, and have the maximum number of ovarioles producing eggs at maximum rate.

My bias is that the queens produced under ideal swarming conditions set the size standard for queen quality. Think about it: the bees have produced the queens from larvae of their choice, fed them profusely, and never allowed them to become stressed. Conditions in the area should support good drone production, so mating should approach the ideal.

Further, queens produced under *emergency* conditions may be the poorest standard: the bees are limited to the larvae they have in the colony at the time of the queen's accidental death (or beekeeper removal). The conditions of cell production, feeding, stress elimination and drone supplies are unknown and subject to great variation.

Queen producers mimic swarming conditions by providing too many nurse bees rather than not enough. They provide a surplus of feed, combs of honey and pollen for ideal rearing conditions. One Florida queen producer claimed he put the starter boxes for queen cells in bed with him and his wife to keep them warm on really cold nights. He may have been teasing this young Yankee beekeeper, but I still remember the point he was making!

Handle with Care!

Once we have produced a large queen, we can easily lose the benefit of that queen if we allow her to become damaged by chilling, overheating, rough handling, exposure to pesticides, or some other horror. Here is a short list of hazards to avoid .

Rough-handling of queen cells

Queen cells should be handled like thin-shelled eggs. Always handle them from the cell base and be very careful not to damage the tip or sides of the queen cell. If you are using a plastic or wax cell cup, use a wood or plastic base and always, always handle the cell by the base. And don't drop or shake the cells because the larva may be dislodged from its hold on the royal jelly at the base. If you have ripe cells, any sharp movement may cause damage to the queen's body, especially to the wings. She has to fly to mate, remember?

When you install a queen cell into a nucleus colony, push *only* the cell base into the wax of a comb, making sure the tip is *never* touched or crushed by comb when you push them together

Rough treatment of queens

Always, always, always pick up a queen by her wings. If you are clipping and/or marking a queen, make

sure you hold her gently by the thorax, *not* the abdomen. With hundreds of egg-producing ovarioles in the abdomen, you can see how a careless pinch could cause serious damage. When clipping a queen (I support his practice to mark queens for identification purposes), make sure you clip *only* the wing, and not a stray leg that frequently pops up when you go to make the snip. The general rule for clipping is to clip the right forewing on even years (2004) and the left forewing on odd years (2003, 2005). A clipped wing will never grow back, so you will know that the queen in the hive is the one you installed there, and how old she is as well.

No extreme temperatures

Queens (in mailing cages) should not be subjected to cold or heat. Unfortunately, a recent study at Penn State University confirmed what I had always suspected; that the U.S. Postal Service routinely allows queen bees to become exposed to very high and very low temperatures. I use the short-sleeved shirt test. I you are comfortable in a short-sleeved shirt, the temperature is okay for the queen. If you reach for a jacket or to switch on the air conditioner, then it is too cold or too hot for the queens as well, although a queen may take a bit more heat than some humans. Remember, the brood nest is usually about 92°F.

Hydration

Queens are shipped with worker bees and a bit of queen candy, which contains some water. This is the sole water source of the queen and her attendants. A drop of water on the screen will provide additional water. The attendants will lap it up quickly if they need water Queen candy can be made too hard and too soft. One will dry out the queen, and the other sugar coat her. Neither are desirable.

Holding queens

Overnight In a cooler room without direct sunlight (to cause overheating). This keeps the queen and the attendants quieter. If they seem restless, offer water slowly, providing only what they need.

And provide *clean* water. Use a dropper if possible. Your finger has all manner of 'stuff' on it – everything from transmission fluid to hamburger grease.

Longer than overnight Queens should be removed from the shipping cage and installed into a queen bank. This is not always convenient or even possible. I had good luck holding queens (in their cages without attendants) by shaking a few nurse bees onto the cages inside a small box holding a piece of queen candy. If the bees were getting old (several days) dump them out and add new nurse bees. The box of queens was carried to the apiary and queens installed as needed. Remember to keep the box of queens in the cool shade and not to leave them in the truck or car on a hot day!

Controlled Introduction

The largest loss of queens is at the time of introduction. Why? Because most beekeepers are either in a hurry or they are careless. It is a point in the queen's life when she is still fragile: newly emerged, newly mated, and newly laying. The queen has arrived into your hands after several days of travel, exposure to heat and/or cold and who knows what. She has lost significant weight since she was removed from the mating nucleus. If present, the nurse bees in the shipping cage are likely to fight with the worker bees in the new colony. *For this reason, attendant bees should be removed before the queen is introduced.*

"The largest loss of queens is at the time of introduction, because most beekeepers are either in a hurry or they are careless."

I advise that queens be introduced into colonies but not allowed to escape from the cage too quickly. I like to restrict a queen in her cage for at least three to five days prior to her release. Why? This holding does several things. First, I believe that the queen scent (pheromones) of the new queen is dispersed throughout the colony by communal feeding. Second, the queen is re-fed and re-hydrated resulting in increased weight, increased pheromone production and restarting egg laying. She may actually start laying eggs in the cage, which is an indication of her status.

Unless you are sure you are experiencing a strong nectar flow, feed, feed, feed the colony where you are introducing the new queen. This enhances the food exchange process, engorges the workers *and* the queen, and helps duplicate conditions present during a nectar flow.

General Colony Manipulations

Rough handling and a careless disregard for the queen during colony inspection often leads to pinching and crushing of queens. Work carefully and slowly Keep handy an empty hive body shell or nuc box to place the frame holding the queen if you want to know where she is during your inspections. You don't want to put your foot though the comb holding the queen and accidentally kill her.

Always think about the queen. Once, while searching for a queen, I felt a bee crawling up the inside my pants leg. I instinctively went to pinch the bee when I felt its size. I shook the bee out of my work pants and it was the queen. This clipped queen was on a mission: purpose unknown. She returned to her hive without comment. BC

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MAKE THIS ENTRANCE TUNNEL

Lee Messersmith

Slatted racks (sometimes formerly called Bovard or Killion racks) have had these advantages claimed for them: 1 More room for the clustering of the bees, 2. swarming was reduced, 3. brood nest tended to remain closer to the lower entrance, 4. protection from wind and cold and rain, snow and dirt, 5. bees don't hang outside as much in hot weather, and 6. bees won't chew out a bee space at the bottom of the lower frame.

What I call tunnel entrances provide all of the above advantages, at least to some degree, but at much lower cost and ease of assembly. Over the years tunnel entrances have provided much greater protection from mice, cold, wind, rain, snow and dirt and no bee created bee space (cluster space?) at the bottom of brood frames. And, the brood nest is more prone to remain down near the lower entrance. Additional benefits include using the ¾-inch rim bottom boards all year; entrances can be easily closed down for cold weather by slipping in a length of lath. "Ladders" are provided for easier assent by a returning forager With the need for *Varroa* mite detection for integrated pest management, tunnel entrances can be removed and screens and sticky sheets can be inserted easily for the time desired for testing the degree of mite infestation.

Make a few and try them, you and your bees will like them. Construction is easy.

Material list: 1-3/8" thick by 3 or 4 inches wide by 14 and 3/8 inch + or – long piece of easily worked wood or other available material. Most of mine were made of left over 3/8-inch thick composition house siding which will absorb water and expand eventually unless painted and I prefer not to paint surfaces that will be much used by bees. Three 6-inch, plus or minus, pieces of 3/8-inch thick lath or similar scrap wood, and six small nails. BC

Lee Messersmith is an energetic 80-year-old semi-retired commercial beekeeper from Hemingford, NE.

USING BEES FOR APITHERAPY? MAKE OR BUY THIS BEE HOTEL

Dick Johnson

This unique screened bee box has been popular for keeping hundreds of bees alive and healthy for up to two or three months. Therapists who teach apitherapy and people who use honey bee sting therapy have found the BEE HOTEL a convenient way to store 400 to 500 bees. Typically bees are kept in a glass jar but they usually die in about a week.

In the hotel, bees are fed 2:1 sugar syrup in a Boardman-like fashion using a mayonnaise jar atop of the box. Paper towels line the removable bottom tray and are changed as they become soiled to maintain sanitation. Plenty of ventilation is provided by an entire screened side of the 11" x 10" x 7" box. The cubic space apparently provides room for the bees to defecate while flying in the box and the feces are absorbed by the towel helping to keep the box clean.

Winter bees appear to survive better if kept cool (55° to 65°F) as this matches more closely their environment and metabolism during the Winter cluster. Bees appear to be "content" when kept clean, cool and dark and often will cluster in an upper corner and even may build a little wax comb to cling to. Waterproof spar varnish inside and out allows the entire box to be rinsed in hot water to keep it clean.

Setting Up Box

1. Mix the sugar syrup for feeding – two cups sugar to one cup water Heat to dissolve – cool before feeding.
2. Use a small mason jar or mayonnaise jar that fits the thread on the white lid with pin holes.
3. Open box and remove tray. Use three to four layers of paper towel to line bottom of tray. A few drops of honey under towels helps to keep them in place.
4. Close up side hole with spare jar lid and tape it closed if loose.
5. Introduce 400 to 500 bees into access hole.
6. Use of clear plastic bag can make handling of bees easier Bag may be inflated with air, closed tightly and chilled in fridge (not freezer!) for five minutes to calm down the bees. (See footnote.)
7. After bees are installed locate box in a quite room and invert the jar of sugar syrup over top hole.
8. Rate of syrup feeding is a critical factor for survival of bees! It is important to watch syrup flow and feeding behavior of the bees.
9. Syrup will drip out on to the paper towels at first when you install jar This is OK but it should not drip continuously.
10. Proper balance is reached when the paper under feeder is moist with occasional dripping but not flooded, and bees should be feeding by clinging to underside of feeder
11. If too much drips – add more sugar If none drips and bees not feeding, add more water to syrup.
12. Cover with towel to keep them in the dark and leave them alone till you need them.
13. Removal of bees can be done through top or side access hole by placing a jar over hole and rubbing it to make noise. Bees are attracted to light and heat. Use a flashlight or warm the jar to help move bees to jar
14. No guarantee on length of bee survival – depends on age of bees, sanitation – clean and replace towels, and proper feeding. BC

Footnote: *Send for your free 11-page information on use and care of bees including suggested method for removing bees from a hive during Winter. Bee Hotel may be ordered at $42 plus $8 for shipping and handling from – Dick Johnson, 850 Mill Street, Windham, NY 12496, 518.734.4629.*

Dick Johnson is a hobby beekeeper and lecturer from Windham, NY

FOLLOWER BOARDS REVISITED

Serge LeBesque

Follower Boards serve a variety of functions in your colonies.

Most of the beekeeper's paraphernalia is not very complex, and when it comes to simplicity of construction, it is hard to beat the follower board. But since it is rarely mentioned in beekeeping literature, I suspect that few beekeepers realize how much they and their bees can benefit from using it. Hopefully, the following thoughts will bring you some fresh ideas about its potential uses. Personally, what I enjoy the most about the follower board is the flexibility it brings to the management of the brood nests. I have also become convinced that beekeepers can position follower boards in their beehives to effectively reduce the moisture level around the winter clusters of their colonies. Intrigued? Read on.

What is a follower board?

It is a plate that has been cut to the dimensions of the frames you are using in your hives. It can be made out of plywood, lumber or even plastic. In fact, I have even heard of beekeepers who have made their boards out of sheet metal, but I would advise against this practice because the heat conductivity of such materials must be detrimental to the bees.

Most of the follower boards I have made and use are cut from ¾"-thick plywood. Very often, they are pieces of scrap material that are reprieved from their final ride to the dump. The accompanying sketch shows the dimensions and simplicity of construction of these follower boards. Even simpler are the rectangular pieces of lumber with two nails that fulfill the function of shoulders or lugs. Just don't use a material that is much thinner than three quarters of an inch thick, or the bees might build a comb under a frame that would be located above the gap which will separate the board from the side of the hive. Unlike hive frames, these simple devices are tough. You can always have a few of them bouncing around in your pick-up truck without worrying about them.

How can we use follower boards?

Up until two years ago, I was using follower boards mainly when I made divides, and occasionally after hiving small swarms in a hive body. Just like most beekeepers, I guess... I already liked the flexibility they provided: A colony of bees could be started with a few frames in a standard hive body, and gradually be given additional frames as its population and its need for space increased. This tailoring of the brood nest helps the bees of a small, developing colony control the temperature around the brood. When the hive has gained sufficient strength, the follower board is removed and the complement of frames is given to the bees. So there is no need to carry boxes of different sizes, and the hive manipulation to transfer the contents of a small nuc box into a larger super is eliminated. Not a big deal, of course, yet the time and effort saved are nevertheless appreciated.

But over the last two seasons, follower boards have become a more integral part of the techniques I use in managing my colonies. Indeed, instead of removing the follower board when a colony is about to fill its hive body, I now intentionally leave one or two of these boards in the brood chambers of my hives. The boards are typically left in the frame positions #1 and #10, which are adjoining the sidewalls of the hive bodies.

Once you have introduced these boards into the brood chambers of your hives, you cannot help but notice how much easier it is to inspect your colonies of bees. Because a board is thinner than a typical frame, the gap that separates it from the side of the box is substantially wider than if a frame had been put in place of the board. The bees seldom visit in large numbers the ¾"- to one inch-wide gap, and they do not build comb in it. So, unlike a first frame that may be locked in place by propolis and bridge comb, it is very easy to slide the follower board away from the adjoining frame when you intend to inspect a brood chamber The risk of crushing bees or, worse, the queen is virtually nonexistent. The few bees that are on the board are quickly returned to their hive if that is necessary. In fact, if you lean the board against the hive, near its entrance, the bees will leave it and re-enter the hive on their own, instead of clinging to it like they would a frame. Once you have done this, you can proceed with your inspection, knowing that the queen is not going to be lost in the grass.

Beyond this little bit of peace of mind, there are several benefits in using follower boards, which I

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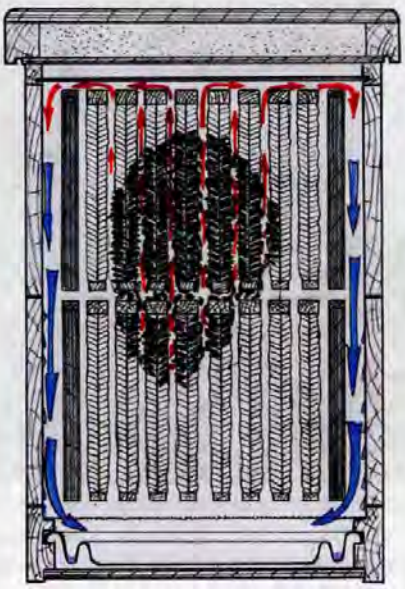
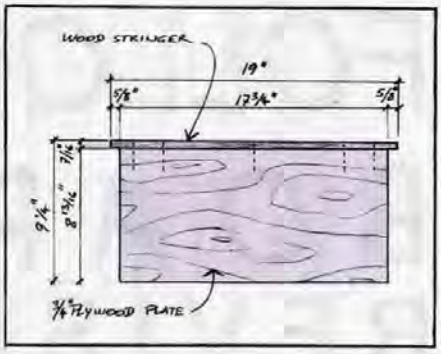


Air currents in a colony with follower boards in positions one and 10.

have come to appreciate. **In Winter**, I use two boards in each hive body of the brood chambers, with eight frames in between them. The gaps that are left open between the sidewalls and the follower boards are kept approximately equal width. Warm, moist air rises from the bee cluster and, in a typical hive arrangement, most of that moisture condenses on the "ceiling" when the outside temperature is cold. Cold water then drips down randomly onto the bees and the frames, which, in time, can become covered with all sorts of fungi and algae. Because the sides of the hive are cold then, the air that is next to them becomes denser and sinks to the bottom of the hive. But when follower boards have been installed in position #1 and #10 the center of the hive is significantly insulated from the colder sides. This difference of temperature encourages a movement of convection that drives the moisture produced by the bees into the gaps that separate the follower boards from the sides of the hive, and away from the cluster Most of the water vapor condenses against the sides of the hives and does not shower the bees. This is particularly noticeable if an insulated top is used to cover the hive. If you use removable trays under your screened hive floors, you can definitely see the lines of condensed water on the trays. Thus the winter cluster is kept drier, which is desirable, as many bee health problems arise from damp conditions in the hive. Furthermore, since the clustered bees move upwards more readily than laterally, they can utilize their stores more efficiently in this narrower eight-frame configuration than in a wider ten-frame hive body where the outer frames often end up neglected. In my mild California climate, sixteen deep frames reasonably stocked are sufficient to carry a colony through the Winters. In harsher conditions, I would definitely consider wintering my colonies in three hive bodies, each containing eight frames and two follower boards. Such a vertical configuration of the hive would suit the bees, and would promote even further the internal movement of convection that was described earlier

As Spring comes and the bee population increases, beekeepers are busy with many tasks, among them hive manipulations to prevent swarming. Here again, follower boards to the rescue! They provide a degree of flexibility in the horizontal management of the frames of the brood nest. When the queen needs more egg-laying space, it takes very little time to remove one or both of the follower boards and to introduce a frame of drawn comb next to the brood nest. This immediately relieves some of the congestion the colony might have been experiencing.

During the hot season, I prefer to maintain or re-introduce follower boards in the #10 spot on the west side of the brood chambers, as this seems to reduce the effect of the afternoon sun beating on that



side of the hives.

Towards the end of the Summer or in the Fall, I insert follower boards in the hives again, in preparation for Winter This is done while removing old or misshapen frames that have to be culled... another healthy routine that is too often neglected.

Some of you may be objecting: "Hey, a follower board occupies the place of a frame that could be used by the bees to raise brood." This is not necessarily the case. Indeed, the outer frames of a brood chamber are more often than not filled with honey and nectar, if they are not altogether neglected by the bees, which happens very often, particularly in Winter. But it appears that queens are less reluctant to lay eggs in the frames adjoining a follower board than in frames adjoining the sidewalls of a hive. Would this be because these boards reduce the fluctuations of temperature inside the hive more effectively than the sides alone? Or could it be that bee clusters can tend to eight frames set side by side without being excessively stretched? Regardless of the reason, one can also mention that there are commercial beekeepers as well as hobbyists who keep their bees in eight-frame equipment, and they are quite satisfied with the productivity of their colonies.

I have made some space in the brood chambers of my colonies for those sometimes-called dummy boards, and I consider them well worth the temporary sacrifice of a frame or two per hive body. Actually I think that the easier hive manipulations and the healthier bees more than make up for those few missing frames. BC

Serge LeBesque is a hobby beekeeper from Glen Allen, California.

James E Tew

Bee Culture's Beeyard

Comb Honey

For the past 14 years, just before Christmas, my lab conducts a honey sale. It started small, but has grown to be a laborsome, but profitable annual event. A discussion of what we sell and how we sell it could be a discussion for another time, but just now, I want to tell you about the comb honey products we sell and how the our current generation of customers react to buying and eating comb honey.

We just extract our honey

Extracting honey is the common way to go. In fact, my Dad and I were phone-talking just last night about an old extractor he has for sale. This thing was actually more of an antique than a true piece of processing equipment, but Dad said all the proper things. "Everyone wants an extractor " Why wouldn't they? If we keep bees long enough, we need – sooner or later – to use an extractor to process our crop. He has had several offers to buy the unit – not for its antique value – but to use for extracting honey. For many years I used a two-frame extractor made by the Wapakoneta Churn Company in Ohio. I estimate it to be about 80 years old. It was a hand-cranked, cast iron gear drive unit with a soldered galvanized tank. Though I did finally retire it, it was impossible to wear it out. Though it is currently sitting in storage, it is still ready to extract some future honey crop.

I suppose beekeepers want to extract their crops because: (1) we need to use our extractors in order to justify buying them; (2) extracted honey allows us to reuse comb, and (3) extracted honey stores better for the long term. So liquid honey is common while comb honey, in any form, has become more and more of a rarity. We have lost many of our diehard comb honey consumers. I've found that we must now give a short course on consuming comb honey to most people who buy it. They ask similar questions before buying comb honey.

Cut comb honey in a plastic box.

Can you eat the wax?

"Can you eat the comb?" is the most common question we get. I need you to help me with the wording in my answer. Frequently within my university community, the comb honey purchaser is an international student using English as a second language. I tell them that eating wax comb is perfectly safe. "Does it have food value?" I respond, "No, our bodies just void it." That response rarely translates so I try, "We just pass it." *"Pass it??"* with a quizzical look, is the common response. I respond, "If you don't want to swallow the wax, spit it out." That always sounds crude. Uh, uh, you can just take it from your mouth and discard it. By now this has become a delicate conversation and by default, the average customer will have begun to understand what I am trying to say without me actually having to say it. Ironically, I hope you, too, are grasping my meaning. It's no easier to write than it is to say it.

The bottom line? Swallow the wax if you want or spit it out if you want. It's your call. It won't hurt you to swallow it, but it will do you no nutritional good either[1].

How do I eat it?

"How do I eat comb honey?" is an easier but common question. You use it the same way as you

[1] Does anyone know? I use beeswax all the time to lubricate drawer runners and to lubricate screws before driving them into wood. For consumers suffering from digestive problems, would beeswax serve as roughage? Would the normal amount of wax eaten be enough to make a difference? I don't know. Do you?

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BEEYARD ... Cont. From Pg. 35

would use any jam or peanut butter spread. If the comb honey was made correctly, the foundation (called the "midrib" in the completed comb) is undetectable to your senses of taste and feel.

I suppose there are a few points that you should clearly know that I don't ever recall reading in the literature.

- Some of the wax from the comb will stick to your teeth. Nothing is wrong with that, but sometimes you will need to be clever to get the wax removed.
- Honestly, after you cut a few bites off, the remaining piece of comb can get to be pretty ratty looking. My only suggestion? Only offer new comb honey to your guests.

Why would I want comb honey over liquid honey?

Both are good but with differences. Comb honey is unmodified, in any way, from the way the bees made it. In years past, it was a guarantee that it was pure and unadulterated. Additionally, the extracting process aerates the honey so you lose some of the delicate aroma of honey stored in the comb.

Bottom line? Comb honey has *all* of the flavor and aroma possible, while extracted honey has lost some of these characteristics. It is a truly natural, unprocessed product.

Chunk honey or comb and liquid honey mixed.

LATE BREAKING NEWS!
While writing this article, I got the call I've been waiting for the past nine months. My wife and I are first-time grandparents – a granddaughter! This will always be a special article for me. I wanted you to know. Now, after I have taken a short break, back to my current article, already in progress.

How long will it keep?

It is edible indefinitely, but the honey contained in the comb will probably granulate within a few months. While you can still eat it granulated, without concern, it will be a bit gritty. Since the comb will soften, even melt, if heated, it's probably a good idea to eat it within a few months. You can't re-liquefy honey in comb honey.

Comb honey foundation

Comb honey purists would not have used any foundation at all, but the common challenge would have been to keep the comb oriented correctly within the comb honey device. An alternative would have been to use just a small strip of foundation, hardly ½" wide as a starter strip. Another old procedure that probably worked less well was to use a thick bead of melted beeswax as a starter bead.

However, for many years, bee supply companies manufactured comb honey foundation. It was so thin that while holding a light behind the foundation, a newspaper could be read through the foundation. It is really thin. This foundation has multiple names such as comb honey foundation or thin surplus foundation. It's still available from bee supply companies.

In a strict sense, any beeswax foundation is edible, but put in a few wires, plastic centers or even plastic foundation and the comb honey consumer is going to get bogged down trying to chew through that. Obviously, honey intended to be consumed in the comb should have thin, easily edible foundation.

TYPES OF COMB HONEY

Bulk Comb Honey

Just for the sake of being complete, I should mention "bulk frame" honey In years past, beekeepers would simply sell the entire frame containing the comb honey Consumers could return the frame to the beekeeper or just toss it. Having a small clear window, there were even cardboard boxes for shipping the frame. I haven't seen any of this – either the boxes or the frames of honey for sale – in many years, but at one time, they did exist.

Section Comb Honey

For the first time in my life, I will write this, "Just as with bulk comb honey, basswood section comb honey is essentially gone from our market." True, a few people still produce it and, true, some of the manufacturing companies still make a few of the components, but basswood comb honey sections are nearly antiquated. For those recently coming into beekeeping, section comb honey was produced in specialized comb honey equipment. Thin, clear basswood was folded along pre-cut creases, to form a square into which bees (reluctantly) put comb honey. There were all kinds of cardboard containers in which to put the finished product and there were several sizes of basswood containers. Alas, all of this equipment is mostly gone. Ironically, the comb honey supers were exactly half the depth of a deep super so many of these comb honey supers found a second life when two section supers were stapled together and used as a deep hive body or deep super While these old components are common in the used equipment market, few people still use them to produce comb honey.

Long-gone styles of comb honey

One of the styles of comb honey that is long gone is the "Pullman" section or very small sections of honey, in tiny wooden boxes (about 1 ½" square), that were given out with meals on Pullman train cars. Deep frames were filled with these small boxes and bees were forced to put comb honey in them. The bees must have absolutely hated these devices. Essentially, these were the predecessors to the plastic jelly and honey packets that we get with meals today I have only seen a few of these small sections. They are long gone from our comb honey repertoire. Other such unique styles of comb honey are gone, too.

A common problem with all forms of comb honey that was what

A modern "round" section of comb honey.

to do with unfinished sections. Few people were willing to pay much for partially filled sections. Other styles of comb honey got around this problem.

Cut Comb Honey

Cut comb honey is probably the most common form of comb honey still on the market. Regular wooden frames are outfitted with section foundation and bees fill the frame. Using a sharp knife, or other cutting contraptions available from bee supply companies, measured comb sections are cut from the frame. Special plastic boxes are available for protecting the fragile comb, but frequently, the piece of cut comb honey is simply wrapped in plastic and sold that way.

Chunk honey

Even with cut comb honey techniques, small pieces of "scrap" comb honey remained after all the perfect sections were cut. Particularly in the southeastern U.S., these small pieces of honey comb were put into cylindrical jars and all remaining space in the jar was filled with extracted honey. This style of liquid and comb honey mix is called chunk honey and is still common, and usually commands a handsome price.

Plastic sections

Though we no longer produce much comb honey in basswood boxes, we do have new devices for producing comb sections. Specialized supers enticing bees to put comb honey in plastic sections are readily available for producers. These devices have reintroduced the old problems of what to do with unfinished sections, but the market for comb honey in these devices is normally quite good. Watch out. The plastic covers are easily scratched and small pieces of wax readily stick to the plastic covers.

SOME PERSONAL COMMENTS

Lower quality comb honey products

I suspect this was always the case, but I very commonly see marginal (marginal based on old comb honey production standards) comb honey sections for sale. As our ability to produce comb honey has waned and as our comb honey-consuming market has changed, our standards of proper comb honey have been lowered. There is nothing wrong with the product other than appearance. I know, I know, there are still some of you producing an admirable product, but many of us are producing and selling comb honey sections that would not have been impressive 50 years ago.

Comb honey is generally messy

It's true, a section of partially eaten comb honey is messy looking. While new comb honey dishes are still available and antique covered comb honey dishes are highly collectible, honey in these dishes still looks somewhat unappealing to me. Again, absolutely nothing is wrong with the product other than appearance.

So why produce comb honey?

The market is still very good for comb honey. Your processing equipment costs are reduced to nothing. Comb honey can truly be touted as a natural product and it's satisfying to produce. Complete information on comb production is still readily available in nearly all of the common bee texts. If you haven't already, you should give it a try. BC

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MEETING PLANNING

Ann Harman

In the January issue we looked at making a Time Line for successful planning for your beekeepers' meeting. We covered setting the date, finding the meeting place and organizing the food, This month we will tackle the program and the speakers. I told you where to put those in your Time Line – right after setting the date and the meeting place.

The time of year may well help you design an interesting program. For example, during wintry weather or the suffocating heat of summer the time will be spent inside. However, during the nicer weather of spring or autumn, some outdoor events could be scheduled. A very appropriate time for some outdoor activity is the right-after-lunch period.

It is best never to schedule a slide presentation right after lunch. The lights go out. Everyone nods off. The pauses in the speech are punctuated by snores. Not a nice sound for your speaker to hear Instead, schedule some workshops with smaller groups. Hands-on are by far the best. Then if you wish to have more presentations they could occur around 2:30. Included in workshops can be various contests, such as smoker lighting, nailing together a hive body in the shortest time, catching bees at the entrance, and other games.

If your association is composed of really new beginners and those who have kept bees for many years, dividing up the group after lunch would provide an opportunity for two types of workshops. Perhaps one on hive inspection for the beginners and one on queen rearing for the advanced. A small group allows more beekeeper participation.

Let's get to work on the program and timing for the day. Paper and pencil, again. Will you start the day off with coffee and doughnuts? Even if you had advance registration, quite a few beekeepers seem to prefer registering at the meeting. A half-hour, or more if you did not use advance registration, gives the people time to arrive, meet friends, make out name badges (you do have those, right?) while enjoying a cup of coffee.

What time to start registration? What time to start the meeting? Time somewhat depends on the number of beekeepers expected and the distance they might travel. Experience with your group will give you the answers to those questions.

Now that you have the starting time, mark in lunch. Lunch needs a minimum of one hour and a maximum of one and a half hours. The time allotted will depend on the number of people you expect, how they will be served, and if the meal is in a separate part of the venue. Allow more time, up to the hour and a half, if attendees have to walk to another building.

See? You have the total time for the morning program. Divide it approximately in half and you will have the time for a midmorning break. The length of time for the break depends on the number of people attending. Sometimes 20 minutes is enough, 30 minutes is common. Do not give too much time or some will wander off, return late and cause confusion while they search out their old seats.

You are ready to allot the time for the morning presentations. Forty-five minutes with the last five, or perhaps 10, minutes for questions is a standard for a presentation. Welcoming speeches at the beginning of the program should be short, even if the speaker is somebody important. The beekeepers want to get down to business.

Stop trying to cram in as many speakers as possible! Cramming a meeting full to the brim with too many speakers wedged into the time frame leads to disaster Your meeting is supposed to be a success, and fun!

Decide on the time to adjourn. You already know the time lunch is finished. Then divide the afternoon in half, as you did the morning, and you have the approximate time for the afternoon break. If you are having workshops in the afternoon and the beekeepers are moving from inside to outside, moving from room to room, you have a choice on timing. You can build in five or 10 minutes "transportation" time or you can instruct your speakers to stop a few minutes early to allow this moving-about time. The latter is a bit chancy, especially for a presenter who can't keep good track of time.

While we are on the subject of keeping track of time, remember these words. **KEEP THE MEETING ON ITS PRINTED TIME SCHEDULE.** Write this on your forehead so you see it every morning until the meeting. If you do not have the courage to do that, have someone who does take care of starting and stopping speakers.

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MEETING ... Cont. From Pg. 39

It is possible to be diplomatic and fierce at the same time. For workshop sessions it is a bit more difficult to keep everything moving. Perhaps several "timekeepers" can rove around. But you must also emphasize to the workshop presenters that they have a responsibility to keep the afternoon flowing.

I always wonder why nobody thinks of a clever way to get the audience back into their seats after a break. Someone usually walks around shouting. That approach has no class. Does anyone in your association play the trumpet? How about a very short fanfare. Maybe you could ring a large cowbell. Blinking the lights does work. Use your imagination.

Now you can fill in the time slots with speakers and topics. You are still flexible here since you have not asked anyone to present anything yet. This is a good time to be in contact with neighboring states' beekeeping associations. One of their members might have given a well-received slide presentation or a workshop. Bee science researchers and their graduate students from universities and scientists from bee labs are good attraction. Certainly members of your own association can be used. However, nothing says you have to have a speaker who is tiresome and boring, disorganized and mumbling. Your audience will remember that one for a long time.

Take a piece of paper Write on it the name of your association, the date of the meeting, the place – for the moment the town is more important than the actual building, the topic(s) and time (morning, afternoon) for the speaker, length of time for presentation, the compensation for the speaker (room and board, transportation, honorarium). You will need to ask the speaker about motel/hotel accommodation – one night, two nights? You are ready to telephone the prospective speakers. The notes on the piece of paper are so that you do not forget a vital piece of information. Once the speaker says "yes" ask for mailing address and also e-mail. Hang up, give three cheers, and call the next speaker

Once you have those "yeses" sit down and compose the confirmation letter Take note of the information the confirmation letter should have: name of your association, date of meeting, the town and name of venue of the meeting, time(s) of presentation, compensation. If the speaker is flying in and you are arranging transportation you do not have to think about directions to the venue. However, if the speaker is making the journey, detailed directions are a must!

Please check out the directions. Write them down. Get some responsible person to be a navigator, hand him/her your directions and start driving. It would be great to have a navigator who has no clue where the meeting will be. Your navigator will read off the directions and you will follow them exactly, even if you end up in the parking lot of a mall. Now you know you did not count the right number of traffic lights, got the wrong exit off the expressway, and put down "right turn" when you meant "left."

We are still working on the confirmation letter You need to ask the speaker for the title(s) of the presentations, if five minutes for questions is reasonable, and what sort of equipment is needed – Power Point (if not available at the venue, the speaker must provide the necessary equipment), slide projector, overhead projector, table(s), and anything special. You must ask the speaker for introduction information.

If motel/hotel accommodations are needed you need to make those before sending the confirmation letter This is so you can put that information into your letter Your speaker needs to know the name of the motel/hotel, its address, phone number, confirmation number and directions. Some motels/hotels have a small brochure giving information and directions. Send one of these with your confirmation letter Don't skimp on directions.

On your Time Line, closer to the meeting date, put down to check with all presenters to make sure all is well and that they have not lost the letter with the date, place and directions. Any changes to program can still be made without making a mess of the whole day.

It is time to mention compensation for your speakers. Mileage, if driving, should always be given, using the government rate. Compensation for room and meals is obvious. Airfare, of course. Some speakers have a set honorarium which you discovered in your first phone call. Otherwise you will have to offer something. Remember, I said you have to work closely with the association treasurer to know what funds are available. Small, local associations typically have a smaller treasury than large state ones. Speakers understand that. But an honorarium should reflect your thanks for the time and effort spent. Workshop presenters should not be ignored. Sometimes these people are lugging great boxes of equipment, put together over the course of several days, printing up handouts, and toting all the stuff home again. Don't they deserve a good compensation for all that effort? Sure. Make certain they get it. Don't be cheap with honorariums – your association will suffer from lack of willing speakers in the future if you are.

It will also be important to write a letter of thanks to each speaker It does not have to be a long letter but it should reflect that your association appreciated the information presented. Some associations give the speaker a gift – which is a very nice touch. Gifts can be something made by an association member, such as candles, beeswax ornaments, hand creams, handmade soaps or it can be something with a bee motif (check the equipment catalogs). For a speaker from a long distance away a jar of local honey is appropriate. Put this information on your Time Line close to the meeting date but with enough time to assemble any gifts or honey.

If your speaker is from another

area and perhaps known to only a few, introduce him/her to the association officers and to others. It is the polite thing to do and makes the speaker feel among friends.

Let's skip to the meeting date on your Time Line for a few minutes. Ask your speakers with slides and especially Power Point to arrive at the same time registration begins, or earlier if possible. You have already selected someone in your association to be the A/V person of the meeting. This is a big responsibility since the smooth flow of the meeting depends on the A/V person as much as the person monitoring time.

The A/V person is going to set up the audio equipment, the slide projector and coordinate the Power Point. All the screams of the audio system, the fuzzy focus of the slide projector and the reluctance of the Power Point to work MUST be taken care of well before the start of the meeting. I am sure we have all sat through earsplitting audio system noise, slide projector burnt-out bulbs (a spare is a necessity) and interminable fiddling with computers and projectors. There is no excuse for any problems with A/V equipment unless you are in the middle of an earthquake. If the A/V person can visit the venue the day before the meeting, all the better, but sometimes that is not possible. At the end of the meeting *please* publicly thank the A/V person for doing a good job.

The speakers are the foundation of a good meeting. Treat them well and they will not only be happy to return one day but also will give your association a good reputation among their colleagues.

Next month we are back to the Time Line with promotion and miscellaneous details. BC

Ann Harman is planning a meeting right now from her home in Flint Hill, VA.

Sometimes It Bees That Way

Jimmy Reed

Ever so often a fellow stumbles into calamities worse than he could ever imagine. Consider mythological Actaeon. He and his dogs were hunting when he spied the lovely Artemis bathing in a stream. Red-blooded god Actaeon couldn't stop staring. Suddenly Artemis saw him, and residing higher on Mount Olympus than he, batted her eyes, shrieked Greek "abracadabra," turned him into a deer, and his hounds made hash of him.

My honey bees got me in a fix about as bad as Acteon's. When I farmed, I sold honey to finance my fishing addiction. A friend asked me to teach his son Ken the apiculture trade, but I knew the boy would never keep bees; he was too normal.

Whenever I removed a hive's lid and the hum shifted upward an octave, his hair stood on end.

As we suited up that day, the phone rang.

"J-i-i-i-i-my, this is Louise Crenshaw," a gravelly voice growled. "Come git this swarm outta my peach tree."

"Yessum," I said. Nobody disobeyed Miss Louise. Her baleful visage glowed lobster red, and her torso rivaled the Incredible Hulk's.

When Ken and I arrived, kids thronged the yard, eager to see a crazy man fool with that huge ball of bees. Recognizing an opportunity to tell youngsters about one of Nature's marvels – an insect society that works far better than human society, I held forth pedagogically.

"Bees swarm when a newborn queen threatens the old queen," I orated. "Two female bees are no more willing to share first place than two female people are, and they pipe until one outpipes the other. The loser swarms off with a bunch of workers who gorge themselves on honey to start the new hive, and being so full, they can't sting. So, never fear swarms."

They were impressed, although no one edged closer to the swarm. "On the off-chance you upset them, remember, never make loud noises or sudden movements around bees," I droned on, "and if you get stung, never swat – brush, so you won't squish venom into the sting.

"Now, when I lower this swarm into the box, Ken, my assistant, will clip the branch. I'll close the box and soon the bees will start making honey." As bees coated my arm, the audience's hum sounded spookily similar to annoyed bee hum.

Ken wasn't cut out for this. Lard pale, he clamped the pruning shears above my hand. When he exerted pressure, instead of clipping the branch, his right and left hands instantly swapped places, swooshing the branch upward. It was like a total eclipse of the sun as a roaring, black cloud of bees went from docile to deadly.

"D-d-don't move suddenly or shout!" I screamed as I streaked past Ken, swatting instead of brushing. The kids exploded like minnows beset upon by a garfish.

"Thirty-one, thirty-two thirty-eight ," Mama counted, daubing alcohol on welts covering my polka-dottish body.

And Ken, bless his normal self I never saw him again. BC

[This story was originally published as a "Voice of the Delta" column in the April 2001 issue of Cotton Farming Magazine.]

Beginners!

YOU CAN KEEP BEES IN TOWN!

Bob Bober

With a little planning an apiary can be installed and maintained in almost any suburban environment. A few simple guidelines are illustrated in this article to encourage those who might still be hesitating.

Introduction

I started keeping bees about five years ago. I live in a typical suburban setting of half-acre lots and yards abutting each other I had some serious concerns about how my neighbors would react to my introducing bees to the neighborhood. With a little planning and fore thought it has worked out very well. I'd like to share my experience with you, to encourage anyone in the planning stage to move forward.

Location

I chose a location that was in the corner of my lot. I did this primarily for my own convenience. I did not know how close I could come to the hive on a routine basis, such as mowing the lawn. Locating the hives in the corner meant they were out of my way (and I was out of theirs). I wanted them to face south to maximize winter warming. I would have liked early morning sun to wake them and get them gathering as early as possible, but neighbor's trees made this impossible.

The top photo shows an overall view of the hive location. The photo was taken about 2 pm in early October. So you can see there is good solar exposure. Notice the hive is between a shed (on left) and a stand of pine trees on the right. There is a six foot high stockade fence about six feet behind the hives. The stockade fence shields the neighbor's pool and patio. The bees have to get up at least six feet when they fly north and that has kept the bees completely out of the neighboring yard. I have a bird bath about 50 ft away that is refreshed every morning (timer). So the bees have shown no inclination to bother the neighbor's pool. They seem to prefer clean fresh water to chlorinated pool water There is a mound of dirt and rock in front of the hives. This mound is the remnant of a play area for my two boys (now adults on their own). I chopped down the heavy growth and planted a fast growing ground cover (vinca). It has really taken hold and does not grow very tall. As a result, the bees have a clear flight path South.

Base Construction

I started with one hive (more about that later), but planned for two. I began with a little excavation. I scraped the area clear of rocks and weeds and laid down patio blocks (8" x 16" x 1") for a solid, weed free, base. I used 24 blocks for an area of 48 inches deep by 64 inches wide. I sloped the surface about one inch down at the front to insure good drainage out of the hives. A few weeds seed themselves between the cracks, but they are easily pulled up. This was much easier than pouring concrete. Next I set four concrete building blocks down (8" x 8" x 16"). On top of the blocks I set two five foot long pressure treated 2 X 6's. I now had a surface that was up off the ground, was bug and rot resistant and was high enough to minimize back strain when lifting brood chambers. The photos show the stack up of concrete building blocks and 2 X 6's.

Hive Construction

I chose to use sloping landing boards under the bottom board. I made these out of cypress for maximum rot resistance. Next comes the bottom board, and then two brood chambers, one brown and one white. My first hive I gave several coats of linseed oil and left it natural. It looked great the first year but now looks pretty scruffy. I have now settled on an off white for all my hives. I reasoned that I would rather have the light color for summer cooling, rather than a dark color for winter heat absorption. Much of the winter is dark due to long nights and cloudy days so I didn't think there would really be much heat value. I stenciled the name of my son's farm on the sides of all hive bodies. I have ten more hives on his farm in western Massachusetts, for pollination. I have added wide handles on the ends of all hive bodies. I found that I had trouble holding onto 60 lb spring brood chambers with just the routed grooves. They are ¾" in stock cut at 30 degrees on the table saw and attached with four screws.

The photo that shows a front view of the hives also shows (in the background left) the frame I welded up with ½ inch square stock. It stands about 23 inch high. When I dismantled a hive, I was setting the outer cover on the ground and then placing the brood chambers on that. We do our inspection there, away from the hive location. It seems to antagonize the bees less. A 60 lb hive was difficult to lift back up from ground level for reassembly, so I now set them on this frame. It saves my back, and lets me work more.

The photo that shows the rear view of the hives has the hive on the left with an additional layer above the bottom board. It is a slatted bottom board that is supposed to reduce drafts in the front of the hive and encourage more complete use of the frames for brood. I am not sure if it works or not. I usually forget to compare the hives for this particular circumstance. Also note

the bricks on top of each outer cover. Some of my hives on the farm are in an open area and last Winter we found one of the covers blown off. I don't know how long it was off, but that was one of the hives that did not make it through the Winter We weight all hive covers now.

Legalities

I inquired at the Town Clerk's office about the laws governing beehives in my town. They told me they didn't know of any laws, but suggested I contact the animal control officer I did and she didn't know about any laws either I did contact the state and learned that Massachusetts had county bee inspectors. I contacted him and he came by for several years to inspect my hive. Unfortunately, funding has run out and that service is no longer available.

Hive Acquisition

I mentioned earlier that I started with one hive. My wife and I attended a Bee School (you really should do this before you begin) in the Winter of 1998-1999 at the Worcester County Beekeepers Association. It was an excellent introduction to beekeeping for two rookies. It was one night a week for seven weeks and cost a grand total of $25. This included attendance the next year for free. We were encouraged to do so and I think we learned more that second year. All aspects of beekeeping were covered. The school also included a Saturday afternoon hive opening at a member's home. The last night was a summary of the school and a raffle. There were queens and hive tools and lots of other donated goodies. The very last item raffled was a complete hive. I won the hive. During the seven weeks I still had reservations about actually buying bees and getting stung. With the hive at home I really had no excuse. I ordered a nuc and we were into beekeeping all the way.

Last Spring we had a swarm from our hive and captured that swarm from a shrub branch 12 inches off the ground. We filled that second spot on the hive stand. They prospered and multiplied during the Summer Last winter was a particularly difficult one and we lost one hive. We added a third brood chamber to the survivor and after a month took it off and added a queen. We actually moved the two original brood chambers to position two and left the new brood chamber at position one. Thus we gained most of the returning field bees for our new hive. Both hives did very well this Summer and the bees are very gentle.

Critters

I have had some skunks in the yard regularly. They dig in the lawn looking for grubs. I don't mind that. They also are known to eat bees. I do mind that. I put chicken wire on the patio blocks in front of the hive to discourage the skunks. I also have trapped and disposed of several skunks with a HavAHeart trap.

Insurance

Every Fall I give a bottle of honey to my abutters. They seem to appreciate and use it. It is very inexpensive insurance.

Conclusion

I hope I have given new beekeepers some encouragement to make the plunge and set up that first hive. The rewards of pollination, honey, and bee watching are well worth it. We have made many new friends in the Worcester County Beekeepers Association who have helped us immeasurably with advice, assistance and encouragement. Bees are so busy with their work they just don't have time for neighbors. The one subject I have not addressed is children. We live in a mature neighborhood with no young children in the abutter homes, so I have not had to deal with that situation. BC

Bob Bober keeps his bees in his backyard in Framington, Massachusetts.

The Mystery Of "The New England Hive"

James E Tew

Where have all the antiques gone?

Been on eBay lately? Man, talk about a concept that has changed things when it comes to buying antiques, second-hand shopping, and even making new purchases. This on-line shopping system is currently rewriting all the books on electronic marketing. Just a couple of years ago, I would log onto eBay to look for woodworking tools. A few hundred listings – total – would pop up. Now the same search query results in thousands of listings. It would be a fulltime task just to look at all of them.

In the early days (two years ago), while looking for tools, I occasionally looked for bee-related listings, but there was never much there. Well, look again! More and more often, all kinds of bee related things turn up on the system. For those who already shop on eBay, you already know that you must sift through thousands of listings that are not really honey bee related like Bee Gees music recordings or the seemingly thousands of *Winnie the Pooh* listings *(I know, I know, you can design the search to filter out those listings).* I suspect that this auction system is responsible for most of the donations to our university bee museum essentially drying up. Why give it away, when someone will give you money for it? I suppose that does make sense.

The New England Hive

A few months ago, my Ohio friend Dana Stahlman gave me some blue prints for a hive called the New England hive that he bought for nearly nothing on eBay. I have built items from plans many, many times and was happy to be given such a gift. To build a hive from such complete plans should be simple. But here's the rub – after studying the prints for hours, I can't make any sense of the plans. I am asking you for help.

The name given on the blue prints.

First, let me give you a few disassociated comments. I have assembled many things in my life and a few of those things did come with confusing or complicated instructions, but I have never tried to comprehend anything as confusing as these plans. I would expect that those of you trained in reading formal blue prints would blow right through these, but I can barely make sense of any part of this design.

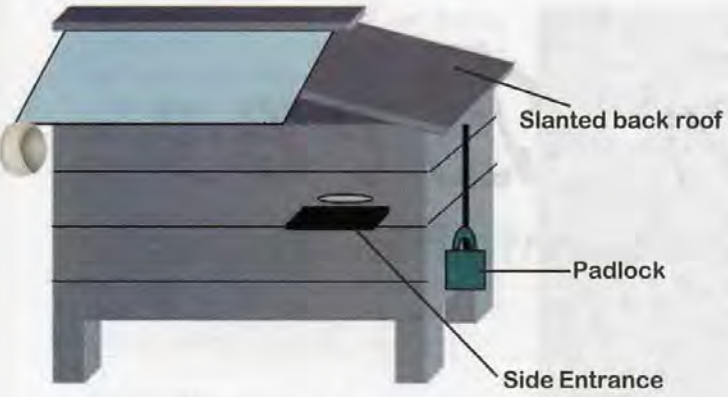
The plans are complex and seemingly complete though I don't have a general pictorial overview of the hive. My problem is that there is essentially nothing in writing that tells me what the hive designer had in mind. I don't even have the hive designer's name. It is as though I have the body but not the soul of the design. It is truly a bee puzzle.

The only markings on the prints are shown below.

A quick web search has not turned up any information on the design or intent of the hive. I have never seen nor heard of this hive. Was this set of drawings something required by the US patent office before issuing a patent?

My best guesses

So far as I can tell, the hive was not top supered, but rather had a honey storage area at the back of the hive. Being small, it sat on four stubby legs and sported a steeply pitched roof on the front half of the hive. The back half of the hive had a shed-type slanted roof giving the hive the look of a house with an addition on the rear It clearly shows three entrances, each with a small landing platform beneath each. All entrances could be closed with a metal strip. There are two front entrances and, strangely, a side entrance on the left side only. A very strange at-



The side and back of the hive – as I understand the design.

The front of the hive minus the rear outer cover.

tribute is that the hive locks with a padlock. There is a metal bar contraption that goes all the way through the hive ending in a hasp intended to receive a padlock. Other than this one quirky requirement, the hive is made, as per blue print instructions, from grooved barn siding or pine boards and is assembled with screws and nails. One sheet of the plans describes how to build frames for the unit, but there is no mention of foundation. Obviously, beeswax foundation would have been readily available in 1931. Not being able to competently read the plans, I can't say for sure, but the hive may be double-walled for insulating effects.

In the figures above, I have crudely tried to diagrammatically show what a side view and front view of the hive would possibly look like. These figures are not drawn to scale. I need to ask for the privilege to be wrong. If I could read these plans well enough, I would simply build the hive and then write about it.

The horizontal lines in the figures that resemble super separations are representative of grooved barn siding. Apparently, the hive is a one-piece unit. There are no supers to be added or removed. One aspect of the hive that completely baffles me is how the back slanted roof joins the pitched roof. I simply can't tell from the plans what the designer's intentions were.

Also, I am embarrassed to have to tell you that I can't tell the outer dimensions for sure. As I said earlier, the hive appears to be small. I am guessing that it is about 20" wide, 24" deep and about 20" high. It is not Langstroth dimensions. I can't tell what happens to the space underneath the gable roof.

That's it

I have a professionally-drawn set of plans for a hive I am not qualified to read. As I get the energy, I occasionally get the plans out and ponder them again. My curiosity about this hive is not because I feel that it is the perfect hive, but rather someone put so much effort into the design.

Other hives of this ilk

In our hive history, many designs have come and gone. That so little is known about this hive is not unusual. Some designs, such as the Wooster hive[1] were never built but existed mostly on paper Interestingly, the Wooster hive was primarily a box of small drawers that I suspect would have been propolized tightly. As with so many of these hive designs, I only have the information contained in the U.S. patent information with very few dimensions. Other hives were the Butterchurn hive, the Quimby hive, the J.S. Harbison hive, the King hive, and the Ohio hive.

About 100 years ago, our industry went through a frenzy of hive designs but none save the Langstroth hive are in commercial existence today in this country. Even the Langstroth hive evolved in design from its original concept. A.I. Root is credited with removing most of the trappings of the Langstroth hive; thereby, simplifying it for manufacturing purposes. The modern hive we call the Langstroth hive is actually the inner workings of the original design, but that's a topic for a future article.

So, when I came in possession of so much design information about the New England hive, I incorrectly thought that this was a hive that I could reproduce for the educational interest of modern-day beekeepers. I hope that with your help, I can still make that happen. Please communicate with me if you know anything about the New England Hive. BC

Dr. James E. Tew, State Specialist, Beekeeping, The Ohio State University, Wooster, OH 44691, 330.263.3684, Tew.1@osu.edu; www2.oardc.ohio-state.edu/agnic/bee/; beelab.osu.edu/

[1] From Wooster, Ohio, my present hometown. I know where the beekeeper lived but nothing remains today other than the BP service station that presently occupies the spot. I can't find out anything about the beekeeper.

Kids 'n Bees

Organizing and Implementing Events For The Public

Kim Lehman

This is the first of four articles on creating and presenting programs to children about honey bees. The first two discuss organizing and implementing educational events for the public. The third concentrates on presentations with groups of children in a classroom setting, and the last will share ideas, resources and ways to add pizzazz to programs.

WHY WORK WITH CHILDREN?

Children and nature go together like honey and hot biscuits. I have yet to meet a child who doesn't show some interest in animals, plants, or rocks. Being that bees are part of the creepy crawly world of insects, we have an instant entrée into the curious minds of children.

The many benefits of educating children about honey bees are obvious: Pollination (including the understanding of food production and the regeneration of seeds) affects us all. Products of the hive are gaining more attention everyday The decrease in our wild bee population has alarming implications. All these things need to be shared and discussed.

Some of you have children, some have grandchildren, most know children and all of us were children at one point in our lives believe it or not! So being around and working with children are things we can all identify with on one level or another

WHY PARTICIPATE IN EVENTS

Any time we can educate the public (children included) about the benefits of honey bees, we are providing a valuable service. Fear dissolves when the virtues of this "stinging insect" are known. Once we get those benefits about honey bees out there, people will think twice about poisoning and killing nature's tiny little pollinators. By educating children, they, in turn will educate adults. From my own experience I learned the virtues of water conservation in fifth grade. I went home and insisted that all my family members conserve water It is something I still practice to this day. This same kind of impact can happen with honey bee education.

GETTING STARTED

Events can encompass everything from a state fair to a public program in a library. An organization, business or agency can produce an event. These may include county and state fairs, community events, agriculture days, and school events. The producer sets up the location, publicity, booths and logistical details for the entire event. The logistics are fairly straightforward. What your responsibility entails is to plan and prepare activities, show up and provide volunteers for your table or booth. This is great exposure and provides an opportunity to inform the public about honey bees. It can be quite a task depending on the number of days and the size of the event.

The other type of event is one specifically produced by you or a beekeeping organization. This kind of event may be in cooperation with a beekeeping convention. It attracts the attention of the general public and the local media.

There are several steps to take when organizing an event of this kind: 1. Find a location. 2. Get the word out and do all the publicity. 3. Gather volunteers. It sounds daunting, but the benefits are many.

Finding a location

Possible locations include museums, nature centers, parks, schools, a parking lot, libraries, and hotel (especially if in coordination with a beekeeping conference).

Things to consider when looking for and working with a location:
How much room is available?
Is there ample parking?
Is it a child friendly, safe environment?
Will it be inside, outside or both?
Are there electrical outlets?
Are tables and chairs provided or

Kim Lehman with a boy scout at the Kids and Bees program at the American Beekeeping Federation Convention.

does someone need to bring them?
Is there an entrance fee? Does there need to be an entrance fee?
Who will do the publicity?
Who will be responsible for what?

There needs to be clear expectations between you and the location contact person. It's best to have the above questions answered well in advance of the event.

Publicity

If your event is already publicized you can sit back and drink a cup of hot tea and honey. On the other hand, if you are the one producing the event eat some pollen and royal jelly and get energized to do some legwork. What good is an event if no one knows about it? Do not underestimate the value of getting the word out. You can never do too much.

Who to contact:
Scout groups
Homeschool Groups
4-H groups
schools

Where Do You Find These Groups?

Use every resource possible. Phone books, Internet, word of mouth, and the local library all offer valuable contact information. Once you have some names and numbers start making calls. Ask to talk to the newsletter editor and/or person in charge of programming. If you must leave a message and do not hear back from them in a few days, try calling back later A real, live person is always the best way to assure that your information will get passed on. Most groups are very interested in this type of free program.

Media Mania

Don't forget to contact the media. This includes TV stations, radio stations, newspapers and magazines. Lead times for publication announcements vary with magazines generally needing information two months in advance and newspapers usually 2 weeks before an event.

General time frame:

• Magazines, 3 months

• Newsletters, 2 3 months in advance, most scout publications come out every other month

• Radio and television stations, 1-2 months if you want an interview, 2 weeks if you just want to place an announcement

• Call the television stations the week of your event. They may request the information be faxed to them again or may be interested in an interview.

Honey bee activities at an Elementary Science Program sponsored by the University of Texas.

Sometimes I have pitched stories with targeted topics to the newspaper For instance, the Food and Lifestyle section of the paper may be interested in a story about cooking with honey, your honey contest or candle making. The gardening section will sometimes pick up a story about bee plants or the importance of pollination in the production of garden produce and the production of seeds. Someone has usually heard of or is familiar with the health benefits of honey bee products. With the increased interest in natural health alternatives and natural beauty products, this topic will often get someone's attention.

When you contact radio and TV stations ask for names of people who produce local shows. Call them. Fax information to them. You never know what topics may attract some producers. One radio station recently wanted to cover a variety of bee topics by interviewing a commercial beekeeper, a researcher and someone well versed in apitherapy for an hour-long show.

Media Magnet

Events for children and families are often an instant draw for cameras. Stations know there will be something interesting to shoot and community events are always a winner with viewers.

So what do you do if the media actually shows up? Have someone available to meet them. After introductions, offer to show them around and ask if there is anything else you can do for them. Be willing to work within their story interests and needs. Give them a jar of honey, a beeswax candle or lip balm as a little gift.

Smaller community media outlets are always looking for stories. Urban areas have more competition for airtime but will often put an event like this on their story list.

Writing a PSA (Public Service Announcement)

The vital information you must include for an effective PSA includes who, what, when, where, and cost (if any) and contact information. Keep all the information to one page that is quick and easy to read. Sending a fax seems to be the most effective means of contact. Some places accept E-mail. Here is a sample PSA for the Kids and Bees program presented in cooperation with the American Beekeeping Federation Convention.

Continued on Next Page

Future Teachers of America from Crockett High School volunteer for an event in a public library.

FOR IMMEDIATE RELEASE:

"Kids and Bees" Bring Swarms to Jacksonville

What: "Kids and Bees" is a free, fun-filled and informative program about honey bees for children of all ages.

Hands-on activities with entomologists and beekeepers from around the United States will give children and parents an opportunity to discover the benefits of honey bees and beekeeping.

The program is in conjunction with the American Beekeeping Federation Convention, January 14-17, 2004 at the Sawgrass Marriott Resort and Beach Club.

Time: 10:00 a.m. noon

Date: Saturday, January 17, 2004

Place: Beaches Branch of the Jacksonville Public Library, 600 3rd St., Neptune Beach, FL 32266, 904.241.1141

Activities Include:

Observation Hive
Honey Tasting
Making Bees Wax Candles
Cooking with Honey
Bee Body Parts Puzzle
Bee a Beekeeper
Bee Biology with Microscopes
Pollination Fun and Games
Products of the Hive
Bee Puppets
Bee Experiments
Resource Center

Fee: Free!

Contact: For more information, public may call 904-273-1677

Media Contact for information, interviews, "stand-up" interviews, guided tours: (contact information)

VOLUNTEERS

A great place to find volunteers is with your local beekeeping organization. Beekeepers and their families are often ready and willing to help. Most of the time willing volunteers can be found within associations. Unfortunately with other commitments and jobs, willing doesn't always mean available. Sometimes an event may be during the day, which may limit the possibility of finding volunteers. Here are some other places to locate volunteers.

Youth volunteers

Tap into local high school groups such as science clubs, Future Teachers of America as well as homeschool groups, scout groups and 4-H clubs. True, it can be a bit nerve racking keeping a bunch of teenagers on task but the benefits are worth it. Think of it as having students as teachers. The younger children benefit by having the extra attention and the older students' benefit by gaining knowledge about honey bees and participation in a confidence building experience.

Training Youth Volunteers

I needed help with a program to be presented at a public library so I called a group of Future Teachers of America to help. They were required to do community service, so the group was very excited about the opportunity to be involved in a small scale teaching experience. I gave them a crash course on honey bees and went over some of the activities we would be doing previous to the actual event. They were very excited about helping and even more excited about their own learning experience. I watched as their knowledge about honey bees grew.

On another occasion I put in a request for youth volunteers on a homeschool "list- serve." The response was surprising. This is what I wrote.

Students as Teachers

What: I am looking for young adults ages 13 and up to help with a honey bee program on February 15 and February 21. We will have a two-hour training session on honey bees and teaching techniques.

Learning Objectives:

- learn more about honey bees, beekeeping and bee products
- develop and strengthen skills in communication, interaction, and leadership
- understand, digest, and integrate knowledge through teaching and sharing

Requirements:

- able to work independently
- able to come to at least one of the two events

To help: (contact information)

TIPS FOR WORKING WITH CHILDREN AT EVENTS

If you have experience working with children you already know and use most of these tips. For those new to this endeavor this list will give you a basis for effective interactions with children.

- Kneel or sit while talking to children to maintain better eye contact whenever possible.
- Don't wait for children to ask questions. Many times they don't have enough information to know what to ask. Also, many children are discouraged from asking questions.
- Let children know the best way to learn is by asking questions.
- Invite the children to participate in the activity or conversation.

• You can begin interaction by using some of the points of interest about your learning area.

• When talking to a young child, keep your language simple but avoid talking down to the child.

• Remember that children WANT to learn. They are naturally inquisitive about the natural world.

• Children can often understand more than you think.

• Don't be afraid to say, "I don't know" to difficult questions. You could respond with, "That's a great question. I need to look that one up. Thanks for asking such thoughtful questions."

• Allow and encourage children to participate in the activities themselves. A crooked candle is much more rewarding if a child knows THEY did it than if an adult insists on doing it for the child so it will be perfect.

• Be enthusiastic and positive. Smile. Compliment the children at every opportunity.

In Conclusion

Now you have the basics for producing an event for children about honey bees. It is usually easier to have a booth or table as part of a larger event but sometimes a specific event for children can be beneficial. Part 2 will cover a variety of interactive learning activities to choose from. BC

Kim Lehman is a hobby beekeeper. She works as a freelance children's performer and educator, and coordinates the "Kids and Bees" program at the American Beekeeping Federation Conventions. Contact information: Kim lehman@sbcglobal net 512.385.3266 or P.O. Box 2743, Austin, TX 78768.

Past Pieces

The Glory Days Are Gone: The Demise of the Clark Smoker

Wyatt Mangum

In previous articles, we charted the rise of the mighty Clark cold-blast smoker. Conceived in 1879 by Norman Clark to help A. I. Root design a better smoker, it proved very popular Rolled basically from one piece of metal in the shape of a cone, manufacturing the smoker was simple and easy to mass produce. Root sold his Clark smokers individually and offered wholesale lots of up to 1000. By 1894, Root reported selling 150,000 Clark smokers, a remarkable achievement.

The smoker's simple construction also allowed beekeepers to make a homemade version – and here too Root helped out. Even though potentially it could have diminished his sales, he included instructions for making the smoker in his *ABC of Bee Culture*, the 1884 edition, complete with pictures (see Figure 1). Looking at the parts diagram, shown below are the boards for the bellows. One has the curved blast tube and the other has a valve to let air return to the bellows. Next to those are the tin parts for making the cone. The large piece is the cone in the flat before rolling. The piece having the large round hole is the back of the smoker Covering that hole is the door cut in a half circle. The round piece with numerous small holes is the fire grate. With these pictures and the assembly instructions in Root's widely disseminated book, any beekeeper could make a Clark smoker, or perhaps employ the skills of a local tinsmith. (Today, however, homemade versions seem to be more rare, suggesting to me the manufactured version predominated).

Figure 1: A pictorial parts list for making a Clark smoker.

While the 1880s were good times for the Clark smoker, things would change. Jumping ahead to January 1890, the Root catalog still had an imposing picture of a Clark smoker. But it was shown above a smaller picture of an upcoming rival, a Bingham hot-blast smoker (see Figure 2). This smoker had become popular with beekeepers and seemed to be making some inroads into the buying habits of Root's customers. (Future articles will explore the history of the Bingham smoker, which in its modern form is still in use today.)

Just after the turn of the century, by February 1901, the harsh winds of change blew bitterly against the Clark smoker In a catalog put out by one of Root's distributors, George E. Hilton of Fremont, Michigan, three other smokers were shown with the Clark, all vying for the customer's attention with equal size pictures. Among these, which were all hot-blast smokers, was a selection of Bingham smokers, a Crane smoker and a Corneil smoker (see Figure 3, more on these smokers in upcoming articles).

And surprisingly, this catalog even recommended the Corneil smoker over the Clark, adding to its pending doom.

"While it [the Clark smoker] is a trifle cheaper than our direct-draft hot-blast Corneil, it does not begin to be as effective. Better pay a little more and get the Corneil."

This negative catalog commentary against the Clark smoker continued and even became bolder. In the 1903 Root catalog, the description for the Clark smoker seemed to sum up its existence and clinch its fate.

"There was a time when the cold-blast principle in smokers was regarded more favorably than now; but long experience has shown that the hot-blast smokers are far more effective. We are prepared to furnish the Clark ... but we strongly urge our customers to get one of the small-sized hot-blast smokers."

Some time afterwards the A. I. Root Company discontinued the Clark smoker, though I'm still not sure exactly when. Their 1918 Root catalog did not list it.

Looking back through the old

PRICE LIST OF CLARK'S COLD-BLAST SMOKER.

One to four smokers, 50 cts. each; by mail, 70 cts.
Five to 24 " 40 " " " " 60
25 to 250 " 35 " "
250 or more " 30 " "
Five in a basket, to go by express, weigh 7 lbs.
25 " " " " " " 30 "
We can not deviate from above prices.

Your smoker should, of course, be kept indoors out of the rain, but if you are careless and get some part of it broken or injured, we can send you the different parts at the following prices. The postage is given in the left-hand column.

10 | Bellows complete.....$ 25 | 1 | Leather for bellows...$ 10
10 | Tin case for fuel..... 20 | 2 | Coiled wire spring..... 05

This spring is to be put on the outside, and can be quickly attached to any smoker. Ten, 45c; 100, $4.00.

10 | Leather for bellows, per side..... 75

BINGHAM SMOKERS.

The accompanying engraving represents a large size Bingham hot-blast smoker. That is, the blast of air from the bellows passes through the fire, instead of in front, as in the Clark. While a great many prefer the cold blast, some will prefer the hot blast. The smoke from the latter is a little more pungent. These smokers are durable and well made. Prices are as follows:

PRICE LIST OF BINGHAM SMOKERS.

Name.	Size of Barrel.	Price Each. By Mail.	Price Each. Freight or Exp.	Per Dozen.
Doctor	3½ inch	$2.00	$1.75	$14.00
Conqueror	3 inch	1.75	1.50	13.00
Large	2½ inch	1.50	1.25	11.00
Extra	2 inch	1.25	1.00	9.50
Plain	2 inch	1.00	.80	8.00
Little Wonder	1¼ inch	.65	.50	5.00

We can furnish ½ dozen of any one size at dozen rate.

Figure 2: *A Clark smoker shown in a January 1890 catalog from the A.I. Root Company. The smaller picture below is a hot-blast Bingham smoker. For a while at least, the Clark smoker is still "on top." Judging from the pictures, which smoker would you buy?*

bee supply catalogs from other companies revealed more negative statements against the Clark smoker. The G. B. Lewis Company of Watertown, Wisconsin at one time sold their famous "Lewis Beeware," a line of beekeeping supplies. In their 1919 catalog, the Clark smoker was still listed, but the description stated, "we do not recommend it to be as good as the Bingham." By 1921, the Clark smoker had vanished from their pages. Still more opinions were voiced against the Clark smoker The Kretchmer Manufacturing Company located in Council Bluffs, Iowa once sold a full line of "Bee-Keepers' Supplies." Their 1908 catalog advised against a Clark smoker, opting instead for their hot blast "Champion" smoker

Turning to the catalogs for Dadant and Sons of Hamilton, Illinois, their 1905 issue strongly urged customers to get a hot-blast smoker instead of a Clark. And by 1914, their catalog showed only a diminished, dime-sized, picture of the now lowly Clark smoker, relegating it to the lower corner of a page and tersely calling it an "old-time" smoker That is, old-time by even 1914 standards! (See Figure 4.)

Clearly the poor Clark smoker was fast becoming a relic as newer smoker styles grew in popularity Nevertheless its production run lasted about forty years. That's pretty good considering all the other old obscure smokers whose brief production life "died on the vine," relegating their names to that largely forgotten part of our apicultural history.

Figure 3: *Some Clark smoker competitors. From the top is a Bingham, a Crane, and a Corneil smoker. Note also how they are beginning to resemble the modern smoker.*

KRETCHMER'S CHAMPION SMOKER.

This is a good medium priced smoker of standard size. It is strong and durable and will give good service.
Price by freight, 85c; 6 for $4.50; Mailing weight, 1¼ lbs.

THE ROOT SMOKER.

Prices of Root Smokers.

By Freight—	Each	Three	Mailing Weight
Jumbo, 4-inch	$1.25	$3.45	2 lbs.
Standard, 3½-inch	.85	2.25	2 lbs.
Junior, 2½-inch	.65	1.80	1½ lbs.

THE CLARK SMOKER.

Price, by freight, each, 55c; 3 for $1.50. Mailing weight, 1¼ lbs.

An old-time, low-priced smoker used by many bee-keepers.

For Parcels Post Rates see Page 1.

Figure 4: *A Clark smoker barely on the bottom of the page. Interestingly at this time, the Dadant Company sold Kretchmer's Champion smoker and a Root smoker in its modern form. With Figure 2 in mind, which smoker would you buy?*

In the next article, we will bring back a bit of Clark smoker history by firing up one and using it. To better understand some aspects of our beekeeping history, one needs to use past equipment designs. (This is best done by using reproductions, if possible.) Years ago at an antique show, I even found an exceptionally rare instruction pamphlet titled, *How to Use the Cold Blast Smoker*, written by none other than A. I. Root, who probably knew more about these smokers than anyone else. Packed with rare bits of bee-smoker wisdom, Root's pamphlet helped me use my Clark smoker the way beekeepers of the late 1800s used theirs. Next time we will see the Clark in action. BC

Acknowledgments

The author thanks Suzanne Sumner for her comments on the manuscript.

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?DO YOU KNOW?

Stressful Pestilent Spring

Clarence Collison
Miss ssippi State University

While beekeepers in the south are gearing up for the upcoming package bee and queen rearing season, those in the north are only making plans for the upcoming year, since their colonies are still in tight Winter clusters. Colony health must be a major consideration in the Spring, if colonies are to develop into strong productive colonies. The activities of honey bees are regulated by many different factors associated with the environment in which they live, interaction between members of the society and their internal physiology. Early Spring is a very difficult time of year for the honey bee colony because of unstable weather patterns in many parts of the U.S. During this time the colony food stores must be carefully monitored. As fresh pollen and nectar become available, they serve as strong stimuli for brood-production. As a result, the size of the brood area may increase faster than stores are replenished. Colonies often run a tight line between available food and starvation, since weather often inhibits flight activity for extended periods of time. Stress diseases (European foulbrood, sacbrood, and chalkbrood) plus tracheal mites and nosema disease are also most prevalent in the Spring and further complicate the problem.

Please take a few minutes and answer the following questions to find out how familiar you are with the stressful conditions that colonies face in the Spring, bee diseases and parasitic mites.

The first nine questions are true or false. Place a T in front of the statement if entirely true and F if any part of the statement is incorrect. (Each question is worth 1 point).

1. ___ Gamma radiation is used in parts of Canada to disinfect honey bee equipment contaminated with American foulbrood.
2. ___ The mating of *Varroa* mites within a brood cell occurs at the fecal accumulation.
3. ___ *Tropilaelaps clareae*, a parasitic mite, is found in Southeast Asia and South America.
4. ___ Currently there are no strains of honey bees that are immune to American Foulbrood.
5. ___ The spores that cause American foulbrood and nosema disease are similar in shape and size.
6. ___ Both the spore and vegetative stage of *Nosema apis* are infective to honey bees.
7. ___ Package bees are extremely susceptible to nosema disease.
8. ___ Nosema spores when they germinate have a harpoon-like structure that attacks the mid-gut lining.
9. ___ When a foundress female *Varroa* mite enters a brood cell, she submerges herself in the remaining royal jelly, lying upside down.

(Multiple Choice Questions)

10. *Bacillus alvei* is most often encountered with _____
    A. American foulbrood
    B. Nosema disease
    C. Chalkbrood
    D. Sacbrood disease
    E. European foulbrood
11. ___ *Apanteles galleriae*, a tiny parasitic wasp, attacks the larvae of the:
    A. Small hive beetle
    B. Greater wax moth
    C. Bee louse
    D. *Varroa* mite
    E. Tracheal mite
12. *Varroa* females produce their first egg a)___ hours after the cell is sealed and subsequent eggs are laid at b)___ hour intervals.
    A. 20
    B. 30
    C. 50
    D. 60
    E. 40
13. ___ Virus that kills both adult honey bees and brood, especially in *Varroa* infested colonies.
    A. Acute Paralysis Virus
    B. Kashmir Bee Virus
    C. Deformed Wing Virus
    D. Chronic Paralysis Virus
    E. Filamentous F-Virus
14. Honey bees are able to rear small quantities of brood without being able break the Winter cluster and get to pollen stores within the hive or prior to the availability of fresh pollen. Under these conditions, what is the source of protein used by nurse bees to produce brood food (royal jelly/worker jelly)? (1 point)
15. Name three impacts that nosema disease can have on worker honey bees. (3 points)
16. Within the Winter cluster, heat production and heat conservation are two important functions related to survival. Describe how honey bees accomplish these two tasks. (2 points)
17. What stage and sex of the *Varroa* mite survives the winter in a colony that has a broodless period? (2 points)
18. The pathogens that cause American foulbrood, chalkbrood, and nosema disease produce spores. Upon finding a dead colony early in the Spring, where would you look for these spores within the hive? (3 points)

ANSWERS ON NEXT PAGE

?Do You Know? Answers

1. **True** Research has shown that gamma irradiation is effective in disinfecting hive equipment that has been taken from colonies diseased with American foulbrood. Since no disease recurrence occurred within one year of irradiation, some areas of Canada and the U.S. are currently using this technology in their American foulbrood abatement program.
2. **True** The honey bee prepupae occupies only 2/3 of the brood cell space, leaving the foundress female *Varroa* mite free space in the upper half and the anterior part of the cell (in front of the cap). The mite defecates within the brood cells of maturing bee pupae. She concentrates her feces on a little spot on the cell wall, usually close to the developing bee's anal area. This fecal accumulation (deposit of mite excreta) is a bright white amorphous mass that contrasts sharply in color with the dark cell wall to which it is attached. The fecal accumulation serves as an aggregation site on which mating occurs.
3. **False** The distribution of *Tropilaelaps clareae*, a parasitic mite, is restricted to southeast Asia. It occurs from Iran in the northwest to Papua New Guinea in the southeast. It normally is associated with the giant honey bee, *Apis dorsata* but also parasitizes the western honey bee *Apis mellifera.*
4. **True** Currently there are no strains of honey bees immune to American foulbrood. Different degrees of resistance to the disease, however, have been shown. The mechanisms responsible for this resistance include: the role of the proventricular valve, removal of diseased larvae, protection of larvae by adults, larval resistance and different levels of bacterial inhibitors in the brood food provided by different nurse bees.
5. **False** The spores that cause American foulbrood and nosema disease are oval in shape but nosema spores are more than 20 times larger than American foulbrood spores. From a diagnostic standpoint, nosema spores can be seen and identified at a magnification of 40x, whereas American foulbrood spores require 400x.
6. **False** The vegetative stage of *Nosema apis* in not infective. Spores must be swallowed by a honey bee for infection to be initiated. Spores germinate quickly after entering the midgut (ventriculus).
7. **True** Package bees are extremely susceptible to nosema disease. Nosema infection peaks in the Spring when packages are normally shaken from overwintered colonies. The level of infection and percentage of infected bees increases rapidly while the adult population is confined within the package bee cage. No brood rearing or cleansing flights further aggravates the situation.
8. **True** *Nosema apis* spores enter the honey bee through the food canal and pass into the mid-gut (ventriculus). Spores germinate quickly after entering the mid-gut. The spore germinates, ejecting a polar filament into an epithelial cell, lining the mid-gut. The vegetative stage is introduced into the epithelial cell through the hollow polar filament. Once inside the cell, the vegetative stage increases in size and multiplies, effecting an apparent concurrent reduction of RNA synthesis in the host cell.
9. **True** Female *Varroa* mites enter prepupal cells 1-2 days prior to capping and hide from the nurse bees by submerging in the remaining liquid brood food, lying upside down. The mite's modified peritremes protrude snorkel-like out of the fluid surface, enabling them to breathe.
10. E) European foulbrood
11. B) Greater wax moth

12a. D) 60

12b. B) 30

13. A) Acute Paralysis Virus
14. Stored fat bodies-The contents of adult nurse bee fat bodies vary according to season. Fat bodies function as production and storage sites for reserve food materials chiefly fats, glycogen and protein compounds. Bees produced late in the season rear little brood, and fat body protein content is relatively high. During active brood rearing periods, their fat bodies are swollen with fat, but almost devoid of any protein compounds. When brood rearing decreases, protein content in fat body cells of adults increases. Protein is apparently stored in the fat body cells until it is needed for the synthesis of brood food.
15. Nosema infection affects individual honey bee workers in many ways. The life span of infected honey bees is reduced, particularly under the stress of rearing brood. The ability of infected nurse bees to feed brood is greatly reduced since the infection causes ultrastructural changes in the brood-food glands. Infected bees also undergo rapid physiological aging. It also causes them to lose their ability to fly, thus we see crawling workers with disjointed wings, distended abdomens and the absence of the stinging reflex.
16. The Winter cluster plays a role in regulating the temperature of the brood nest as temperatures fall below 57° F. When forming a cluster, honey bees on the surface establish an insulating shell which varies in thickness from one to three inches. The colder the temperature, the more compact the cluster becomes, reducing the surface area from which heat energy is radiated. The honey bees within the cluster are much less compact and generate heat through metabolic processes and microvibration (shivering) of the thoracic flight muscles. The heat generated within the cluster is conducted to the surface of the cluster

17 Adult female *Varroa* mites

18. Chalkbrood spores would be found on the surface of mottled (black on white) or completely black mummies (dead larvae). These mummies would be found

in brood cells, on the bottom board or at the hive entrance. Nosema spores would be associated with fecal material on the combs and at the hive entrance. American foulbrood spores would be found in dried-down scales within brood cells.

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

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GLEANINGS

FEBRUARY 2004 • ALL THE NEWS THAT FITS

SHB & Mites

EU BEE IMPORTS RESTRICTED

The European Commission adopted bee import restrictions to protect the EU bee population from two exotic parasites the small hive beetle Aethina tumida and the parasitic mite Tropilaelaps.

Neither has ever been reported in the EU but the commission said if introduced from third countries they could severely endanger bee health, the apiculture industry and honey production.

The new measures adopted will limit imports of both live honey bees and bumble bees and require imported bees to be examined for signs of the parasites when they arrive in the EU.

Imports of bees will be limited to consignments containing a single queen bee with a maximum of 20 accompanying attendants.

The imports will only be authorized from third countries that have demonstrated the necessary veterinary competence to certify that animals fulfil all criteria for import into the EU and where the small hive beetle and the Tropilaelaps mite are notifiable diseases.

When the consignment arrives in the EU, the cages, attendants, and any other material accompanying queens from the country of origin must also be sent to a laboratory. There they will all be examined for the presence of the small hive beetle, their eggs or larvae and signs of the Tropilaelaps mite.

Small colonies of bumblebees up to a maximum of 200 adults can still be authorized for import into the EU if they have been bred and reared solely under environmentally controlled conditions.

"These two parasites have had a devastating effect on the health of honey bees, the bee industry and the production of honey in affected third countries," EU Health and Consumer Protection Commissioner David Byrne said.

"The EU needs simple import rules to make sure these bee parasites do not hitch a ride to Europe." – *Alan Harman*

APIMONDIA NEWS

For 2004 Apimondia is planning several conferences and symposia, and of course we are working with our Irish member organization preparing for the next APIMONDIA congress. Please find further information and links at www.apimondia.org.

Apimondia Conference on Tropical beekeeping: Research & development for pollination and conservation – San Jose, Costa Rica, February 22-25, 2004.

Apimondia Symposium Prevention of Residues in Honey 2 "Changes in Beekeeping Practice" – Celle, Germ., April 27-28, 2004.

International symposium on "Cooperative organizations & assns. in Beekeeping" – Mendoza, Argentina, Sept. 2-5, 2004.

Symposium on the "International Honey Trade" – Hanoi, Vietnam, November 2004.

APIMONDIA 2005 in Dublin Ireland, August 21-26. The world congress for everybody in the beekeeping world. Beekeepers, scientists, companies, honey traders, pollinators, apitherapist, development workers, pathologist, journalists, administrators and legislators are all gathering in Dublin for the world congress.

APIMONDIA is meant to work for the benefit of beekeeping all over the world. It is a non governmental organization with members from all over the world. Beekeepers Associations, Institutions and individuals are members.

FAMOUS IN CALIFORNIA

Distinguished Service Award Chris Heintz was named as Research Director for the Almond Board of California in 1996. Her job responsibilities were in the areas of production and nutrition research, as well as product development, and other general operations of that board.

Chris has been an aggressive proponent of pollination research and has been instrumental in getting research grants to fund numerous honey bee projects at UC Davis. She put on a successful Pollination Seminar recently, and currently is serving on the Liaison Committee for the Carl Hayden Bee Research Center in Tucson, Arizona.

She is a great friend and asset to the California Beekeepers Association.

Young Beekeeper of the Year Pat Stayer worked for Home and Lois Park for 26 years, becoming the foreman, managing the queen operation, pollination contracts, and honey production.

In 1998, he and his wife, Bonnie, bought the Park queen operation, signaling the beginning of Stayer's Quality Queens. They are a major queen producer, a pollinator of almonds in the Chico areas, and a honey producer in the Shasta and Siskiyou areas.

Lifetime Honorary Beekeeper Brian Ferguson was born in Los Angeles, and raised in Riverside. At the young age of 14, he landed his first part time job working bees for the Knoeffler operation. At the age of 18, he went to work for Bill Huston. He became the Central California Manager for Huston Honey Company in 1973, and then President for Huston-Ferguson Apiaries, Inc. in 1979.

Lifetime Honorary Beekeeper Ardith Eggman became involved in bees during a high school FFA project with four colonies. By the time he graduated, he had over 100 colonies. He continues to work bees to this day, supering, medicating, making divides, and pulling honey. This is remarkable because he does this all from his motorized wheel chair.

Beekeeper of the Year Wayne Harrison grew up in a beekeeping family, and had no intentions of becoming a beekeeper. He attended Cal Poly majoring in Ag Business, enrolling in the ROTC program there. Upon graduation in 1970, he promptly went to Fort Benning, Georgia. When done he left the country to run his dad's bees in Australia with his dad's partner. They used his dad's whole super extraction (it held 72 supers at one time) that was build here in the U.S. After three years in Australia, he, his wife Barbara, and son Kade, returned to California, where he began working for Andy Nachbaur until he started his own bee business in 1979. During this time his daughter, Becky, was born.

He has operated about 4500 colonies of bees for pollination and honey production in Central California, and has raised queens, sold package bees and nucs, and trucked packages across country to Wisconsin for the past several years.

OBITUARIES

MARY BOYER ANDERSON died at The Fairways at Brookline Village in State College, PA on Saturday December 13th at the age of 101. She had resided at 307 South Garner Street in State College for sixty-two years.

Born September 18, 1902 in the Lykens Valley near Gratz, Dauphin County, PA on a 200 year old family farm, she was the daughter of Jacob Moyer Boyer and Carrie May Boyer. She graduated from Reading High School for Girls and the Pennsylvania State University, majoring in Home Economics. She taught for a year at Dimock, PA in Susquehanna County. On August 14, 1925 she married a Penn State classmate, Edwin Joseph Anderson, subsequently a Penn State Professor of Apiculture. He passed away on December 3, 1974.

Mary Anderson was a member of the State College Presbyterian Church for more than sixty-five years enjoying church activities, including the Womens Association Circles. During the years during which she was raising her five children, she was active in girl Scouting, serving as the Commissioner of the State College Girl Scouts Council. She was a member and president of the local Penn State Alumni Club; and an active member of Omicron Nu as well as Kappa Delta Pi academic honorary societies. She was a chairman of The Pennsylvania State Honey Queen Committee. In 1970 she and her daughter Leona organized and directed the first licensed Day Care Center in State College, "the Busy Bee" Mrs. Anderson was a member of the University Club, the Retired State Club, the Faculty Women's Club and the Eastern Apicultural Society.

Memorial contributions may be made to the State College Presbyterian Church, 132 West Beaver Avenue, State College, Pennsylvania, 16801.

JOHN DAVID HITCHCOCK died Friday, November 21 at Ivinson Memorial Hospital after a short illness.

Mr. Hitchcock was born April 7, 1909, in Jaffna, Ceylon (now Sri Lanka), to William and Harriet Hitchcock who were teachers at the Congregational American Ceylon Mission. He earned a B.S. degree at the University of MA in 1932, and an M.S. degree at the University of MN in 1935. He worked as an apiculturist at the USDA Beekeeping Research Lab in Laramie from 1936-1973, becoming its Research Leader in 1960.

He joined the U.S. Army in 1942 and was in the first draft to be called from Laramie. He served during World War II with overseas duty in India, Burma, and the Philippines. He was assigned to the Malaria Survey Unit and the Sanitary Corps of Engineers, completing his service as a 2nd Lieutenant in 1946.

On June 15, 1946, he married Marion Prahl in Laramie. They have two daughters.

Research $$ Given Away

2004 CALIFORNIA CONVENTION

At the 2003 California State Beekeepers Association convention, held at Caesars in South Lake Tahoe, over 250 attended and the auction raised over $17,000.

The CSBA allocates $20,000 a year for research that the research committee feels most benefits our industry. This year the board of directors selected the following proposals: 1) An integrated approach to reducing pesticide and antibiotic use in honey bees, by Dr. Marla Spivak of the University of MN, 2) An investigation of the genetic basis of chalkbrood resistance in honey bees, by Drs. Carol Fassbinder-Orth and Thomas Rinderer of the USDA lab in Baton Rouge, 3) Identifying factors contributing to the loss of European queens introduced into Africanized honey bee colonies by Drs. Gloria DeGrandi-Hoffman, Davis Gilly, and Judith Hooper of the USDA lab in Tucson, 4) The effect of Captan and Propiconazole on colonies pollinating almonds and blueberries by Dr. Frank Eichen, Raul Rivera, and R.H. Graham from the USDA lab in Weslaco, TX. Please contact the CSBA if you have a project you feel needs attention and the committee will make an evaluation.

HONEY SLOGAN - PHASE TWO

Back in November, Jim Fischer suggested that our industry needed a catchy slogan to bring attention to honey. He based it on other catchy slogans – Got Milk? Pork, The Other White Meat! and the like.

We couldn't agree more, so we asked readers to send in their suggestions. You did. Lots. So we picked out the 10 best, using a group of objective judges, and have them now to be judged by all of our readers.

We first sifted through the entries and sorted out the duplicates by date received. There were lots of those, too. One of our judges, however, came up with yet another slogan that everybody thought should be included. Now that particular slogan isn't in the running for the grand prize. On the outside chance that it's picked, we'll give the prize to the three top picks from the other entries.

So take a look at the 11 entries below and pick your favorite three and email (kim@beeculture.com) or mail in your selection by March 15. We'll publish the winner in the April or May issue. The first place winner gets a free five-year subscription, second two years and third a one year subscription.

But best of all, you can use any or all of these for *your* slogan – on a label, a sign or as an additional sticker on your jar. No copyright or patent or any other hindrance gets in the way.

So help us out. Read over the list and send in your choices for 1, 2 and 3. And use any or all for your own.

You Gotta Love Your Honey
Home Is Where Your Honey Is
Bee Healthy – Eat Honey
Honey – Make My Day
Honey – Sunshine In A Bottle
Honey For Health
Taste The Sweet Life
Honey – A Table Staple
Honey – Flower Flavor
Liquid Energy
Honey – Pure Flower Power

Owns Manuka Honey

COMVITA BUYS API-MED

Natural health products company Comvita has bought the 50% of Cambridge-based Api-Med Medical Honey that it didn't own.

The move came after the European Union certified Api-Med's wound dressing products. This allows manuka honey dressings to be marketed directly to hospitals and clinics.

Comvita bought a 50% stake in Api-Med in September to secure the intellectual property for manufacturing wound dressings infused with manuka honey.

Comvita chief executive Graeme Boyd said the use of honey products in medical situations opened exciting new market potential for Comvita and New Zealand as well as opening new economic opportunities for beekeepers and landowners.

Display Advertisers

Strange Story, Twice

Ed Colby

Fact truly is stranger than fiction, and I can prove it.

At lunchtime Paul treats at the White Buffalo Restaurant in Battlement Mesa. The comely waitress looks about 20. I say, "You look familiar Who are you, anyway?" It turns out she's the granddaughter of "Pete," a celebrated local character still going strong at 98.

When she goes back to the kitchen, Mark says, "How can she be Pete's granddaughter? She don't look old enough. Old Pete must have been Hey, this just don't add up."

As she comes back to chat and fill our water glasses, the waitress touches each of us affectionately the way savvy waitresses do when they're working a table of guys. Mark chokes on his buffalo burger

The waitress tells us a story, then wraps it up by saying, "It's been a strange week."

I say, "I've had kind of a strange morning. I'm not going to tell you how strange."

But I'll tell you. It was late October, and we were getting the bees ready to go to California for the almonds.

Here's how we do it: First we consolidate the hives into a few holding yards that a semi can get into and out of easily.

Then we pull the pollen traps and go through the hives to check for colony strength, disease, and food stores. Lean a hive over, snap off the trap, check for bees top and bottom, sniff for foulbrood, maybe pop a frame or two for a quick look. If the hive makes my back ache, it's got sufficient honey. If it doesn't, put on a syrup feeder or add some honey. Don't forget mite strips and Terramycin. Mark weak or diseased hives with a rock. Stack the traps on a pallet. This whole process might take a minute or two per hive, start to finish. We roll.

You notice I didn't say anything about smoking the bees. That's because we generally don't bother Sometimes Paul will say, "We'd better get a smoker going," but we end up hardly ever using it. It's just another step in the process, and although nobody talks about who works the fastest, I will say Paul is hard to keep up with.

Paul likes to work the bees cold, but we work in about any weather Cold seems to work better if you don't smoke them. By the time they figure out what we're up to, we're practically finished, but the little darlings do get upset, some of them.

Sometimes bees get inside our drawstring veils. You get enough angry honey bees bumping against your veil, and sooner or later one is going to find her way in. They like to sting my ankles, too, but high rubber boots put a stop to that. Anyhow, what's the big deal here? Beekeepers get stung. That's the way it is.

In a strange way, I pride myself on having gotten stung in some unusual places. That way, when folks say, "You're a beekeeper? Do you ever get stung?" I can tell them about the bee that flew up my nose. But I don't push my luck. I wear gloves, jeans, a canvas shirt, and long johns, if it's cold enough.

There was, however, this one particular place I had never gotten stung

I like to drink too much coffee in the morning. The day we went to the restaurant the bees were up in arms about something. In the middle of the chaos, I said, "I wonder if I can irrigate some rabbit brush without getting stung."

Mark said, "Probably not."

I don't know why I even said that, although I do like to keep the conversation moving on the job. But there's a lesson here: Life is nothing if not ironic.

I walked a ways away Then I walked a little farther. Sure, a few bees buzzed around me, but I'd done this a time or two before. Mortals that we are, we all have to relieve ourselves sometimes, even in a beeyard.

Then my world suddenly lit up. "Ow!" I yelled. "Doggone it, you won't believe this, Mark, but I just got nailed."

"Doggone it?" OK, maybe I did say a bad word.

Mark said, "Oh, that's a likely story "

I still wasn't "finished," so I walked maybe 10 yards farther away. Maybe now it's you who won't believe me, but cross my heart and hope to die, I got stung again. I cried out for mercy.

Mark shouted, "Did you ever hear the story of the little boy who cried wolf?"

As I removed the second stinger, I double-checked for the first one, too. It was still there, doggone it.

We chuckled about this all day, but deep down I wondered if Mark really believed me. What if I'd said, "I wonder if I'll get struck by lightning if I go outside?" What if then I went outside in a thunderstorm, and guess what – I got hit – twice? Who would ever believe such a thing? But I'm here to tell you the strangest stories aren't made up – they really happen.