Bee Culture

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Bee Culture
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Radioactive larvae? Larry Connor explores the need for drone comb in a colony. Pay attention. There are a lot of good reasons. Even green bees.

– photo by Larry Connor

FEATURES

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Taking A Rest (Bears)

After 25 years of beekeeping I am taking the year off as a result of serious bear damage here in the Hudson Valley of New York State. Last year the bears destroyed my four colonies and this Spring after moving bees to a more populated location, they found them again. Thought it might be useful to get some reader's ideas or perhaps an article on solutions to this problem.

Peter Krulewitch
Clove Valley, NY

Do You Remember?

50+ years later – I wonder if there is still anyone out there who remembers the *Beekeepers' Magazine/ Michigan Beekeeper* that was published by Elmer Carroll between 1937 and 1952. Would love to hear from folks who might have memories of Elmer and Ruth and/or the magazine. I'm also looking for very early issues. The earliest bound issues I have are v.2, no. 3-10 of the *Michigan Beekeeper*. The entire bound set was water damaged during the early 70s and the first bound volume is really a mess – and those early issues really pack some history that would be of interest to my ever growing list of grandchildren and great-grandchildren.

Nan (Carroll) Chorman
(Elmer & Ruth's daughter)
motherbearshining@sbcglobal.net

Stingless Bees - 1935

Reprinted from Popular Mechanics, February 1935

Stingless bees now working on California farms are producing more honey than the short-tempered common honey bees. A strain of mild-tempered bees was found in the Caucasus mountains of Asia and taken to Russia where they were crossed with the quick-tempered Italian bees to produce a strain that is not only sturdy and disease-resisting, but so gentle that the bees will sting only if injured. It is claimed anyone can pick up a hive of these good-natured bees and allow the bees to crawl over him without danger. The hybrid bees have extra long tongues which enable them to get more honey, particularly from deep flowers. Queen bees of the stingless type now are being raised for the Pacific coast market. These queens are introduced into the hives of bee colonies and the young queens of the new generation are mated with the Caucasian drones, thus breeding out the Italian strain. The resulting bees can be handled easily without the aid of smoke, nets or gloves.

Submitted by
Arthur Holmwood
Greenfield Center, NY

Beeyards Forever

I enjoyed reading Dr. Tew's "All beeyards are not forever" in the August issue. It brought to my mind some funny old stories that happened here in North Dakota. For 10 years we had paid yard rent to a man named Jimmy (name has been changed to protect the innocent), on whose land we had two beeyards – or so we thought. One night I came home and my wife told me she had just been cussed out on the phone by a lady who was angry about the bees we had on her land. So after calling this woman back and scolding her for chewing my wife out, I found out that her complaint was that she'd never received any yard rent. For the last 10 years or so we'd been paying yard rent to her brother, jimmy, since he told us it was his land our two beeyards were on. He hadn't bothered to tell her even though he knew it wasn't his to keep. Later that same year, one of Jimmy's neighbors came by saying that *he too* had been awaiting yard rent for years and never received it. Jimmy had also claimed that his neighbors land was his and gotten his honey payment too. I found it quite humorous that for 10 years we'd paid Jimmy for nothing while his sister and neighbor went unthanked and unpaid for the use of their land!

I also remember a yard we had that was without a doubt a sure fire three to four boxes of honey a year yard. It was easy to remember the yard's owner because his name was the same as a famous Confederate General. One October I didn't get the bees out soon enough and huge blizzard hit. I remember hearing that 60 miles from this yard Grand Forks received 13 inches of snow in 24 hours. I was able to get most of the yard out by chaining up my truck and running the bees out to the road with my forklift (my Swinger usually runs between 160-180 on the temperature gauge, but this time it was barely 120 because of the cold). That day it had to have been 30 to 40 below zero with the wind chill and though I was dressed like my Norse ancestors, getting frostbite was somewhere in the back of my mind. One yard I could not get to on my own was General Lee's yard. So I called him and asked it he would make us a path to the bees, which he did with his big John Deere, making it possible to get the bees out. I sent him a thank you letter when I got home with a check for his trouble, which he never cashed. The topper is that this year he sold the land to someone else who says he's allergic and doesn't want the bees. Yes, it is true – great beeyards are not forever.

Christ Hiatt
Bowman, ND

Continued on Page 9

MAILBOX

Better Bee or Milder Mite

George Desnoyer's letter in the September issue of *Bee Culture* reflected the optimism I have had about the potential importance of feral bee colony survival in this country – without intrusive chemical treatment.

Desnoyer referred to the July 2004 article by Tom Seeley, "Forest Bees and *Varroa* Mites." In that article, Seeley reported observations similar to those I had published in 1999 in the *American Bee Journal* ("Colony Survival: A Better Bee or a Milder Mite?"), now available at: www.beesource.com/pov/wenner/abjsep1999.htm. At that time I had concluded that "The genetically most lethal mites could have been out-competed by a less virulent strain. If so, feral colonies and mites in our backcountry could have achieved an accommodation due to a change in the biology or genetic strain of *Varroa* rather than (or as well as) in the honey bees."

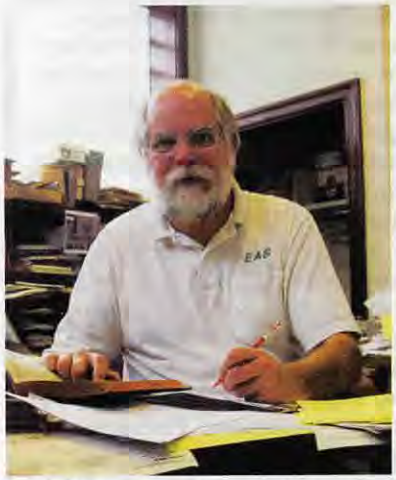
Seeley's article thus served as a replication of my published observation, thereby increasing the credibility of my earlier conclusion.

In that letter I had also described the circumstances prevalent in the vast backcountry behind Santa Barbara, perhaps similar to circumstances in Cornell's smaller Arnot Forest (feral bees and *Varroa* present but no beekeeping).

Although *Varroa* mites appeared in our region in the late 1980s (as described in a 1996 *Bee Culture* issue: see www.beesource.com/pov/wenner/bcjun1996.htm) one can still find honey bees throughout the backcountry – even though beekeeping is not allowed there. My beekeeper co-workers and I have now successfully maintained such hived feral colonies for more than a decade without treatment of any kind. On www.beesource.com, thanks to Barry Birkey, one can find numerous other writings of ours that have been similarly neglected in the past – contributions that contain nuggets of information that could prove very valuable to beekeepers.

I hereby thank Seeley for doing a fine follow-up study and for his useful addition to our existing knowledge about the value of paying attention to why feral colonies survive in the wild without treatment. Perhaps researchers will exploit this recent ground-breaking work to develop a "better bee/milder mite" solution to the *Varroa* mite problem.

Adrian Wenner
Santa Barbara, CA



INNER COVER

One of the tasks I've enjoyed the most during my tenure with the Eastern Apicultural Society has been the search and recovery of much of our history. What stimulated this was our commitment to honoring founders and early pioneers of EAS during our 50th Anniversary Celebration in August next year.

Dick Chapin is our Historian and has done yeoman's work in searching for lost issues of our newsletter, finding retired officers and directors, capturing the oral histories of some of the very few who attended those first gatherings, and collecting other historical documents.

My part in this has been modest in comparison – I've only had to convince the Board of Directors to finance Dick's search and recovery mission. That has been fairly easy because Dick has been so successful.

We now have a complete set of our newsletters and many of the documents we were looking for. Sadly, however, much of our heritage has been lost. Though we have photo copies, we don't have many of the original photos of the people who led the way. Nor do we have many originals of, for instance, Annual Show winners, or Life Members, or Master Beekeepers.

But we do have those photo copies, and Dick has managed to get all the newsletters and many of the documents scanned and put on CD, and then copies of those CDs distributed to several locations. We are not bound to lose again our past.

Why is that important? And why did EAS spend the considerable amount of money we did to accomplish this? Well, sometimes I wonder.

The logic behind learning history, at least for me, is so I can understand why certain decisions were made in the past that are affecting the way things are done today. Most times other people aren't doing what ever it is they are doing, 'just because.' There's a reason. Not always, mind you, but most times.

The EAS founders created something that didn't exist before they put their heads together. All the pieces, all the people and all the means necessary were there, but they put them together, just so, to create EAS. They kept what they needed and didn't use what they didn't need. And along the way EAS has continued, mostly, to do that – use what's needed obtained from wherever it's available, and discarded what's not needed or no longer available.

And although accepting change can be threatening for some, most of us can, and will change if there's a good enough reason. Not 'just because.'

So for us 'beginners' in EAS, there is a reason to learn of the past, to know about the founders and those who followed, about what they did, and if possible why they did it the way they did, and the places they met and the things they created.

And where is your past? Who was the first founder in your organization (although I'm working with beekeeping groups here, the question is valid for any group you are a part of).

Officers change, Directors go away, older members retire and no longer belong, historians move and take away what they collected, sudden death robs us of enriching our store of knowledge from those with history literally oozing out of their smokers

Too easily we lose touch, and the reasons for what we do grow pale and disappear.

Knowing your past takes the starkness of the daily black and white decisions of life and mutes them to a warmer and softer hue. That knowledge softens the edges and eases the sharpness of change. And we are, almost always, wiser for the effort.

So I guess there is good reason to re-collect and study the past. And though I still occasionally wonder, the benefits are grand, and the effort worthwhile.

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Ah, the rumors of the day. Let's see. There is a somewhat short crop here in the U.S. again (see the numbers on our honey report, page 12), which means prices, even for imported honey, will remain a bit above dirt cheap again this year.

One reason for less honey is fewer colonies, which means a reduced supply for almond pollination – again. The best price I've heard so far is $70/colony. Even $50/colony for four frames. That should get some attention.

But why fewer colonies? Mite control, that's why. Mites aren't being controlled by what's available – even the exotic stuff isn't working as well as it (they) was.

There's a lesson here. Dead colonies don't make honey, bees, or money. All they make is demand for more bees. Bees that, by the way, don't seem to be resistant to much besides the will to change.

Think about that "will to change" when you're talking to your queen producer this year.

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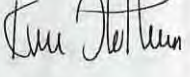
51% of the people eligible to vote, voted in the last Presidential election only 51%. And, if you figure that just about exactly half voted one way, 25% of the *eligible* voters in the U.S. decided what's what for the following four years.

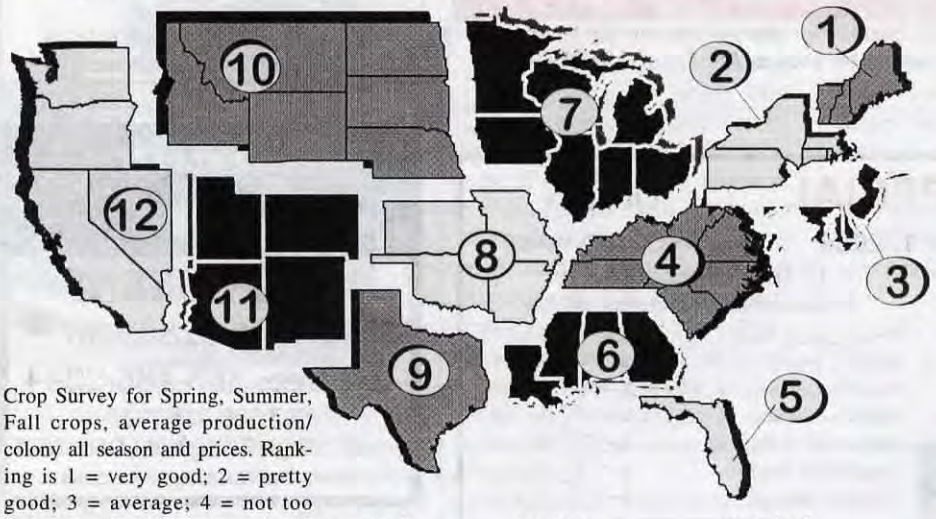
But that 51% also made property tax decisions, chose school and zoning board members, picked judges, mayors, alderman, and dog catchers. The ebb and flow of daily life – cops on the street, sales tax revenues, and who gets to keep bees where – is all decided this month.

It's true, decisions are made, and democracy is dictated by those who show up. On time.

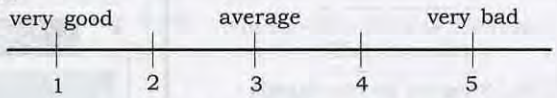


Saving Stuff

NOVEMBER – REGIONAL HONEY PRICE REPORT



Crop Survey for Spring, Summer, Fall crops, average production/ colony all season and prices. Ranking is 1 = very good; 2 = pretty good; 3 = average; 4 = not too bad; 5 = very bad.



Region 1. Spring crop 3.7; Summer crop 3.8; Fall crop 4.2; colony average 56 lbs/colony = 4.3; prices 2.1.

Region 2. Spring crop 4.0; Summer crop - 3.7; Fall crop 2.0; colony average 75 lbs/colony = 4.0; prices - 1.8.

Region 3. Spring crop 1.3; Summer crop 3.0; Fall crop - 2.0; colony average 70 lbs/colony - 1.7; prices - 1.7.

Region 4. Spring crop 3.7; Summer crop 3.3; Fall crop - 2.5; colony average 49 lbs/colony 3.7; prices - 2.6.

Region 5. Spring crop 2.3; Summer crop 3.5; Fall crop 2.0; colony average 130 lbs/colony 3.5; prices 4.3.

Region 6. Spring crop 3.8; Summer crop 4.5; Fall crop 4.3; colony average 79 lbs/colony 4.0; prices -2.8.

Region 7. Spring crop 3.7; Summer crop 3.5; Fall crop 2.7; colony average 84 lbs/colony 3.3; prices 2.5.

Region 8. Spring crop 3.3; Summer crop 4.3; Fall crop 3.0; colony average 59 lbs/colony 4.3; prices -2.3.

Region 9. Spring crop 3.0; Summer crop 3.0; Fall crop 3.5; colony average 86 lbs/colony 3.0; prices 2.7.

Region 10. Spring crop 3.5; Summer crop 3.3; Fall crop 3.5; colony average 88 lbs/colony 2.5; prices 2.0.

Region 11. Spring crop 3.0; Summer crop 2.4; Fall crop 2.9; colony average 69 lbs/colony - 2.8; prices 2.0.

Region 12. Spring crop 3.7; Summer crop 4.7; Fall crop 4.3; colony average 63 lbs/colony 3.5; prices 1.0.

Across all regions, colony production average = 70 lbs/colony. This compares to USDA's 69.9 in 2003 and 66.7 in 2002. Colony numbers in 2002 = 2.574 million colonies for a production total of 171.8 million pounds. 2.59 million colonies in 2003, with that 69.9 lb average made a 181.1 million lb crop. This year, colony estimates = 2.55 million colonies (*Bee Culture* survey estimate), for a projected production of 178.0 million pound crop. This is compared to an 'average' U.S. crop of 220 million lbs., or nearly a 20% drop. Prices will undoubtedly reflect this shortage, as will imports.

	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	1.07	0.95	1.07	1.21	0.88	1.10	1.22	1.07	1.07	1.10	1.29	1.28	0.88-1.29	1.11	1.10	1.38
55 gal. Amber	1.10	0.90	1.10	1.01	0.75	0.93	1.11	1.03	1.03	1.03	1.35	1.18	0.75-1.35	1.04	0.96	1.22
60# Light (retail)	110.67	114.45	84.00	95.00	75.00	101.67	108.13	99.55	106.67	117.73	135.00	118.33	75.00-135.00	105.52	103.19	95.95
60# Amber (retail)	101.25	104.36	115.38	92.80	97.00	97.50	106.75	105.00	120.00	115.00	140.00	105.00	92.80-140.00	108.34	95.13	92.69
Wholesale Case Lots																
1/2# 24's	39.30	44.78	48.00	35.39	40.37	41.95	38.73	40.37	40.37	35.76	36.00	40.37	35.39-48.00	40.12	35.82	36.52
1# 24's	63.07	60.38	72.00	51.42	55.50	56.00	59.34	57.07	53.20	77.76	62.40	68.40	51.42-77.76	61.38	62.22	58.95
2# 12's	59.45	58.29	58.26	48.30	44.40	48.00	50.29	59.50	48.33	57.84	35.00	60.90	35.00-60.90	52.38	53.64	51.43
12 oz. Plas. 24's	54.19	54.86	60.00	41.23	46.00	48.00	47.78	48.26	48.73	47.64	69.50	52.80	41.23-69.50	51.58	48.56	46.67
5# 6's	62.74	64.29	84.00	50.81	69.28	60.00	58.31	55.50	53.75	61.86	80.00	72.00	50.81-84.00	64.38	57.00	54.46
Quarts 12's	83.60	100.35	83.60	62.86	61.80	85.33	79.51	77.55	78.67	90.85	89.70	96.00	61.80-100.35	82.49	80.16	76.92
Pints 12's	52.11	49.95	52.11	38.00	42.60	51.33	57.27	43.53	45.17	51.75	45.00	54.00	38.00-57.27	48.57	49.11	44.25
Retail Honey Prices																
1/2#	2.34	2.51	2.40	2.59	2.40	2.40	2.42	2.20	2.19	2.63	2.55	2.50	2.19-2.63	2.43	2.57	2.41
12 oz. Plastic	3.37	3.10	3.13	2.85	2.69	3.25	2.96	3.46	2.73	3.17	3.05	3.33	2.69-3.46	3.09	3.11	3.22
1 lb. Glass	3.45	3.69	4.30	3.71	3.49	3.87	3.65	3.94	3.75	4.02	4.07	4.15	3.45-4.30	3.84	3.88	3.70
2 lb. Glass	6.43	6.16	7.00	5.75	5.95	6.99	6.22	6.84	5.74	6.98	5.93	7.75	5.74-7.75	6.48	6.43	6.07
Pint	6.00	6.88	5.90	5.49	4.95	5.00	5.89	5.28	4.75	6.49	5.08	6.50	4.75-6.88	5.68	5.46	5.29
Quart	7.00	8.55	9.50	7.40	7.95	8.75	8.26	8.84	7.80	10.50	8.63	11.00	7.00-11.00	8.68	8.93	8.48
5 lb. Glass	12.13	12.97	15.00	12.63	15.36	11.55	14.00	14.00	15.36	13.94	13.83	13.50	11.95-15.36	12.85	13.30	12.30
1# Cream	4.70	5.06	4.75	4.30	4.83	3.95	4.44	4.31	4.83	4.27	4.81	4.00	3.95-5.06	4.52	4.57	4.21
1# Comb	5.20	4.27	5.50	4.98	5.45	4.00	5.06	4.66	4.99	5.59	5.50	4.75	4.00-5.59	5.00	5.00	4.53
Ross Round	5.35	3.90	5.50	4.75	4.98	4.75	5.50	4.99	5.00	5.55	5.50	5.00	3.90-5.55	5.06	4.48	4.64
Wax (Light)	2.50	2.44	1.50	1.40	1.23	1.91	2.14	1.50	1.83	1.55	2.12	1.85	1.23-2.55	1.83	1.97	1.52
Wax (Dark)	1.96	1.57	1.40	1.25	1.10	1.76	1.24	1.61	1.65	1.61	1.50	1.65	1.10-1.90	1.53	1.42	1.26
Poll. Fee/Col.	46.25	41.33	32.00	35.00	35.00	42.50	42.29	60.00	30.00	42.73	45.00	33.00	30.00-60.00	40.43	41.46	38.42

Mark Winston

Turkey Bones

"For you inventor wannabees, there are still many devices desperately needed by beekeepers."

What do turkey bones, Vaseline, and battery-driven smokers have in common? They are all gadgets associated with beekeeping, one way or another. What do beekeepers and thingamajigs have in common? Just about everything.

In fact, I think the word "beekeeper" must be derived from some ancient language in which it was synonymous with "gadget." I imagine our cave-dwelling ancestors sitting around the fire one night, with one of the resident cavemen holding forth in front of his tribe, perhaps a grizzled old fellow whose family had cornered the market on robbing honey from wild bee hives.

"Fellow cave people," he says, "let me show you the latest widget that I've put together from the thigh bone of a mastodon and the long incisor from that saber-tooth tiger we killed with our spears, you remember the tiger we surrounded last full moon when we were out catching flying termite queens to eat for snacks? But I digress, my doohickey lets me reach into the nest without getting stung. Now I'm going to tell you how it works, but first I wanted to tell you the story about the shaman, the hunter, and the flint-maker who decided one day they wanted to keep bees "

Oops; like all beekeepers yesterday, today, and forever who get in front of a crowd, I digress. My own love of bees is matched only by my admiration for bee doodads, those odd, eccentric, but incredibly useful thingamabobs that seem to pop out of the quirky imaginations of our fellow beekeepers.

Doohickey's are on my mind because I recently returned from the annual Summer meeting of the North Carolina State Beekeepers Association, held in Charlotte this last July. It was a fabulous meeting, one of the most hospitable and welcoming groups I've had the pleasure to encounter, with a hugely successful Master Beekeeper program that also makes them among the most educated and knowledgeable beekeepers on the planet.

And, they love to talk gadgets and thingamajigs. A number of their sessions included discussions about things beekeepers have invented over the years, from skep hive tools to unusual smokers, from Vaseline-impregnated pheromone to an endless array of hive tools.

My first, and favorite, device was a turkey bone. I don't know about you, but I spend quite a bit of time with turkey bones, and like old Rover I could gnaw on one all night long. But I've never thought about using a turkey bone away from the Thanksgiving table, that is not until I met Janno Daniel at the Skep-making session.

Janno is a well-known North Carolina beekeeper whose interest in bees has spilled over into skep hives. She makes skeps, and gave a demonstration at the meeting about how to get one started.

The Holiday Inn meeting room smelled like a barn from the bundles of straw and bramble brier canes that Janno brought in for participants to weave into the beginnings of a skep hive. She gave us two cautionary messages before starting. First, keeping bees in skeps is illegal since they don't have movable combs, and we were making them only for show (snicker, snicker from the audience .).

Second, it's a messy business, and we should put a plastic sheet over our laps before starting. One old boy chimed in at that point, in a heavy southern accent, "But I already got my lap covered over with Betty " His wife Betty, needless to say, was not amused.

There are many gadgets associated with weaving a skep hive, including the turkey bone, useful because it is hollow and has a nice handle to grasp. In beginning a skep, you quickly get to the point where you have to turn it back on itself, which makes it impossible to bind the straw with the cane wrapping. But, if you put the turkey bone through the incipient top of the skep, you can push the cane through the hollowed bone, then remove the bone and voila, your cane is perfectly positioned to continue weaving.

There are other useful gadgets for skep making, like a cow horn cut into many pieces, each with a different diameter, to insure that successive bands of the skep will be the proper width. PVC pipe is the contemporary version, but the cow horn is a way cooler gadget.

I next went over to the real thingamabob session, "Beekeeping Gadgets Around the World," a col-

Continued on Next Page

"Doohickey's are on my mind because I recently returned from the annual Summer meeting of the North Carolina State Beekeepers Association."

lection of stuff that Bob Cole from Watauga County, North Carolina had accumulated.

Bob specializes in smokers, it seems, because he had a smoker for just about every possible scenario. There was the giant smoker designed for the highly aggressive Africanized bees, with a mega-bellows large enough to occupy one beekeeper full-time in the bee yard generating smoke. There was the battery-driven smoker for the thumb-impaired, lazy beekeeper, and the fire-retardant smoker with its spark arrestor inside the cap for careless beekeepers prone to incendiary accidents.

Bob didn't have a hands-free smoker, designed to generate a puff of smoke by a quick exhale through a tube held between the beekeeper's lips. I've always appreciated that one, since it could provide double-duty for a beekeeper who wants to smoke his bees and fill his lungs with tobacco, blowing out for the bees and sucking in for the nicotine fix. Or, perhaps something more illegal could enhance the beekeeping experience for bees and beekeeper alike.

Bob also had a few other dandy devices, including a hive tool from Egypt with a special curved tip used to scrape stingers out, and a spring-loaded comb honey holder with a thin slit through which foundation could be inserted to three squares simultaneously.

Then there was the Brazilian bee veil with a light-colored stainless steel screen instead of the traditional dark screening. Dark colors, of course, attract bees, and the rationale for the light screening is pretty obvious. That one was another killer bee-inspired innovation, but makes good sense to me, killer or regular.

He also showed off Estonian baby nuc frames, cleverly constructed with a thickened, hollowed top bar that served double-duty as a feeder in addition to holding comb. Another highlight was the Italian frame with sloped ends that fit perfectly into a super with correspondingly sloped frame rests, so that it would be a simple matter to insert a hive tool between frame and frame rest to dislodge a propolis-infested frame.

The Europeans were well-represented, with a final device from Poland that seemed to be Bob's favorite. This was a stainless steel frame holder that hung on the side of a super once the top is removed, into which a couple of frames could be rested temporarily while working through a colony. This one, like the best inventions in any field, had that immediate "why didn't I think of that" quality about it.

I also had the opportunity to reunite with my graduate supervisor Chip Taylor, who also was speaking at the meeting, bringing back memories of innumerable devices tried and failed. We once spent quite a few days indoors during a tropical monsoon devising ways of tethering virgin queens to lightweight fishing line so that we could fly them through congregation areas to mate when the weather broke.

We tried harnesses, tiny hooks glued on their backs, and nooses, and even tricked a few queens into flying around our field station. Mating with those impediments on didn't seen too possible, though, and would have been too kinky for our tastes even if successful.

Still, it rained a long time, and we went stir-crazy enough that we named our mating devices, most with monikers not fit for a family journal like *Bee Culture*. "Mastermater" was one of the tamer nicknames, but racy names or not, none of our inventions ever made it to prime time.

Chip did invent lots of gadgets, though, and occasionally one even worked. He devised a top-secret formula to impregnate Vaseline with nasanov pheromone, which when smeared anywhere is highly attractive to bees. Practical jokes aside, it's a highly useful tool for swarm catching, picking up stray bees in the honey house, encouraging a package to walk up into a new hive, and many other things. Chip sells his special blend, and it's one handy thingamajig that I can recommend most heartily.

For you inventor wannabees, there are still many devices desperately needed by beekeepers. For instance, anyone who can invent a simple, low-cost, highly effective queen finder and catcher is guaranteed fortune and fame.

Or how about a hive tool that can double as a cell phone, or a Blackberry? Imagine the convenience of lifting a frame out of the hive, then checking your e-mail and calling home to tell your spouse you'll be late for dinner?

Time to head down to the basement and do a little tinkering. BC

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

Dealing With HIGH MOISTURE HONEY

There is a good reason bees drive moisture out of nectar and produce honey. Properly dried food keeps well.

Keith **Copi**

Dealing with high-moisture honey is mostly a problem for small-scale beekeepers that lack well-equipped extracting facilities with things like overhead fans and hot rooms. In addition, with the relatively small amount of honey harvested, we do not have the option of just blending the high-moisture stuff with 10 other barrels. I have harvested more "wet" honey than I care to admit and have learned a few things along the way that may help other small-scale honey harvesters.

The problem

There is a good reason that bees drive moisture out of nectar and produce honey. They do it for the same reason that we make grapes into raisins and dry grass for Winter livestock feed. Properly dried food keeps well. In the case of nectar/honey, the enemy is osmophilic (sugar-tolerant) yeasts. The bees attempt to remove enough moisture from the honey that these yeasts cannot grow or in the least, that their growth is greatly slowed, allowing the bees to eat the honey before it ferments. The factors which determine whether or not honey will ferment, and how fast fermentation will occur, are the moisture content of the honey, the number of yeast spores present, and the temperature. Generally speaking, as each variable increases, so does the speed at which the yeast grows. Honey with a moisture content of 17% or lower will never ferment. (Except that if that honey granulates, as it does the moisture content of the liquid portion of the honey will increase, and fermentation could then occur.) Honey stored at a temperature below 50°F will not ferment. Removing yeast spores from honey is more trouble than it is worth. Large-scale processors get around the problem by heating the honey to 145°F for 30 minutes, which kills the spores.

"High-moisture" honey defined

From the above, it would appear that honey needs to have a moisture content of 17% or less or it will ferment. Such is not the case. As with everything else in life, we need to deal with probabilities, not possibilities. The bees commonly cap honey for storage which has a moisture content above 17%, and such honey seldom ferments. So how much moisture is too much? The National Honey Board defines honey as having a maximum moisture content of 22.9%. Above that limit you have nectar, not honey. The European Union defines honey as having a maximum moisture content of 21%. Coming back to this side of the pond, the United States Department of Agriculture (USDA) requires

This honey is being extracted under conditions which are too humid, and high-moisture honey was the result.

Continued on Next Page

A simple rig for drying honey in the supers. Note that the dehumidifier faces into the box at the bottom while the box fan lies on top of the supers to pull air through the stack.

honey to have a moisture content of 18.6% or lower to receive a Grade of A or B. Honey can have as much as 20% moisture and still receive Grade C status. A moisture content above 20% receives a "substandard" grade. The standard in the United States for honey shows is generally 18.6% moisture content, with honeys above that limit being disqualified. The general consensus is that honey has "a high moisture content," or is "wet" if the moisture content is above 18.6%. It is generally accepted that honey above 18.6% moisture should not be bottled for sale to the general public. Honey with a moisture content between 17% and 18.6% moisture content could eventually ferment (depending on the other variables) but could be reasonably expected to last for years in a sealed bottle. One advantage of higher moisture honeys is that they tend to be slower to granulate.

Cause

The most common cause of "wet" honey is allowing frames of uncured nectar to mix with honey during extraction. The common solution given for this problem is to wait until the bees have capped all the honey before removing supers for harvest, the logic being that if the bees capped it, it is fully cured, proper honey. I find this approach to be impractical, and I am sure that many of you do as well. In my case surplus honey storage ends abruptly in late June or early July. I like to extract in late July or early August in order to use August for requeening and mite treatments. Whether it is the abrupt end of the flow cutting off wax production, or the very humid conditions we get here in the Summer (which makes fully curing the nectar impossible), I do not know, but I will end up each year with 10 to 30 pounds of uncapped honey/nectar per hive at extracting time. I would think that many of you that produce a Fall crop are in the same boat. You may need to pull supers in mid-flow in order to get them out of the way to prepare your colonies for Winter. Of course, just because the honey is not capped does not mean that it is high-moisture. Ideally the uncapped honey could be tested with a refractometer to determine the moisture content. The low-tech alternative is the "shake test." Face the comb openings downward toward a table and give the frame a hard shake. If nothing falls out, the honey is fully cured. So what do you do if the honey is indeed "wet"? The options are to extract it anyway and hope that your capped honey is dry enough to compensate, but this risks the whole crop. The other option is to return the questionable frames to the bees, but this could involve giving up a significant part of the harvest. There is another option.

Drying honey in the supers

I have built a simple system for drying the questionable honey in the four to six supers of uncapped honey which I take off my backyard colonies each year. I built a frame out of scrap two by fours with a length and width equal to the size of a super and a height equal to the height of a dehumidifier. The top and one side of the frame are open. The bottom and three sides are covered with corrugated plastic (sheet plastic, plywood or sheet metal would also work). The supers to be dried are stacked on top of the frame. On top of the supers I lay a box fan positioned such that air is pulled up through the supers. Into the one open side I place the dehumidifier, such that the dehumidifier blows into the box. The idea is simple: The dehumidifier blows dried air into the stack and the fan pulls the dried air up the column of supers and out the top. The system does not need to be perfectly air-tight. This arrangement allows me to drop the moisture content of the uncapped honey about 2% in twenty-four hours. I would not hesitate to leave it running for longer, if needed. This arrangement leaves me with uncapped honey in the mid-to-low 18% moisture range, along with supers of capped honey. It would appear from this that I am now ready to extract with no risk of ending up with "wet" honey; but actually, I am not out of the woods yet.

Controlling humidity during extracting

Honey is hygroscopic, which is a fancy way of saying that it has the ability to absorb moisture from the air. This is why the bees cover the honey with a water-proof seal (cap it with wax) after they cure it. Another way to end up with high moisture honey is to extract it under very humid conditions. This is mostly a problem for the small-scale beekeeper who extracts in a shed, barn, garage, or other space which is not climate controlled. As a general guideline if the relative humidity in your extraction area is above 60%, your honey is probably soaking up some moisture. In my experience, relative humidity above 70% is where the problems can become significant. Think about what happens during extraction: Droplets of honey are flung through the air, hit the side of the tank, and then run in a thin line down the sides of the extractor wall. If the air the honey is exposed to is wet, the honey has ample opportunity to soak up that moisture. If the air is dry, the honey will give up moisture. In most extracting rooms, whether hobbyist or professional, relative humidity is mid-range, and the moisture content of the honey does not change significantly up or down. I live in central Virginia, where the Summers are very humid, and, as I mentioned earlier, I extract in mid-Summer. I have had more than one occasion where I ended up with high-moisture honey by extracting in an out building in high humidity. The

simplest solution to this problem would be to not extract during humid weather. However, most small-scale beekeepers do not have this option, since extracting day needs to be scheduled weeks in advance to fit it in around work, family and other obligations. Another simple way to solve this problem is to run a dehumidifier in the extracting area. It takes a while for the dehumidifier to dry the air, so start it at least a few hours before you begin extracting, or, better yet, the night before. Another option would be to use a window unit air conditioner, since air conditioners essentially cool the air by removing moisture from it. If you are extracting on a cold, rainy Fall day, adding a heater will help since warm air holds more moisture than cold air, effectively lowering the relative humidity in the heated room. Fans by themselves do not help much, unless air is being pulled in from a drier area. For example, a fan pulling air from an air conditioned house into the attached garage would somewhat lower the humidity in the garage.

Drying extracted honey

As I mentioned above I have had cases where I have extracted honey only to find myself with several buckets of high-moisture honey. In fact, it happened this year. Now what? I developed a relatively simple way to dry the extracted honey. I dumped four gallons (48 pounds) of 20% moisture content honey into a large (24 in. X 30 in.) stainless steel pan. I covered the top of the pan with a door screen which had several layers of cheese cloth over it, to catch dust. I placed a 24-inch box fan on top of the pan, with some scrap lumber spacers to hold the fan up a little, such that the fan blew air down into the pan. Most importantly, I set this up in a small room with a dehumidifier running and closed the door. I stirred the honey once per hour, except at night and during the day while I was at work. This set-up reduced the moisture content of the honey to 16.8% in 24 hours. I did the same thing with another, slightly smaller batch, then blended the dried honey with a third bucket of 19% moisture honey to end up with all of the "wet" honey in the mid 17% moisture content range. The concept here is simple: Spread the honey out as much as possible (to increase the amount of surface area which can interact with the air), then pass dry air over the honey. If you do not have a large pan, large plastic storage containers from places like Walmart and Home Depot are readily available. Just make sure it is strong enough to handle the weight. If you do not have a dehumidifier, setting this up in an air conditioned room in your house may work, but will likely take a few days to dry the honey. I will leave the task of convincing your spouse that this is a good idea, and the logistics of keeping kids and pets out of the honey, up to you. Obviously, drying extracted honey like this is a big hassle, and is to be avoided if possible, but if you find yourself in a bind, it will work.

Refractometers

The moisture content of honey is determined by using a refractometer. Many small-scale beekeepers are reluctant to spend the $60-80 that a basic refractometer costs. With reasonable care a refractometer will last forever. Personally, I think it is an important tool to have on hand. I would not recommend trying to extract or to dry honey of questionable moisture content without a refractometer. If you do get a refractometer, make sure that you get one that is meant for use with honey. When you get your new refractometer read the owner's manual. If you do not use it properly, you will get erroneous readings. For example, many basic refractometers are meant to be used at 20°C (68°F) and if used at a different temperature, you will need to make adjustments to the reading according to a table in the owner's manual. Some refractometers have an Automatic Temperature Compensation system (ATC), making such adjustments unnecessary. However, be careful with ATC models; most are intended to work within a set temperature range. Mine is intended for use in 10°C to 30°C (50°F to 86°F). Since I extract in the heat of the Summer, my honey can end up warmer than the upper limit, and must be cooled a bit to get a good reading. BC

Keith Copi keeps bees and deals with high moisture honey at his home in Richmond, VA.

Four gallons of honey placed in a 24 by 30-inch pan to spread it out for drying. The screen and cheesecloth dust catcher and fan placed over the pan of honey, making it ready to be dried. There is also a dehumidifier in the room.

More On FGMO, and Characteristics of Russian Bees

Bob **Brachmann**

Recalling this past Winter's conditions, our bees experienced a fairly mild December but a wicked cold January and most of February. This was true for both our bees wintering in Western New York and for those wintering 300 miles to the south in the Blue Ridge Mountains of Virginia. Here in New York we had an all time record low average temperature for the month of January. The weather forecast called for a decent break in the weather in Virginia at the end of February and, being anxious to check on hive conditions, I made plans to check and sample a couple of beeyards.

The first yard chosen went into Winter with 132 colonies. This yard contained those colonies most likely to still have some Russian hybrids. Also in the yard were five non-Russian colonies. These were headed by queens purchased the previous year (early Spring 2003) to make up splits for sale. I kept those five left over splits for myself; it's nice to have a few to offer a comparison.

The second yard chosen for sampling went into Winter with 60 Russian colonies and 48 Russian nuc mother colonies (consisting of two shallows each) each of which wintered on top of one of the 60 big colonies.

The first yard went into Winter with 132 colonies. Seventeen of these died over Winter, the vast majority due not to the bees but the beekeeper; they starved to death. Western New York was not the place to make honey last year. 2003 was our poorest production year ever and we pulled all the honey I dared to. In some cases we pulled too much.

In the second yard we lost two of the 60 big colonies and five of the 48 nuc mothers all due to small clusters (due to having a very poor production year in 2003).

Samples of adult bees were taken from both yards. They were gathered in plastic medical sampling jars partially filled with alcohol. (These were inexpensive at a medical supply store and they've never leaked any alcohol in shipping.) All the samples were handled by Jan Dormaier, a microbiologist who runs "Honeybee Investigations," a diagnostic laboratory for apiaries.

Samples were pulled from 21 colonies in the first yard, one of them from a non-Russian colony. Several bees from each sample were checked for tracheal mite levels. Both left and right trachea were observed in each bee. There were no tracheal mites found in the samples – none, nada, 0% infestation.

Each of these samples was also checked (Wilson wash) for *Varroa* mites. (Keep in mind that a 'Wilson wash' yields over twice the *Varroa* mites that an ether roll does on a similar sample.) Levels found were disturbingly high, an average of 10% in this yard. The high was 33% in the one non-Russian colony sampled I am still somewhat confounded by the fact that the levels were this high but almost every colony appeared to be healthy. What would the first hatch of brood look like?

I only pulled two samples in the second yard. Sample A contained bees drawn from several of the big colonies. Sample B contained bees from each of several of the nuc mother colonies. 100 bees from each sample were checked for tracheal mite levels. Again, there were no tracheal mites found.

Why were no tracheal mites found in any of the bees in all this sampling (a total of 305 bees coming from 29 colonies were checked for tracheal mites)? While it's true that Russian bees are extremely resistant to tracheal mites such a large sampling usually produces some tracheal mites. Also, five of the bees sampled came from a non-Russian colony (it was Italian). I suspect that FGMO fogging is very effective at eliminating tracheal mites.

Twenty-five bees from each of these two samples were also dissected and checked for nosema levels. Nosema levels were low, estimated at 68,000 spores/bee in the big colonies sample and 44,000 spores/bee in the nuc mothers sample. Still, we fed all the nuc mothers a gallon of syrup with fumidil to help ensure nosema free queens in the Spring.

Each of these samples were also 'Wilson washed' to determine *Varroa* mite levels. The sample taken from the big colonies was infested at an 8% level. The nuc mother sample showed a 5% infestation.

It's interesting to note that the nuc mother colonies had the lowest *Varroa* infestation (5%), yet only received one fogging with food grade mineral oil in the previous year. The big colonies in that same yard each received three treatments (FGMO) but had an 8% infestation level. And the colonies in the first yard had, over the previous year, been treated an average of about seven

times each yet had a 10% infestation. No folks; that doesn't mean that food grade mineral oil promotes *Varroa* population growth. What it indicates is that colonies started as nucs carry lower *Varroa* levels than 'older' colonies and that nuc mothers used for queen rearing carry even lower levels and indeed, in Russian bees do not seem to need any treatment for *Varroa* mites. We'll leave this for another article though.

In answer to the question posed earlier "What would the first hatch of brood look like?," it looked fine – no PMS. In the interim though they were treated three times with food grade mineral oil or a mix of 500 ml of FGMO and two drops of tea tree oil. Loss of some of the data precludes any hard evaluations concerning the addition of tea tree oil to FGMO but it didn't appear to add to *Varroa* control at that level. The FGMO treatments did, once again, seem to reduce *Varroa* levels though this Spring the reduction was less than 60%.

One other important note about these *Varroa* mite samplings; Due to the extended cold weather, most of these colonies were still broodless at the time of the first sampling. A few had just a little brood. This left most of the mites exposed to sampling. If the samples were taken three weeks later the levels would have appeared to be lower. Of course this would not be the case; the 'missing' mites would be in the capped brood reproducing. A 10% infestation previous to commencement of brood rearing may look like a 6% infestation with lots of brood present in Russian colonies, or a 3% infestation level in non-resistant stock. (More on this later)

From March through April those of our colonies that were in Virginia received five 'foggings.' After this they were fogged an average of once every three to four weeks. At the end of July I've noticed some pms in two apiaries and am going to do some limited sampling. I'll keep you updated on the results.

In the past year I've received several letters and phone calls from beekeepers using FGMO delivered with foggers as a treatment for *Varroa* mites. Some have been very pleased with the results and some have not. There are endless variables in environment, timing of applications, number of applications, etc. One probably not often considered is the characteristics of the bees themselves. Certain traits in Russian bees ensure a much higher likelihood of success with FGMO (or any other fumigant or irritant.) than with other bees.

For several years the staff at the Baton Rouge bee lab has been sampling mixed apiaries of Russian and non-Russian colonies in commercial operations in Louisiana, Mississippi, and Iowa for the purpose of comparing overall desirability and, in particular, mite population growth in Russian versus various non-Russian stocks. "These evaluations included: counts of mites in 200 worker brood cells (50 from each side of two combs), counts of mites in 100 drone brood cells (50 from each side of one comb), counts of mites on 300 to 600 adult bees washed in ethanol to remove mites, and comb by comb estimates (to the nearest 5%) of the number of worker and drone brood cells in the nests (sealed and potentially infested) and the number of adults (to the nearest 5%) comprising the colonies." (1) These exhaustive studies show that infested Russian colonies exhibit a very high level of phoretic behavior, ie, when compared to other domestic stock, in Russian colonies a much higher percent of *Varroa* mites present are found on adults rather than in the brood. Aside from limiting mite reproduction this also means that at any time during brood rearing a treatment with any fumigant (FGMO) will reach a much higher percentage of the *Varroa* mites present in the Russian colony. This should be true also in any colonies exhibiting SMR traits.

There are other characteristics displayed in Russian colonies that suppress *Varroa* mites within these colonies and which also, I suspect, add to the effectiveness of any treatments using fumigants/irritants. Many of those who are using FGMO in a fogger to suppress *Varroa* mites have noticed that the bees go into an intense grooming mode immediately after the application, indicating that FGMO is indeed an irritant to the bees. Let me put this together with some other observations made in the last few years.

In 2001 staff at the Baton Rouge bee lab in cooperation with Charlie Harper, a commercial beekeeper in Louisiana and the holder of the CRADA agreement to maintain and produce Russian breeder queens for the industry, did some IPM research on tracheal mite control using both Russian and non-Russian colonies. (2)

Part of the test involved the use of screened bottom boards and formic acid. Although the test was designed to observe differences in tracheal mite controls it was observed incidentally that when compared to the non-Russian colonies a much higher percentage of the *Varroa* mites found under the screened bottom boards from the Russian colonies showed missing appendages and bite marks. Very interesting.

It is generally accepted that hygienic behavior can have a positive impact on a colony's ability to control *Varroa* populations. Staff at the USDA-ARS bee lab in Baton Rouge compared Russian colonies to other domestic lines and found that Russians expressed strong hygienic behavior at a much higher level (69% vs 37%). (3)

The fogger and mask I use.

Continued on Next Page

Additionally, at the 2001 joint meeting of the Canadian Honey Council, the Ontario Beekeepers Association, the Empire State Honey Producers Association, the AAPA and the CAPA, Geoff Wilson gave a presentation describing his research at the University of Guelph (Not yet published). He had compared the Russian bees (Released in 2000) to selected lines of Ontario bees. One of the traits evaluated was hygienic behavior. The Russian lines were, at that time, completely unselected for hygienic behavior. The Ontario lines had been intensively selected for several years and had shown superior hygienic behavior when compared to other lines. Despite this his research indicated that those unselected Russian lines were roughly twice as hygienic as the highly selected Ontario lines.

Could it be that applications of FGMO (or other fumigants/irritants) may be tapping into and stimulating some already existing abilities displayed by Russian bees? More research would be helpful.

Characteristics of Russian Bees

I am often questioned by perspective queen customers about the color or race of Russian bees. Are they yellow or black? Are they Carniolan, Caucasian, Italian? The answer is black or yellow or in between, Caucasian, Carniolan, Italian and in between.

Russian bees are not a race or a color. They are a group of bees imported from over a huge area in eastern Siberia. A majority tend to be darker bees. Genetically they are predominantly Caucasian but also contain Carniolan and some Italian lineage. They do have some common characteristics though. I hope the following comparisons of bees (generalizations) will help beekeepers to fit them into their operation, or perhaps to fit their operation to these bees. These comparisons begin with a baseline of healthy Italian, Carniolan, and Russian bees.

A) Wintering ability 1 = best, 3 = poorest
1 Russian
2 Carniolan
3 Italian

B) Winter honey consumption 1 = need least, need most
1 Russian
2 Carniolan
3 Italian

C) Spring buildup 1 = earliest, 3 = latest
1 Italian
2 Carniolan
3 Russian

D) Speed of buildup 1 = fastest, 3 = slowest
1 Russian
2 Carniolan
3 Italian

Note the paradox between C and D. Russians are very late starting their big build up. They will just linger until both pollen and honey are available. This could lull you into complacency leaving you unprepared for their explosive buildup.

E) Swarming 1 = strongest impulse, 3 = weakest impulse
1 Russian
2 Carniolan
3 Italian

You can often get away with crowding Italians. Russian and Carniolans will readily swarm if crowded or honey bound. With both Russians and Carniolans you must consider supering earlier in their development (percentage of open comb). Along with this, super more generously if possible. Super even earlier with Russians as their growth can be the most explosive. Swarming is not a problem with Russians or Carniolans if you know what to expect and manage your colonies. Swarming is negligible in our outfit.

F) Bee populations throughout the year 1 = most bees, 3 least bees
1 Italian
2 Carniolan
3 Russian

G) Tracheal mite resistance 1 = most resistant, 3 = least resistant
1 Russian
2 Carniolan
3 Italian

Russian bees are, by far, the most resistant to HTM. There have been some mites present in a few of my samples but they have not been a threat either biologically or economically in my Russian colonies. Russians require no treatment for HTM. Italians and Carniolans are both slowly improving in this area. Some highly selected Carniolans and Italians are highly resistant.

H) *Varroa* mite resistance 1 = most resistant, 3 = least resistant
1 Russian
2 Carniolan
3 Italian

If you're operating only pure Russian apiaries you should not need to treat every year for *Varroa*. It's too early to determine if an all Russian apiary can thrive indefinitely with no treatment. If you run mixed apiaries or Russian hybrids you will need to treat, though my experience indicates that you can extend the period between treatments. In all cases, the amount of *Varroa* pressure from outside sources must be taken into consideration.

My previous stock was primarily selected for wintering ability, honey production, and tracheal mite resistance. If there was nectar available, they made a good crop. As we've transitioned from one stock to another (1999 - 2003) I've seen comparable production between the two stocks. As I've adjusted my management, my production is now probably higher because the Russian bees require so much less to Winter on. (Note: If you leave too much winter feed on Russian colonies, you're hurting your pocketbook as

well as your bees' ability to thrive.) BC

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.

1)September 2001 American Bee Journal; *Multi-State Field Trials of ARS Russian Honey Bees* by Rinderer, DeGuzman,DeLatte, Stelzer, Williams, Beaman, Kuznetsov, Bigalk, Bernard, and Tubbs

2)October 2001 American Bee Journal; *an Evaluation of Far-Eastern Russian Honey Bees and Other Methods for the Control of Tracheal Mites* by DeGuzman, Rinderer, DeLatte, Stelzer, and Harper

3)January 2002 American Bee Journal; *Hygienic Behavior by Honey Bees From Far-eastern Russia* by De Guzman, Rinderer, Stelzer, Delatte,Beaman, Harper.

My Home – Just One Big Nest

James E **Tew**

And not just honey bees!

J.E. Tew – House Painter.

Early last Fall, after putting the task off for years, I finally decided that I would paint my house. I don't have a particularly large house nor is it very high (unless you are the one at the top of the ladder) so I was confident that I was up for the job. As per the common instructions on how-to TV programs, I made the trip to the home improvement store where I bought the various home painting gadgets. Having painted quite a bit throughout my life, I was certain that someone would have come up with something to make the task nearly effortless. Nope. The best bet is still a good 4″ brush and a heavy duty 9″ roller. You add the labor – which has not changed. I did the job right. Lots of caulking and three heavy latex coats. I don't want to do this again any sooner than I must.

The way bees fit in.

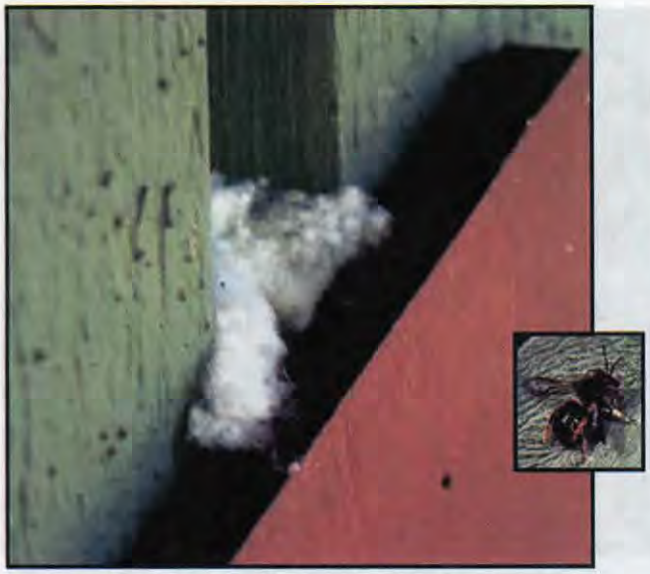
I love honey bees and I like most other bees. On those perfect seasonal days that come and go during the year, I enjoy the natural sound of bees busily buzzing about my yard. On such days, I congratulate myself for contributing to the insect pollinator population and being environmentally sensitive. But then I took on the house painting job and very nearly tired of bees altogether. You see, having bees buzz about your lavender plant is not the same as having bees buzz around your head while you are 20 feet above the ground on a ladder

Yellowjackets first.

Yellowjackets gave me the greatest challenge. During late Summer and all of Autumn, I get a lot of communication about *"bees coming out of the ground"* at my lab. Of course, that's not bees. I do my best to be helpful, but in my heart-of-hearts, I don't have much patience with these callers. They're just yellowjackets that will die after the killing frost season starts. I've even had people specifically ask for help as they house-painted due to the discovery of a nest. *Either kill them or work around them.* I had no mercy in my response. Then I found that I had two nests and a house to paint. This past season's nest on my property was high off the ground. I wasn't particularly concerned about them but last year was bad. I also had two nests that were at nose-height. After my wife was stung twice, I declared war and finally won but it took multiple attacks. But that was last year.

This past Summer, I had a tolerant attitude toward my hornet occupants. Then the painting started. I don't particularly enjoy being on the high end of a ladder. The stinging insects just made things worse, so I decided that the nests would have to go. I suited up in a honey bee outfit, climbed up to the yellowjackets' multiple entrances and sprayed them multiple times with off-the-shelf chemical concoctions. I know

An unusual painter outfit.



Wool Carder nest and adult. (Neil Robinson photo – www.bwars.com/frames/main/members/photos/neil_robinson/)

the neighbors must have been watching. While I killed a few, it really had nearly no effect on the total population. It is not uncommon for the nest to be located some distance away from the entrance. This was obviously my case. I tried a few other times, but spraying them clearly was not going to work. After having admitted defeat on killing them, I went with the other recommendation I nearly always make – work around them.

Back up the ladder I did go where I plugged three of their five entrances with acrylic caulking. My hope was to – at least – restrict their flight pattern to a smaller area. As you would expect, I caused a lot of entrance confusion with small hornets flying all about me, but not one tried to sting me.

After giving them a day to adjust, I again suited up, climbed back up the ladder and put on my primer coat of paint. I even wore bee gloves. On a ladder, I was hot and clumsy. Not surprisingly, I got paint on everything, but eventually, the entrance area was thoroughly painted.

Just as with classic honey bee keeping, on the second coat, I thought, *"They weren't all that aggressive. I think I'll go without the gloves."* Again, nothing happened, so long as you don't mind stinging insects being extraordinarily close to you. As you are probably suspecting, by the third day, I just climbed the ladder and painted the area with no protective gear. Yellowjackets everywhere, but no stings.

Now having told you about my success, I cannot recommend it as a general procedure – primarily because a ladder is involved. The fundamental recommendation for dealing with an attack from any stinging insect is to run, but now you're twenty feet off the ground on a ladder. Telling someone to *"be careful"* as they jump from a high ladder is probably not a good plan.

Though nervous, I was not stung once by either yellowjacket nest during the entire painting project. I was expecting something more, but I was very happy with the outcome as it was. Painting my house has forced me to get up close and personal with spots in the shrubbery and underneath the eves – places I don't routinely explore. I have been intrigued with the diversity of bees and hornets that I have encountered around my home. I suppose some of them could sting, but most of the time, they were just going about their business and I was the intruder.

Wool Carder Bees

As I initially worked my way around the house in the preparatory caulking phase, I kept noticing cotton tuffs stuffed in protected cracks and crevices. I thought it to be some kind of spider action but, in fact, it was the action of wool carder bees (probably *Anthidium manicatum).* Last summer, I noticed the males defending territory around our flowers and acting aggressive, but I didn't make the connection. It appears that the cotton is actually plant fibers and plant hairs that have been collected to form a nest. I never had a minute's trouble from these bees, but they are assertive and will fly near me as they go about their bee business.

Paper Wasps

As a kid, these were the stinging insects that always tormented me. Now as I look back on my youthful years, I suspect that I was the tormentor more often than not.

My encounter with these guys did elicit an immediate response from me. I was on a 10-foot A-frame ladder underneath the eve and I had not noticed that this nest called that particular neighborhood their home. Having the common name Paper Wasps (Polistes sp.), they were fluttering their wings and looking threatening. I can only imagine how I looked to them. Hymenopterous insects must hook their wings together before taking flight. Even honey bees must do this. I used to think that the fluttering business was the wing hooking process, but I am now guessing that it is a warning procedure. I didn't go out of my way to wage battle as I did with the yellowjackets. As it was, these wasps didn't bother me so I didn't bother them.

No-nonsense wasps in the ready position.

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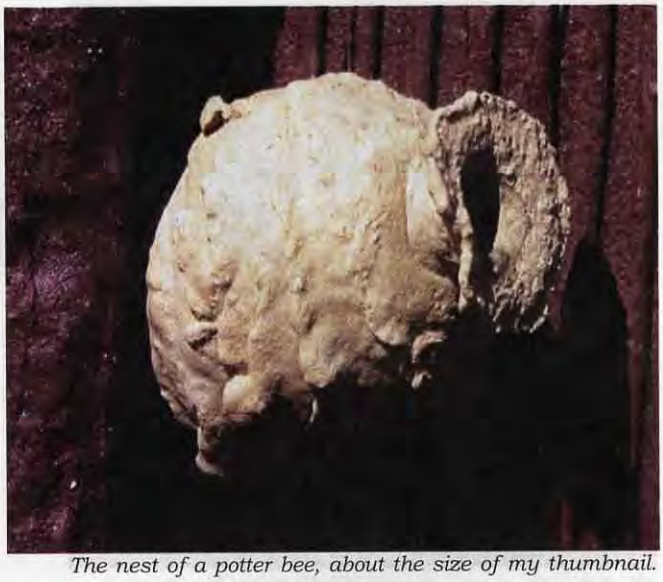
European Paper Wasps.



The nest of a potter bee, about the size of my thumbnail.

European Paper Wasps

All around my house, I had to deal with European Paper Wasps (*Polistes dominulus*) on a common basis. The native range of this wasp is from China to Europe and is the most common wasp in Western Europe. The wasp came into the U.S. in Massachusetts in 1981 and has been spreading ever since. The wasp has gotten the attention of bird enthusiasts in that it readily builds nests in bird boxes. In my case, as I weatherized my house in preparation for the paint job, I unknowingly caulked closed the entrance to their nest. Around my house and outbuildings, I must have come across twenty nests of these insects, but not all nests were active. These guys will nest just about everywhere. Two did pop me earlier in the Summer as I was moving some piping. The ladder on which I am standing has small European paper wasp nest in nearly all of the hollow ladder rungs. Again, most were inactive, but this stinging insect appears to be in the U.S. to stay. Happily, it does a good job controlling caterpillars and other small insects.

Mason and Potter Bees

I came across the occasion Mason bee, sometimes called a potter bee. I never actually saw these bees, only their nests. One was particularly eye-catching. It was miniature clay pot just about the size of my thumbnail. I frequently saw mason bee signs in the voids in my plywood wall where these little bees had set up a nursery. Compared to wasps and yellowjackets, these little bees were rare. I have no idea what species they are though someone might be able to tell something by the look of the clay domicile.

You must tiring by now

I freely admit it. Observing all these bees and wasps gave me something to do as I was doing drudge work this past Summer. Though they are not honey bees (and I really didn't need two yellowjacket nests), all of these bees and most of the wasps are welcomed at my house. I had tiny mining bees digging in the sand near my shop. I had mud daubers building interesting nests in my storage shed. I had leafcutter bees filling the holes in my pegboard tool rack in my garage. I've got bumbles in the back yard and four honey bee hives on location. Have you inventoried your bee population? Until I was forced to paint my house, I just never knew how wealthy I was in bees. I hope next year is even better. 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/

'SUPER' CUPBOARD

Make several – some to give as gifts or to offer for sale!

Peter **Sieling**

Now that you've replaced your old woodenware with Styrofoam hives, what do you do with all those wooden hives? Try making furniture. Mass produced boxes are relatively inexpensive and quick to assemble. Your project is well under way before you even start.

This country primitive beehive cupboard makes a fine jelly cupboard, book case, telephone or light stand. Give it as a gift to a long suffering spouse. Construction is straightforward and simple. Because hive boxes vary slightly in size from one manufacturer to another, you may have to adjust the dimensions slightly.

Make this cupboard with either one or two doors. Inset doors (the door fits flush with the cabinet front) give a traditional appearance. Overlaid doors look more contemporary and are less fussy to mount. For overlaid doors, add one inch to the overall length and width of the doors and use overlay hinges (see sources of supply).

You can use the same lumber species as the hives for face frames, doors, shelves, and back, but it isn't necessary if you paint the cupboard.

Bill of Materials

Part	Description	Size	No. required
A	Beehive Boxes	16¼ x 19-7/8 x 9-5/8	2
B	Top	¾ x 11½ x 18¼	1
C	Face Frame Stiles	¾ x 1¾ x 42	2
D	Face Frame Rails	¾ x 1¾ x 12-5/8	2
E	Front Bottom Rail	¾ x 2½ x 12-5/8	1
F	Side Rails	¾ x 2½ x 9-5/8	2
G	Door Stiles	¾ x 2¼ x 17½	2
H	Door Rails	¾ x 2¼ x 12¾	2
I	Door Panel	¼ x 8¾ x 13½	1
J	Shelves	¾ x 9 x 14 ¾	2
K	Back	5/8 x 14 ¾ x 19	2
Hardware			
L	Knob	1 ¼ diameter	1
M	Hinges	1 3/8 x 2"	2
N	Shelf Pins		8

Procedure:

1. Plane the lumber to thickness. Rip to the appropriate width and crosscut all the pieces slightly longer than the final length.

2. Assemble the two hive boxes. They should be glued perfectly square. Once the glue has dried, sand the box joints on the two ends that will be joined until they are flush. Stack them end to end and then glue, nail or screw them together. If using nails or screws, fasten from the lower box into the upper box so the heads won't be visible when viewing the cupboard from a normal angle.

3. Assemble the face frame. Crosscut the face frame stiles 2½" longer than the hive boxes and position them. Crosscut the rails to fit between the stiles. Cut a 10" radius arc on the lower front and side rails. The curved lines of the "feet" soften the otherwise boxy shape of the cupboard.

There are several ways to attach rails to stiles. The traditional method involves mortise and tenons or dowels. A lot of professional cabinetmakers now use pocket screws instead. They are fast, easy and while not as strong as mortise and tenons, they are strong enough. There are a variety of pocket screw jigs available in a wide price range. I used the inexpensive Pock'It Jig™. Like any versatile tool, you'll find a lot of other uses for it.

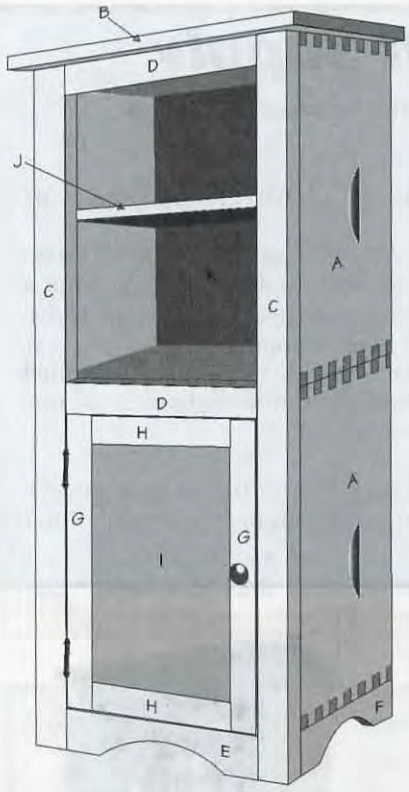
As an alternative the face frames are narrow enough to fasten with finishing nails. Clamp the frames and rails in place, pre drill from the sides. Countersink the nails and fill the holes with wood putty.

4. Glue the face frame to the hive boxes. If you don't have enough pipe clamps, the face frame can be glued and then fastened with finish nails. Sand everything flush.

5. Cut and attach the lower side rails. The face frame extends below the hive boxes about 2½" Rip the rails to the exact width. These can be nailed into the box like the face frame or pocket screwed.

6. Cut top and shelves to fit. With the appropriate shelf supports, the shelf height can be adjustable. Drill the shelf pin holes on the sides of the boxes.

7 Cut door frames and panels. I used an open mortise and tenon joint. It's not the fastest, but it's similar to the joint on an inner cover frame. Cut both the stiles and rails slightly larger than the outside dimension of the doors. To avoid botching the door's fit, make them about ¼" oversize, then trim them on a table saw after assembly. Mill



Cutting door mortise.

a 1/4" wide x 3/8" deep groove down the center of the rails and stiles for the panel. To center it perfectly, set the fence as closely as possible, cut the groove and then turn the piece around and cut the same groove starting from the other end. The groove width will be slightly more than ¼", but the panel can be planed to fit.

8. Cut the mortises. To perfectly center the groove, set the fence so the saw blade slides into the groove that was made in step 7 Clamp a guide board perpendicular to the stile to ride along the top of the fence. Don't try to free hand this cut. The blade will rip the board out of your hand and try to hit you with it. Raise the blade to the height of the tenon. After the first cut, turn the board around, re clamp the guide board and saw again. With a typical 1/8" thick saw blade, the two cuts result in a ¼" mortise.

9. The easiest way to cut the tenons is to remove the excess wood with the dado blade. Set the blade low. Cut one side. Flip over and cut the other side. Try the fit, raising the blade a small amount and removing more wood until it leaves a tenon the exact thickness to fit snugly into the mortise.

10. Cut the door panels to fit into the grooves on the door. The panel is trimmed slightly undersize so it can expand and contract according to local humidity (1/4" plywood can be used instead of a solid piece of wood. It doesn't expand and contract). It can be tight on the top and bottom, but should have at least 1/8" play on the sides. The door should be glued after painting, otherwise when the panel shrinks a light unpainted line will show. Glue only the mortise and tenons, not the panel: it needs to be able to move. Touch up the paint job if necessary after gluing.

11. Fasten 5/8" back pieces inside the frame rest rabbets. I used random width poplar. ½" plywood will also work.

12. Finish the cupboard. For a traditional milk paint look, I applied

Door Mortise and Tenon Detail

Cutting door tenon.

Continued on Next Page

Attaching face frame rails and stiles with pocket screws.

two coats of "Pine Black" interior flat latex paint from the Do it Best Historic Color Gallery. A coat of paste wax protects the paint and gives the surface a warm shine.

13. Glue and mount the door. Trim it to fit the opening and repaint the trimmed edges.

Traditional hinges require mortising. Non mortise hinges (available at hardware stores or Woodworker's Supply) can look just as good and install a lot faster. Attach the knob and catch.

Step back and admire your work. Too late into the project, I wished I had made several at once to offer for sale to my honey customers. BC

Sources Of Supply

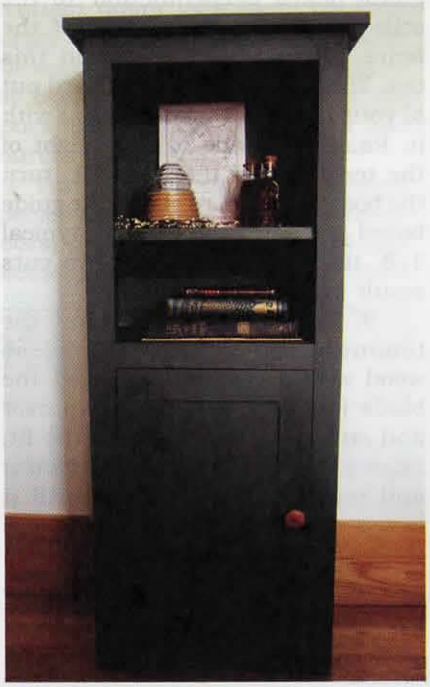
Woodworker's Supply 800.645.9292 or **woodworker.com**
Pock'It Jig™ #122-381, $39.99

Garreson Lumber Company 607.566.8558 or **garresonlumber@hotmail.com**

Beehive Cupboard rough kit: includes 4/4 select unplaned basswood lumber for two doors, two shelves, face frame and back, plus a little extra for mistakes. Some parts will need to be glued to width and planed to thickness. Price $28.00 plus shipping.

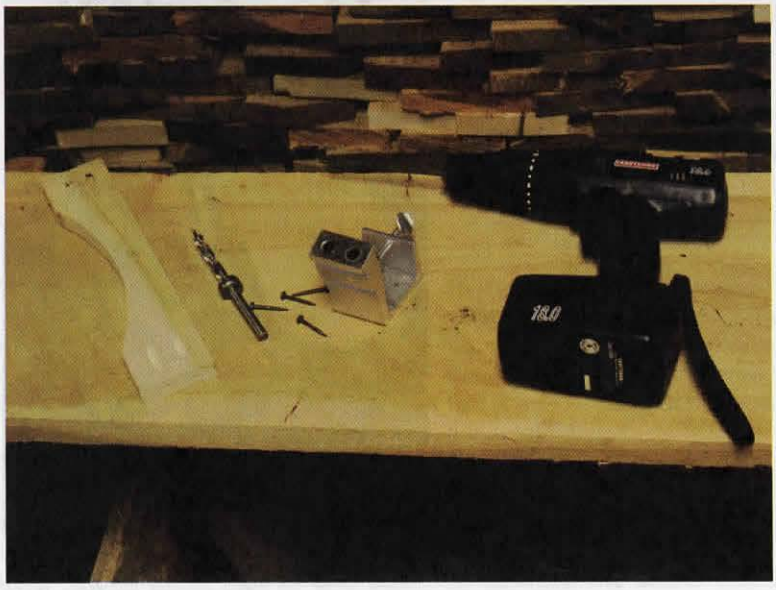
Beehive Cupboard planed kit: Same as above but lumber is planed on two sides to the appropriate thicknesses and straightened on one edge. Price $38.00 plus shipping.

Do It Best Corp. - check doitbest.com to find the nearest store
Black Pine interior latex flat paint #F184, from the Historic Color Gallery



Finished cupboard

Pock'it Jig.



You can use a homemade beeswax finish instead of commercial paste wax. Pour two ounces of melted beeswax into a one cup container. Fill the rest of the way slowly with mineral spirits or turpentine, stirring to dissolve the wax. Warm the mixture in a double boiler until the wax fully dissolves. Apply to the furniture, rubbing in briskly with a clean cloth.

Special thanks to cabinetmaker Bill Forsythe for the cupboard design.

Ann **Harman**

NOVEMBER READ

Winter brings days that you would rather spend inside with a good book.

Look! The calendar says November. Winter is approaching. Whether you live east, west, north, south or in the middle, Winter brings days that you would rather spend inside instead of out in the wet and cold. Those are the days you need to gather the dogs and cats together and read a good book while they snore at your feet (or in your lap, depending on size of animal).

Why are bee books important? Well, during the bad weather the bees are confined to their hives and *they* are reading such books as *Ten Easy Ways to Aggravate Beekeepers* and *How to Swarm When Nobody Is Looking*. You need to read bee books to stay ahead of them. Furthermore the holiday season is approaching and you need a wish list – books that Santa can toss down your chimney or stuff in your stocking.

The assortment of topics bee books cover is astonishing – books for people just thinking about becoming a beekeeper, books on specialized topics such as queens, books that are just fun or interesting to read, and books to expand your knowledge.

Bee books are available from various sources. You can look in the beekeeping supply catalogs (You do have a library of those, don't you?) or you can look through the ads in the beekeeping magazines. That is where you will find the new arrivals. Book stores, no matter how large and how fancy their coffee cafes are, may have only a book or two. You probably already have those. You can look in amazon.com but their list is limited. After all, beekeepers are a specialized group of people and their numbers are limited. Don't neglect the secondhand bookshops. Real gems can be found there with a bit of persistence. And if there is some out-of-print book that you feel you must have, whatever the price, you can go on the Internet and find it.

You can give bee books as well as receive them. If an acquaintance has shown an interest in beekeeping but is not quite certain whether it would be a good hobby or not, a small gift of one of the three beginning beekeeping books would be nice: Root's *The New Starting Right with Bees*, or Dadant's *First lessons in Beekeeping*, or Kelley's *How to Keep Bees and Sell Honey*. These books give a nice introduction to beekeeping and may well inspire someone, young or old, to acquire a hive next Spring. Then other books will be of value.

If that person asks you where to obtain bees, you can be glad we do not live around the year 200 B.C. At that time, and for many centuries after, you needed to have a dead ox. The belief was that bees were produced by the decaying body of a dead ox. Wasps and hornets came from a dead horse and beetles from a dead ass. Now just where did that gem of information come from? A really fun book: Hilda Ransome's *The Sacred Bee*. This book had been out of print but thankfully it is now available again. If you like historical information you will really enjoy this book.

In keeping with history, Langstroth's original book (4th Edition) has also been reprinted. I think this is a "must book" for all beekeepers. After all, we call our hives the Langstroth hive and we credit him with discovering bee space, definitely one of the most important discoveries of beekeeping. His book, the forerunner of today's *The Hive and the Honey Bee*, is valuable for his insight into bees and their lives. By the way, you do have a current copy of *The Hive and the Honey Bee*, don't you? It has a wealth of information on just about every topic concerned with beekeeping.

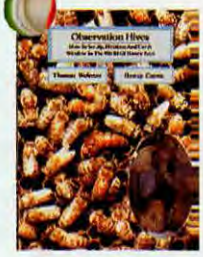
Another reference book for your shelf is Root's *ABC and XYZ of Beekeeping*. This is another book that began back in the late 1800s and has been updated through 40 editions. Although many beekeepers prize their current edition, the early editions that appear on the secondhand market are prized even more for their historical value.

Two other historical books that many beekeepers feel are of importance or interest are C.C. Miller's *Fifty Years Among the Bees* and Materlinck's *The Life of the Bee*. Miller's book contains information that benefits beekeepers of today and gives us many things to think about as we work with our bees. On the other hand Materlinck's book is a bit fanciful and definitely dramatic. For some reason the part on the "massacre of the males" (the autumn ousting of drones) has grabbed the imagination of many non-beekeepers. Miller's book is hard to find, probably because once a beekeepers owns one it is not given up easily. Materlinck's book is easier to find.

For more pleasure reading see if you can find a copy of Sue Hubbell's *A Book of Bees*. You will laugh at and also sympathize with her and her experiences as a beekeeper. Hubbell's writing style is delightful so this book may lead you on to some of her subsequent books. Richard Taylor's *The Joys of Beekeeping* will make you wish Spring would come tomorrow so that you can join your own bees again.

Perhaps you have decided that 2005 will be the year you will have an observation hive, either for your home or to use as an educational presentation. The beekeeping supply catalogs list and show pictures of various styles of hives. But before you buy or make one, you need to read an important book, one

that will help you decide which observation hive is best for you and how to keep an observation hive successfully That book is *Observation Hives* by Drs. Thomas Webster and Dewey Caron.



On a more serious note, you may decide to start raising queens, either for your own use or for sale. The most modern and complete book on queens is Laidlaw and Page, *Queen Rearing and Bee Breeding*. There is no point in trying to guess your way through raising queens and hope to improve your stock without a good basic knowledge of the hows and whys of raising queens. This book will give you a grounding in the genetics necessary for stock improvement as well as the hows and whys of raising your own queens. After all if you are going to invest the time and effort, you might as well learn how to raise queens right. This book is definitely worth studying over the Winter months.

It may seem early to plan for Spring Short Courses for beginning beekeepers, but you need some time to review books and other materials both for yourself and for your students. Although you will find a number of books suitable for beginning beekeepers, two books give you a wealth of pictures. Your students need those pictures more than they need pages of words. You need to obtain a copy of *Beekeeping for Dummies*, one of Diana Sammataro's *The Beekeeper's Handbook* and one of *Beekeeping Basics* from Penn State. See which one of these will fit the needs of your students.

For a comprehensive book you need to consider *Honey Bee Biology and Beekeeping* by Dr. Dewey M. Caron. Actually this is an excellent book for all beekeepers since it covers the biology and behavior of the honey bee. If you are planning a beekeeping course you can use the outlines and activities presented in the *MAAREC Beekeeping Resource Manual*. Visit the MAAREC website at maarec.cas.psu.edu.

Perhaps you would like to investigate the healthy properties of honey. Two books can give you a wealth of information. Joe Traynor's *Honey The Gourmet Medicine* has universal appeal. Read it yourself and also give it as a gift to your friends, with a jar of honey, of course. A bit more technical but extremely informative is *Honey and Healing*, available from International Bee Research Association (IBRA), Cardiff, UK.

You might wish to contact IBRA for other books of interest. The astonishing book by Leslie Goodman, *Form and Function in the Honey Bee*, is a treasure for those who are interested in the anatomy of a bee – what makes a bee and how a bee works. Yes, it is expensive, but worth every penny (dollar) spent. If that book is more than you really want, but you are still interested in anatomy, IBRA offers Dade's *Anatomy and Dissection of the Honey Bee*. IBRA has three very practical books on bumble bees. Who knows, with these three books you might become a bumble bee beekeeper. Contact IBRA at 18 North Road, Cardiff CF10 3DT, United Kingdom (www.IBRA.org.uk).

Winter is a good time for cooking, obviously with honey. Here is a source of gifts for family and friends – a jar of your nice honey and a cookbook to use the honey up. Visit the National Honey Board website at nhb.org to find their latest cookbook, Home Is Where Your Honey Is. This is an ideal cookbook for gifts. A touch of gourmet cooking can be had with Covered in Honey by Mani Niall. Can you really resist a recipe titled "Pan-Fried Apple Fritters with Apple-Honey Dipping Sauce?" Thought not. A total of 100 recipes are in that book. That should keep you busy until Spring.

Although bee books are plentiful, books on plants for nectar and pollen are basically nonexistent. About the only recommendation for an actual book available today is the fascinating reprint of the 1926 *Honey Plants of North America* by Lovell. Yes, there are some pictures. No, the photos are not in color – color photography really was not very available in 1926. So you will need a field guide to help you identify the plants in that book. Fortunately good field guides to wildflowers, trees, shrubs and vines exist. Check then out at your local book store. In addition you can find numerous color-illustrated books on regional plant life. Such books, in conjunction with the Lovell book, can help you identify nectar and pollen plants in your area. The only other alternative is to pull up a chair next to a blooming plant and see if any honey bees visit it. Learning the nectar and pollen plants in your area might take a very long time doing it that way.

For those of you who want to plant something in your flower garden so you can watch the bees at work, may I recommend a small manual called *Garden Plants Valuable to Bees*. This is another IBRA publication. It is a small book, but nicely organized, in a table format. No, you won't find pictures so you will need a seed or nursery catalog to identify plants. Don't worry – seed and nursery catalogs will be along soon. They are designed to arrive on the very worst day of Winter. With this manual you will be able to plan your flower garden and enjoy the visiting bees.

Have you ever thought about making mead? An excellent book for your library is *Making Mead* by Roger Morse. The best mead is made by following their advice rather than letting honey take its own course. You will find that it does not take much honey to make your first batch. Go ahead and get started this Winter. You'll have to wait a while to test it, however.

Have I overlooked your favorite book? Most certainly. But you can recommend that book to your beekeeping friends or to your local beekeepers association. You can also recommend the books mentioned in this article. A good beekeeping library represents many facets of beekeeping and expands one's knowledge. Just be sure to send your wish list to Santa in enough time for it to be packed in the sleigh. BC

Ann spends her Winters with good books and all her animals at her home in Flint Hill, VA.

Honey Plants

Connie **Krochmal**

Spring Blooming Bulbs

Fall is drawing to a close. Yet, it's never too soon to begin planning for next year. In many areas of the country there is still time to plant spring-blooming bulbs for the bees. Over 30 species are excellent pollen plants. Some of these also provide nectar, though the blossoms are seldom plentiful enough to yield pure varietal honeys.

This category of plants includes true bulbs, tubers, tuberous rhizomes, and corms.

Many bulbs are members of the Lily family, and have grass-like or strap-shaped foliage.

General Growing Conditions and Care

Bulbs prefer well-drained soils, but some species will tolerate clay so long as they aren't planted in low-lying areas.

Most require full sun for at least four to six hours daily. A few exceptions are noted later under specific ones.

Planting depth varies from one species to another. Larger kinds, such as tulips and daffodils, should be planted deeper. Bulb packages and mail-order catalogs give specific instructions.

Hardiness is variable and depends upon the kind being grown. Specific recommendations are given below.

Assuming the growing conditions are satisfactory, some bulbs may spread and naturalize. This has been the case with several species. Grape hyacinths have naturalized in the East, while snowflakes thrive in the wild from the Northeast southward to Virginia. Daffodils have naturalized on a local basis in colder regions of the country.

For the most part, bulbs experience few insect and disease problems. They may, however, rot in waterlogged soils, and for some wildlife brings challenges. Deer eat tulip blossoms and Crocus seem specially appealing, for squirrels may eat the bulbs, while woodchucks and rabbits browse on the foliage.

Sometimes certain kinds of bulbs may fail to bloom the first year after planting. They simply need time to get established. After that, things should be fine.

Requiring little attention, bulbs are carefree plants. To be sure, avoid mowing or removing the leaves before they turn brown, because they're making food for next year's growth. For best results I fertilize once a year in the Fall with a complete bulb fertilizer. There are several brands available that contain all the nutrients needed by the plants. Ordinary bone meal can't do that, so don't be fooled by the advertisements you will see.

Normally, hardy bulbs come back every year, but that's not true for certain varieties of tulips. Some catalogs offer hardy varieties, that are true perennials.

Buying Bulbs

Bulbs are often sold by size. Top sized bulbs produce a greater number of larger, longer-lasting blooms the first year. Small, bargain-priced bulbs are often available, and, given time, these increase in size and productivity. For naturalizing or planting en masse, the cheaper ones are fine.

Specific Kinds of Bulbs for Bees

With so many bulbs available, how can you choose the right ones for nectar and pollen? Under each kind discussed below, the best species and varieties for bees are listed.

Anemone (*Anemone spp.*)

Yielding pollen, these half to one foot tall plants bloom in March and April. The daisy-like flowers, one to two inches wide, have yellow centers with petal-like sepals. Typically, the blooms are white or blue. Some have white eyes. The foliage resembles that of the buttercup – a relative. Divided into three sections, each part is triangular-shaped.

Anemones are adapted to any well-drained soil regardless of pH. They prefer partial shade. Soak these bulbs before planting two inches deep.

Apennine anemone (*Anemone apennina*) zones 6-9.

Poppy anemone (*Anemone coronaria*) 'DeCaen' and 'St. Brigid' are commonly available. zones 5-9.

Windflower or Greek anemone (*Anemone blanda*) zones 5-9.

Camass (*Camassia spp.*)

These native plants provide nectar and pollen in May and June.

Camass performs best in a deep, rich, moist, well-drained soil. In warm areas, some shade is needed during the hot afternoons.

Foliage is mostly basal, up to 1½ feet in length. The flower stalks are 1½-2 feet tall. With six flared petals, the blossoms are star-shaped. They're usually blue, but cultivars with white and purple blooms are available. zones 4-9.

The following species are often listed in bulb catalogs.

Cusick camass (*Camassia cusickii*) This Oregon native has bluish-green, odorous foliage.

Leichtlin camass (*Camassia leichtlinii*) is native to the West Coast. It is only four inches tall.

Quamash or bear grass (*Camassia quamash*) is a western species. Found in conifer forests and prairies, it was used as food by Native Americans. Quamash is one to four feet tall.

Wild hyacinth (*Camassia scilloides*) is found in the East westward to Texas.

Anemone blanda

Crocus (*Crocus spp.*)

Spring-flowering crocus bloom very early in the year – often in late January through March in the South. These long-flowering plants are great sources of pollen, but they provide lots of nectar as well when it overflows from the long, slender flower tubes.

Crocus are two to five inches tall. About one to two inches long and almost as wide, the blossoms are goblet-shaped. Usually, these open in clusters of three or four. Flowers come in a wide range of colors. Arising from the underground stems, a sheath encloses the flower bases. A shiny, usually white line runs along the middle of each leaft, useful in identification.

Of the 80 or so species and countless varieties, the following are excellent for bees.

Dutch or large-flowered crocus (*Crocus vernus*) zones 4-9. Among the recommended cultivars are 'Flower Record,' 'Golden Yellow Mammoth,' 'Joan of Arc,' 'Pickwick,' and 'Purpurea Grandiflora.'

Golden crocus (*Crocus chrysanthus*) zones 4-9. The best ones for bees are 'Blue Pearl,' 'E.P. Bowles,' 'Ladykiller,' and 'Snow Bunting.'

Tomasini's crocus (*Crocus tomasinianus*) zones 5-9.

Dogtooth violet (*Erythronium spp.*)

Dogtooth violets are sources of nectar and pollen from March through June.

Among these are native and cultivated species about half to two feet in height. They're noted for their beautiful, mottled foliage and small, nodding, lily-like blooms in various colors.

Preferring cool growing conditions, dogtooth violets require a moist soil in partial shade. They quickly die back after blooming.

The native ones grow in rich woods, bottomlands, meadows, thickets, and shady wet places – particularly along streams and rivers.

In addition to the natives, the dogtooth fawn lily (*Erythronium dens-canis*) is often cultivated. This European species is recommended for zones 2-9.

Common fawn lily (*Erythronium americanum*) occurs in the East westward to Oklahoma. zones 3-9.

Mahogany fawn lily (*Erythronium revolutum*) grows along the West Coast. zones 5-9.

White fawn lily (*Erythronium albidum*) An eastern species. zones 4-8.

Fritillaria (*Fritillaria spp.*)

Fritillarias provide lots of nectar and pollen in April and May.

Considered to be demanding plants, they perform well if provided with good growing conditions. Fritillarias need a moist, well-drained soil that doesn't dry out completely during the summer. They're suited to full sun and partial shade.

These have alternate foliage, which is six inches long. Ranging from one to four feet, their height varies by species. Bell-shaped blossoms come in various colors.

Once you purchase these bulbs, plant them right away. They dry out easily.

Black fritillary (*Fritillaria persica*) Deep purple-violet blooms. zones 5-9.

Crown imperial (*Fritillaria imperialis*) Yellow, red, or orange flowers hang upside down on a leafy bract. zones 5-8.

Snake's head fritillary (*Fritillaria meleagris*) Checkered blooms are a mixture of purple, pink, and white. zones 3-8.

Camassia cusickii

Continued on Next Page

Glory of the snow (*Chionodoxa spp.*)

Yielding nectar and pollen, these can begin blooming in February.

In clusters of five or more, the nodding, blue flowers have white centers. These bulbs aren't long-lived. They will need replacing every five years or so. zones 4-9.

Several species are listed in catalogs.

Chionodoxa luciliae is 3-6 inches tall. There are several varieties, including a pink-flowered one and another with larger blooms.

Chionodoxa sardensis is only 1 inch in height. Its blooms are smaller, and lack the white eye.

Lily of the valley (*Convallaria majalis*)

This plant provides pollen in May and June. It is native to North America, Europe, and Asia where it grows in deciduous woods. Though it prefers partial to full shade, it will tolerate full sun in areas with mild Summers. Rich, organic soil is best. Lily of the valley can naturalize in colder climates.

There are four or five nodding, very fragrant, bell-shaped blooms on a short flower stalk. Though the blossoms are usually pure white, catalogs offer mauve-flowering varieties. The flowers last for several weeks.

Incredibly hardy to –40°F, lily of the valley is recommended for zones 2-9.

Ornamental onions (*Allium spp.*)

These nectar and pollen plants bloom from May through July. Despite the slight, onion-like scent found in the foliage and blooms, this is absent in the ripened honey. They grow well in sun or shade.

Ornamental onions may have rounded, flat, or triangular foliage. Around a foot in length, it is grayish-green. Flower stalks are half to four feet tall. Arranged in large umbels or heads, the blooms are star-like or bell-shaped. Flowers have six narrow, spoon-shaped petals. Their colors vary.

Golden garlic, lily leek (*Allium moly*) Yellow blossoms. zones 3-9.

Ostrowsky onion (*Allium ostrowskianum*) Delicate pink blooms. zones 4-9.

Small yellow onion (*Allium flavum*) Flowers are usually yellow, but they may be red, green, or brown. zones 4-9.

Stars of Persia (*Allium christophii*) Purple blooms. zones 4-8. Horticultural forms aren't quite as hardy.

Snowdrops (*Galanthus spp.*)

Producing pollen along with lots of nectar, these plants bloom very early – often in February and March.

With one exception, these plants prefer full to partial shade, and require cool growing conditions.

Snowdrops are six to eight inches tall. Generally basal, the foliage is glossy and dark green. Fragrant white flowers with green markings are nodding and solitary. Blossoms open near the top of the foot-tall flower stalks. zones 3-7

Common snowdrops (*Galanthus nivalis*)

Giant snowdrops (*Galanthus elwesii*) This species does well in full sun. It has larger flowers.

Nikarian snowdrop (*Galanthus ikariae*)

Winter aconite or hellebore (*Eranthis spp.*)

These early-flowering nectar and pollen plants may bloom as early as February.

Ranging from 2½ to eight inches in height, Winter aconites have solitary, bright yellow, cup-shaped flowers with rounded petals. At the base of the blossoms are leafy, ruffled bracts. The foliage resembles that of the buttercups. Recommended for full sun to partial shade, Winter aconite can spread in good, moist, well-drained soils. zones 5-9.

The bulbs should be soaked before planting.

Winter aconite (*Eranthis hyemalis*) is the most commonly grown species. A slightly shorter variety of this is often sold as *Eranthis cilicica.*

Tubergen winter aconite (*Eranthis x tubergenii*) is the tallest, up to eight inches in height.

Crocus tommasinianus

Part II of hardy bulbs will appear next month. BC

Connie Krochmal is an award winning garden writer and a beekeeper.

Erythronium americanum

A commercial queen yard at Calvert Apiaries.

Extraneous Thoughts On Packages & Queens

James E **Tew**

Maybe I spend too much time looking back on these pages. It's not because I feel that the old days were always better, but by looking back to see where we have been compared to where we are now, I can project a somewhat crude line into the future. These predictions though, are at best, a guess.

Extraneous Thought #1 - Package Bees.

Strange to say, I always had confidence in our industry's package and queen producing ability to produce replacement packages for *Varroa* kills, common winter kills, or colony increase. I had even considered the properness of performing NO *Varroa* treatment, but rather manage declining colonies, and replacing dead ones with replacement packages. This is a concept that I still think has some plausibility, but there are unknowns that persist. Can I assume that plentiful package bees, at affordable prices, will always be readily available? I don't know...I'm not as confident as I was a few years ago.

The labor of shaking packages

Package shaking is a lot of work – a lot of physical work. Increasingly, the package industry has had to scramble to find competent human labor to provide the necessary workforce to get all those bees into all those packages. I have no data and am only guessing, but I sense that package bee operations that cease operations are not being replaced by new enterprises in equal numbers.

The ever-increasing cost of package bee production

I tried to get some comparison numbers from old journals, but such comparisons are not clear. Sure, package bee costs have risen but have they risen disproportionately to other such commodities? I don't know, but the present cost of an individual package of bees cannot be ignored. Not only do they cost more, but when things go wrong, replacement packages are troublesome to get.

And then there are the shipping costs. I don't think I am being too coy when I write that the U.S. Postal System doesn't always seem eager to get our shipping business. Not just bees, but shipping charges for all live animals through the U.S. Postal System have increased. The cost of fuel is considerably higher. Don't forget the small hive beetle. Can't have those in outgoing packages. Bottom line? In the near future, it may not be as easy as it once was to get packages. Two pound packages may become more of an option. And any packages you do get will surely cost you more.

Extraneous Thought #2 – Small Colony Management

Isn't it strange how things that have always been right, can become exactly wrong? Is it still right to categorically combine all small colonies in the Fall? If I am concerned about the feasibility of package bees being a fix for my declining hive numbers, then the bees I presently have suddenly become much more valuable to me – even the small ones. Well, that's not news. Years back, when packages and springtime swarms were common, beekeepers still wanted to keep their bees alive. There's not that much more I can do right now to actually help my small colonies as they enter Winter, but I will worry a bit more.

Combine weak colonies in the Fall.

Combining small colonies in the Fall is probably still a good recommendation, but with an increasing number of caveats. You are likely to keep more bees alive during winter months by increasing the wintering cluster size. Then, next Spring split the overwintered colony back into multiple smaller colonies. But this procedure assumes the *ready availability of queens*, not to even mention packages. If springtime queens are expensive or too difficult to procure, at what point does it become logical to gamble on a small colony making it through the Winter? Now that question will always be a beekeeper's guess, but at some point, you must choose. But there is a time when it becomes a better decision to try wintering a smallish, queen-right colony rather than combine it (your Autumn labor), Winter it and split it next Spring (your Autumn labor + Springtime labor + cost of a new queen).

Many of us have tried to Winter small colonies with varying degrees of success (or failure). I've tried indoor wintering (admittedly not in the best facility), wintering small colonies outside under different systems, or essentially doing nothing but wishing the small colony good luck. I have reported on these adventures in previous articles. If I had to choose one ultimate point that would help small colonies survive the Winter, it would be to have plenty of honey in the comb as a food source and have it properly positioned. If honey in the

Continued on Next Page

comb is not available for Winter feeding, that shortage would go a long way toward me making the decision to combine colonies with other larger colonies. It wouldn't hurt to feed a pollen substitute late in the Winter to help with protein needs.

Extraneous Thought #3 – Beekeeping without Chemicals.

Recall my earlier comment about all things correct becoming wrong and vise versa. In my monthly university faculty meeting just yesterday, we were reviewing a departmental plan that unintentionally highlighted non-chemical or organic concepts time and again. In every arena of the document, reduced chemical use was considered good. The public perception is that anything with a chemical configuration is bad. I'm not debating that social comment here and I am certainly not saying that chemical use should not be curtailed in many instances, but I am saying that, as beekeepers, how are we to produce bees for packages or keep our colonies productive – especially the small hives that have increased in value – without some kind of approved chemical concert? I don't have an answer, but in all things, unbridled chemical use will be increasingly restricted and viewed askance by the consumer.

As a beekeeper, I find that I am confronted with higher costs of packages, increased value of the colonies I already have underway, and a public that is increasingly insistent that I use essentially no chemicals. Ironically, that is pretty much the philosophy of U.S. beekeeping before *Varroa's* arrival. Other than Terramycin and some products for wax moth control, beekeepers despised any chemical use in the hive. As it were, today's beekeepers are the same as yesterday's beekeepers – only different. That sentence makes sense to me.

Extraneous Thought #4 - Queens and Queen Introduction

Okay, we need packages and we need to split our existing colonies, so we are clearly going to need queens. As with packages, queen prices have risen, but the current price is still (mostly) reasonable and queens shipping dates are still (mostly) available.

Hygienic queens

Now that I've decided to buy queens – which ones suit my needs? Clearly, I want disease-resistant queens. Purchasing queens that are not disease resistant is simply not in vogue. *(Are you sure?)* Hygienic queen research is one of the few currently fundable areas in beekeeping so research projects abound. Remember! Most of us want chemical-free beekeeping and resistant queen stock is a non-chemical path to that goal. So almost every major university with a honey bee research program and most USDA honey bee facilities are doing something with hygienic queen research. Though no harm has been done, I can't tell that any single queen strain has shown miraculous resistance to *Varroa*. Plus you will need to requeen regularly. Second plus, you will probably pay more for your specially bred queens. I have a baseless feeling in my gut that consistently keeping a *good* queen in my colony *all* the time trumps keeping a *specially-bred* queen in my colony *most* of the time. You don't know how much

A small colony in early Winter. What's it's future?

disease resistance you can expect from the stock you purchase, but then queen performance has *never* been guaranteed – never in our bee history.

Introducing queens.

Before mites, allowing colonies to requeen naturally was common and in many instances even desirable. Until a beekeeper became proficient in beekeeping, his/her colony was probably better off being allowed to requeen itself naturally rather than having the new beekeeper bungle the procedure. Actually, that advice has not changed too much. But queen replacement should be much more common now that it was in our beekeeping past. I am comfortable suggesting that accomplished beekeepers requeen *annually* and not every other year as has been recommended in countless bee books. But requeening is laborsome and costly. It takes a confident beekeeper who can open a productive hive with a productive queen, kill that queen and put in one that is untested – all because Jim Tew said it was the right thing to do. In fact, *I* probably wouldn't do it – *but I should*, even though some times the hive will be worse off for the requeening event. But, if my skill is great enough, (and there's a bit of luck in the air) most of my hives will be better off because of the annual improvement in queen stock. As a bonus I should nearly eliminate swarming.

If you have followed my thread thus far.

We love beekeeping. We need packages to replace losses caused by weather, pests, and mismanagement. But because it is becoming increasingly difficult, and expensive, to get packages, so we want to keep all our colonies alive – even the small ones. But because we must do this with minimal chemical use we use hygienic queens – queens with disease-resistant characteristics of some unknown degree. They will cost more, but what doesn't cost more? So to control bee diseases, make colony increases, and reduce swarming we need to requeen regularly (but we probably won't). Well, there it is. At this moment we are OK, but for how long? Just some of my extraneous thoughts.

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Bees - 1, Termites - 0

Loyd **Luna**

It was hard to imagine a bee colony in worse condition than this one, which I found in early June in Tennessee.

When I asked the owner: "How are your bees doing"? He sheepishly replied: "Not too well; the last of my three colonies fell over." Why and when was the next obvious question. "Don't know why, but it was probably in January." The colony had not been opened in the last six years, yet bees were busy coming and going from almost any place they wished. Wow! A colony that can survive *Varroa* and tracheal mites, extensive rainfall, and who knows what else, is surely valuable. After extracting a promise from him that I could bring back to Maryland a queen next Spring, I agreed to take a closer look.

What I quickly found was an active colony of termites! Happily coexisting along side the bees, they had eaten away almost the entire bottom board, much of the brood chambers, and some of the wood frames. Plastic frames probably gave the bees a significant advantage. Termites had obviously been responsible for the toppling of the colony.

That did not deter the very productive queen from laying an almost perfect brood pattern, nor the bees from collecting lots of nectar; I estimated more than 100 pounds of honey.

Using some new wood ware, I reassembled two brood chambers and one medium super with five frames of honey, but lost some comb that had shifted when the colony fell over. I salvaged two frames of capped honey for the owner's use. The owner, bees, and visitor were all pleased with the outcome. The moral of the story: *Apis mellifera* is a tough cookie and can survive some pretty miserable conditions. BC

Loyd Luna produces only comb honey and sells it at the local farmers market in Arnold, Maryland.

OUR BEGINNER'S COURSE

THE AFTERMATH

Peter **Smith**

Each year our Association holds a course for would-be beekeepers. As I was retired and therefore had plenty of time with nothing at all to do, I was elected to organise and run it, which I very happily did for several years.

One course, held a few years ago, comprised 25 'students' from a wide cross-section of society: there was a wealthy property developer and a retired army Colonel. There was an elderly couple who had no intention of keeping bees but wanted to learn about them. There was a very 'green' herbal practitioner who wanted to add bee products to his range of cures. There was a retired headmaster. There was a lady who had been recently widowed and a retired engineer whose wife had recently died. (They subsequently married – who said bees aren't romantic?). There was a Doctor who asked all sorts of searching questions, like 'What's the chemical composition of beeswax and propolis?' and a builder's laborer who never said a word. There was a farmer's wife and a nurse. There was even a lady who, it turned out later, had found a swarm of bees in her attic and thought it would be nice to keep bees there. There was a tractor driver from a local farm and there was a young man who couldn't keep any job and thought that beekeeping would earn him a living. With five or six hives – "You know, sell the honey and the beeswax."

All these people came together to learn about the craft of beekeeping.

The syllabus for the course was based on the Association's basic exam and was divided into two parts. The first part lasted for four evening sessions starting in early March, this date being chosen so that, in principle anyway, the students could start their beekeeping in late April or early May – English weather permitting, of course. It was held 'indoors' and dealt with the bees themselves, the life of the colony, equipment required, the beekeeping year, honey gathering and preparation and finished with films of various aspects of beekeeping. Each section of the lesson was illustrated with pictures and diagrams and, in addition, each participant was given a copious set of illustrated notes (nearly 90 pages) that covered *all* the topics discussed together with a glossary of beekeeping terms. They were also given several 'official' booklets, one with descriptions and colored photographs of healthy brood and the brood diseases, one fully describing *Varroa*, its effects and its treatment and yet another (pessimistically, as we haven't got it yet) on Small Hive Beetle.

The second part of the course started in mid-April and was held in the Association Apiary. There are eight hives and there is a large hut for storing equipment and sheltering from inclement weather. It is also used for making up frames and hives and is where demonstrations of some of the various activities necessary in keeping bees are given. (It is also where members boast about how much honey they've taken off and how *their* bees *never* swarm). There are a dozen bee suits of different sizes available and gloves and smokers and hive tools and all the other bits and pieces that accumulate in such places. This part of the course lasted a further three weeks but students were encouraged to attend the various regular Association meetings throughout the rest of the Summer.

One big problem was that each year, after the course had started, people wishing to join the course would contact me – "Only just heard about it – can you fit me in?" In order to accommodate them all one year, I actually did *three* courses, Tuesday, Wednesday and Thursday night each week for a month.

On completion of the course came the really hard work.

Now that they had finished the course, those who decided that they wanted to keep bees wanted bees, hive equipment, bee suits and all the other bits and pieces. Who should they ask but the person who took them through the course? Enquiries revealed that a few items could be supplied from surplus equipment held by beekeepers and some other items were available from beekeepers who were giving up, but many would have to start with new equipment.

In an effort to help and encourage 'my' beginners, I contacted a bee breeder for package bees and queens and a hive manufacturer for the cheapest useable hives. I contacted a bee suit maker about buying several suits. Buying in bulk saved money on all these items but I finished up collecting packages of bees and having hives (in bits) delivered to me. With each beginner, I showed them how to assemble the hive parts. Unfortunately, one or two of the beginners thought that it should be my place to assemble the hives, make up all the frames and fit the foundation, then install the bees in the hives.

And, some thought, look after them.

"With each beginner, I showed them how to assemble the hive parts. Unfortunately, one or two of the beginners thought that it should be my place to assemble the hives, make up all the frames and fit the foundation, then install the bees in the hive. And some thought look after them."

I had demonstrated, in a visit to my bee shed during the course, how to assemble the hive and make up frames but it is surprising how quickly some people forget. I later had to repeat the demonstration for some individuals and then stand over them whilst they made up a few frames. A couple of days after this second demonstration and practical experience, the retired Colonel, a really super chap, turned up with his lady friend, the Dowager Lady X in tow. After introducing me to her Ladyship, he showed me a frame he had assembled. "I say! Is this all right?" he asked. It was nailed together with 1½" oval nails which had split the wood in all directions, the foundation was not fitted properly and the frame wouldn't have gone in the super. "Come on!" I said, "That's not how I showed you to make it!" The Dowager Lady chipped in "It's no good showing him anything: he's always too drunk on Port!" We had another lesson on making up frames (partially directed by the Dowager Lady) in my bee shed.

Having assembled all the hives and installed them in their agreed positions, we then acquired the package bees and queens and these were duly hived. The excited and enthusiastic 'beekeepers' were fitted out with bee suit, gloves and boots and given further individual instruction in lighting the smoker and using the hive tool, followed by yet another briefing on the art of inspecting his – or her – one new colony.

Over the next weeks – if not months – I was frequently 'phoned. "I can't find the Queen!" "What should I do with...?" "Can you just pop round?" (only about 10 miles away – won't take you a minute) and show me...?" "I'm having a problem with...." and "The larvae in the cells are all orange and yellow. Is that alright?" When I asked "Have you looked in the notes?", I was greeted with "Well, no. I thought I'd ask you." It turned out later that one beginner was quite upset that, instead of going over there immediately, I suggested that he consult the notes.

There was one would-be-beekeeper who continually interrupted me during the lectures. He questioned everything and was scathing about many things. He actually accused me of making things up to impress the beginners and was absolutely sure that much of what I said was old wives' tales. We were all glad that he decided, after a heated discussion with the Apiary Manager, that beekeeping wasn't for him and left the course. Two others missed the course altogether and, having joined the Association, expected me and the Apiary Manager to provide special practical sessions at times convenient to them so that they could make up lost time.

The problem of stings was fully discussed in one part of the course. The necessity for the veil and gauntleted gloves for the beginners was discussed and explained and it was emphasised that bees will find their way into the smallest chink in the beekeeper's armoury. One of the beginners, in order to reduce the initial costs, decided to use ordinary gardening gloves with short cuffs, with the sleeves of the bee jacket pulled over them and held in place with elastic bands. After about 30 painful stings around the wrist area, he decided that discretion was the better part of valour and the economy wasn't worth the pain, not to mention the danger.

One or two of the beginners had spurned my offer of package bees and bought bargain priced colonies complete with hive and masses of equipment from ex or retiring beekeepers. As they say – if it *sounds* too good to be true, it probably is. As a result, I was asked to inspect the 'bargain' and offer advice (free, of course) on how to repair and put the various items into service.

One lot of three 'bargain' colonies could have taught Africanised bees a thing or two. They were much too vicious for a beginner and were returned to the seller.

In another colony, the bees were a bit spiteful and it was decided to re-queen them. The queen arrived through the post and an explanation and demonstration of how to prepare the cage and position it in the hive was given to the beekeeper. About 10 days later, he phoned me up. "The queen isn't out of the cage yet. Should she be?" I went over and found that the little cork was still in its hole covering what little was left of the candy.

Then there was the case of the homemade equipment. In order to save money, a floor and cover board (top cover?) had been made from spare timber. These weren't square or flat and didn't fit the top of the hive. Also, a wire queen excluder had been framed with 2" x 1" timber and with completely the wrong dimensions. Bee Space? What's bee space? The assembled 'hive' was leaking bees from all quarters. Top marks for enthusiasm, no marks for doing it right.

In another case, the notes that I had so carefully

Continued on Next Page

"One or two of the beginners had spurned my offer of package bees and bought bargain priced colonies complete with hive and masses of equipment from ex or retiring beekeepers. As they say – if it sounds too good to be true, it probably is. As a result, I was asked to inspect the 'bargain' and offer advice (free of course) on how to repair and put the various items into service."

prepared over long winter evenings and given out during the course were used as scrap paper, two sheets being used to light the smoker When the perpetrator of this heinous crime 'phoned for advice, I suggested that he should have consulted his notes wherein the answer to his query would have been found.

Some of the newcomers took to beekeeping like a duck to water and I heard nothing from them. I used to ring up – just to check and offer support. One lady beginner took her honey off and bottled it and won a 'First' in the Association honey show in her first year.

Some never bothered to attend the Association meetings and have let their membership lapse. Even four or five years later I still get a 'phone call from them – "Can you help me find the Queen?"

It turned out that I was spending (much) more time looking at other people's bees than I was looking after my own. Maybe I did do too much, but I felt responsible for 'my' beginners. I was then running 20 of my own colonies spread over two apiaries (bee yards) and, although retired, I found that there was little time to do anything other than bees. And mostly other people's bees and collecting swarms.

To avoid this problem the next year, we instituted a system though the Association whereby each learner was allocated a 'buddy' or mentor to whom he, or she, could address their everyday questions. The mentor, assigned on a 'who lives nearest' basis, would only answer telephone enquiries and, unless a dire emergency, would not visit the 'problem' hive. The learner would be expected to attend the Association meetings – arranged for their benefit anyway – and discuss their problems more fully there.

This arrangement has worked well. However, in a few cases, the learner has chosen to do his own thing without reference to anyone and one or two continue to phone me instead of their 'buddy'

The annual course – well publicised beforehand has benefited the Association in that it has introduced many more members. However, the question of how much help and support should be given to the beginners has not been fully resolved.

Most of the beginners have appreciated the help and guidance but there are still the few who expect much more help than is reasonable. Obviously, there are those who learn at a slower pace than others and, to become proficient, need more assistance. The problem is trying to sort the one from the other.

In the final analysis, it depends upon the people in the association who are able to help and how much of their valuable time they are prepared to give. We have to steer a path between the 'They've been on the course, let them get on with it' school and 'Just ring and someone will be there' approach.

I like to think that I have passed on some useful information and tips. I can remember when I started and having attended a course thought that I had learnt everything. How wrong can one be? I was very glad to have someone to ask. I know that many of the beginners have appreciated my help and I just hope that they will all have as much pleasure from their beekeeping as I have done. I've very much enjoyed the experience of the courses: it has at least been interesting!

Bees are such a valuable asset in the environment and the decline in the numbers of beekeepers is a worrying phenomenon. We need, therefore, to encourage as many beekeepers as possible and help them to manage their hive(s) properly. A badly positioned and mishandled hive can cause neighbours and passers by to get stung and give the craft of beekeeping much adverse publicity and of course, the bad publicity travels round much faster than good.

Anyway, the courses have all been successful and most of those who attended eventually kept bees. Through the pre-course publicity and the course itself, we have introduced more people to the fascinating craft of beekeeping and the Association is bigger and stronger.

And, of course, there is more pollination through more bees, so the environment benefits as well. BC

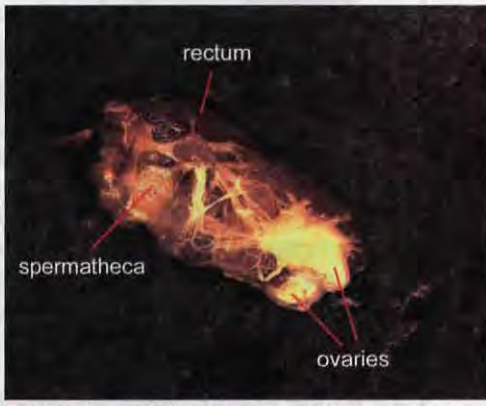
Peter Smith is a hobby beekeeper and teaches beginners in England. He will be a speaker at the EAS conference in Ohio in 2005.

INSIDE/OUT THE QUEEN

An ta **Collins**

All The Parts and Pieces

1. A queen, chilled and ready for dissection.



5. This is a virgin queen, and the ovaries ahv not started to produce eggs, so they appear u small.

The honey bee queen is the most critical component of the colony. She is everyone's mother, and the source of pheromones that help maintain a stable colony. If she is not functioning well, of poor quality or diseased, the colony will suffer and may die. A good beekeeper will keep an eye on the queen and her condition, even if it is just a thorough inspection of the brood pattern, looking for the presence of eggs. I expect that very few of you have ever looked at her insides.

As part of our continuing research on the preservation of honey bee germplasm, that is, semen and eggs, we have occasion to dissect queens to determine the amount of semen in the spermatheca, her sperm storage organ. As a reference for this work, my technician Virginia P. Williams took a series of photographs of a dissection of the reproductive tract. We both felt that these photos would be of interest to all of you who don't want to chop up your good laying queens.

A mated and laying queen's abdomen is mostly full of eggs, as she is laying 1,000 to 1,500 on a really good day. Her ovaries are made up of bundles of ovarioles – the long tubes you see in Figure 4. The eggs near the thorax (to the right in Fig. 4) are just being made; the ones at the other end are complete and ready to be laid. A virgin queen has not yet been stimulated by mating to produce eggs and has very small ovaries (Fig. 5). A queen that is not laying will begin to absorb her eggs and not produce more, and therefore her ovaries shrink (Fig. 7). This photograph is of a mated queen that was held in a cage in a banking colony, but might be one that has been shipped to you or one that shuts down for the Winter months. She will need a few days of good feeding and freedom to start producing lots of eggs again.

The eggs in a queen's ovaries are not yet fertilized by sperm. You know that a young queen mates with many drones and then stores the sperm in the spermatheca (Fig. 6.) When she is moving from cell to cell laying eggs, she is noticing the size of the cell. If it is a worker cell, she will release a tiny amount of spermathecal contents to fertilize the eggs as it passes by the end of the spermathecal duct (Fig. 8). If the cells are large, for drones, she does not release any sperm.

The spermatheca is easily dissected from the tip of the queen's abdomen. Simply remove the last three to four segments of her abdomen and pick out the part that looks like a ball of twine (Fig. 8; that's the tracheal net). Because the spermatheca is filled with fluid, it will feel very firm between your fingers. Rub it gently between two fingers and the tracheal net will come off. If the queen mated well, it will be opaque, creamy in color and with a pattern of marbling (Fig. 9). If the queen is still a virgin, it is clear (Fig. 10). In queens that have used up most of the sperm or never mated with enough drones, the color becomes white or just cloudy. The spermathecal gland (Fig. 11) provides the spermathecal fluid that nurtures the sperm while they are stored. What this consists of we do not yet know. But we are working on that. If we can find out how the queen manages to keep all those sperm alive at warm temperatures for so many years, we might be able to do it ourselves. BC

For further reading see:

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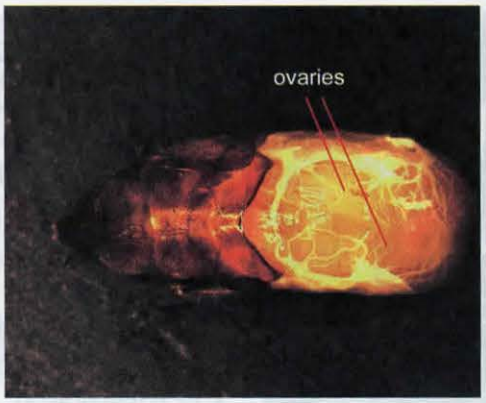
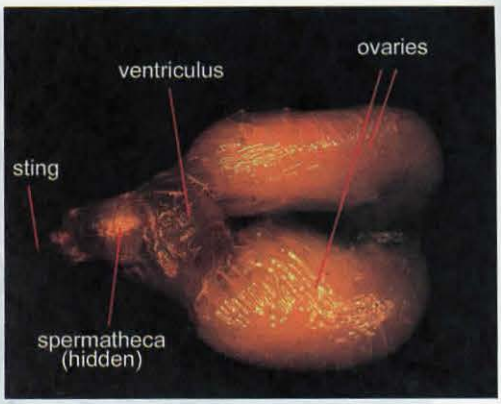
Acknowledgement: Sincere thanks to Virginia Williams for conceiving of and carrying out the photography that is presented in this article.

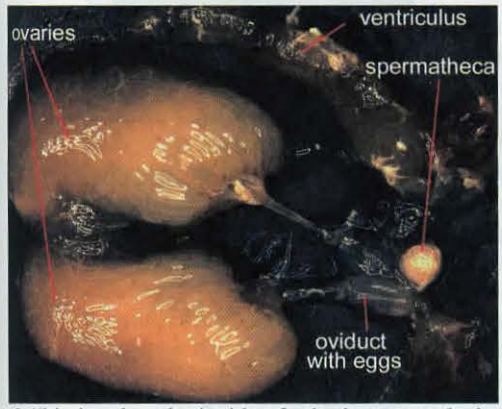
2. *Our first step in to cut the abdomen away from the head, thorax and legs.*



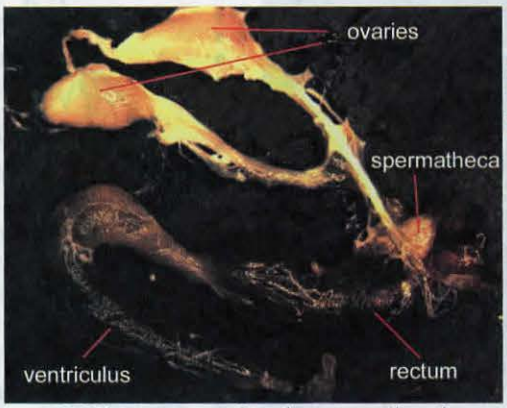
3. *A good laying queen will have an abdomen filled by her ovaries.*



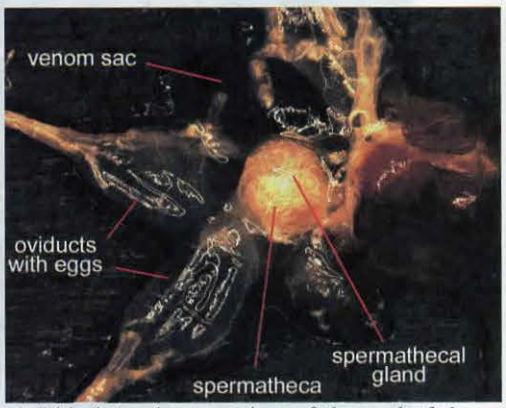
4. *The rest of the abdomen has the digestive tract and the sperm storage organ, the spermatheca.*



6. *This is what the inside of a laying queen looks li[ke] when the organs are spread out. Notice that y[ou] can see the individual segments, or ovariole, of the ovary, each with a row of eggs moving down to the oviducts. Several eggs are near the spermatheca, about to the laid.*



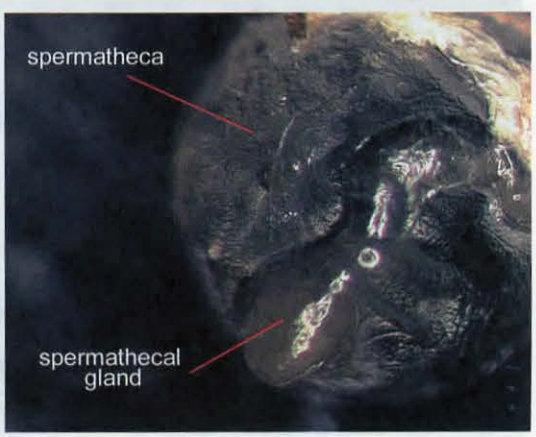
7. *When a queen has been caged and held in a queen bank for some time, the eggs are reabsorbed and the ovaries shrink.*



8. *This is a close-up view of the end of the reproductive tract, where the eggs that are being laid move past the duct from the spermatheca to be fertilized.*

10. *The spermatheca of a virgin queen. With no sperm present, it appears clear.*

9. *A spermacheca filled with creamy semen. The tracheal net around the spermatheca has been moved aside.*



11. *A close-up of the spermatheca showing the gland that is attached. Without the gland producing seminal fluid, the stored sperm will die.*

Malcom T Sanford

New Technologies And Beekeeping

"Now a new suite of technologies is coming out of the use of modern computers, which themselves are the result of research in solid-state transistors that are the basis for chip technology."

Courses often stress that beekeeping technology is quite old. That's true if you look at the development of most of the inventions employed in apiculture, including smokers, hives and other paraphernalia. Only one, instrumental insemination, is a child of the 20th Century. Looking outside of beekeeping, however, one can find several technologies developed in the 1900s that beekeepers have used to make their outfits more efficient. One example is modern advances in sugar chemistry (enzymes) culminating in production of high fructose corn syrup, now used to feed bees.[1] Without advances in corn growing, coupled with increased use in the human food chain, however, there would not be enough demand for this product and it probably could not be employed in beekeeping. Other ancillary technological help has come from improvements in moving colonies long distances (tractors, trailers, interstate highways) or from beeyard to truck (specially designed forklifts). Finally, let's not forget advances in food preparation (stainless steel extractors and processing equipment) and packaging (plastic bottles and portion packs).

Now a new suite of technologies is coming out of the use of modern computers, which themselves are the result of research in solid-state transistors that are the basis for chip technology. Three are closely related: genomics (study of genes), nanotechnology (use of very small objects or tools) and robotics (automatic and replicating technology). Two others are geographic positioning systems (GPS), from which has come the term "precision agriculture," and artificial intelligence (systems that exhibit characteristics associated with human intelligence).

Genomics (the study of genes in organisms), which includes sequencing and genetic engineering has many potential uses in beekeeping[2]. I published an article on this topic and what it is expected to produce in the April 2003 *Bee Culture*[3]. This article listed possible information gleaned from the bee genetic code and what it might mean for humans with respect to novel antibiotics, infectious diseases (bees have them too), bee venom and allergic disease, nutrition, mental health, biosensors, x chromosome diseases, cognition and human gerontology.

Also affecting honey bees are experiments and trials in plant genetic engineering. Since bees are vegetarians, they rely totally on plant food (nectar and pollen) and this can be affected by shifts in the plants' genetic makeup. There is much controversy over the use of these plants, known as genetically modified organisms or GMOs. I wrote a comprehensive article on how GMOs relate to bees in 2003[4]. The marking and tracking of genetic components in plants may be a good example of the potential use of nanotechnology.

According to a Green Peace report, the general definition of nanotechnology is manipulation, observation and measurement at a scale of less than 100 nanometers (one nanometer is one millionth of a millimeter)[5]. There are a host of possibilities that have been suggested using this technology. Unfortunately, the majority of them appear to be involved in military applications. The report concludes: "there is a flow of public money into a great number of techniques and relevant academic disciplines in what has been described as an 'arms race' between governments. Nanotechnology is really a convenient label for a variety of scientific disciplines which serves as a way of getting money from Government budgets."

Robotics is the use of machines that can do things as well as or even better than humans. Many automobiles are assembled by robots in factories today. The newest interest is in robots that can manufacture and deliver substances even down to molecular level. A classical example is delivery of drugs in humans through the blood stream using extremely small robots, otherwise known as "nanobots."

Nanotechnology, therefore, is often closely associated with robotics. There are very few applications that this author knows about with reference to honey bees at the present time, but bees themselves may be considered the first (although pretty large in comparison) "nanobots," or minute robots. One application is the use of bees to deliver plant treatments during their pollinating activities. *Trichoderma harzanium* 1295-22, commonly known as T22, employed in treating strawberry plants for a mold, called Botrytis, is being spread by honey bees[6]. Pollination of some crops by bees instead of by human hand is also in this category.

In the future "nanobot" pesticide applications might harm bees (pesticide particles too small to detect yet extremely lethal) as the development of encapsulated pesticides did in the 1980s (Penncap-M®). On the other hand, the technology might also protect them by

Continued on Next Page

targeting directly parts of plants that bees don't contact.

Related to this is research on identifying small objects through the use of radio frequency identification (RFID). This is a more powerful technology than bar codes because it is "smarter" The possibility of marking products and organisms and then monitoring their movements by remote readers (see remote sensing elsewhere in this paper) is important in many fields, especially retail stores and increasingly, health care. Wal-Mart and the Department of Defense are big players.[7]

An enterprising pollination contractor who had experience with stolen beehives has also seen the advantage of RFID technology "Bakersfield beekeeper Joe Traynor decided to do something. After seeing a TV program on RFID, he contacted AVID, Inc., a Norco, California-based RFID company best known for companion animal and wildlife identification. Using a proprietary, 125 kHz preprogrammed tag concealed inside each of his hives, Traynor can now provide police with positive proof of ownership should his hives be stolen. And, if police have any question about the validity of Traynor's claim to ownership, they can call AVID who will confirm the serial numbers of all the tags assigned to Traynor. Tags are embedded in the frame in such a way that to remove the tag would mean damaging the hive[8]."

Perhaps the most engaging project using RFIDs is that directed by Dr. Jerry Bromenshenk at the University of Montana. "In a field test in May (1999), several bees were outfitted with the tags, each weighing less than a grain of rice. Pacific Northwest engineers determined that the radio-frequency fields didn't interfere with bee activity, but that the tags should be made smaller to lessen the impact on bees' flight. Sokymat of Switzerland and its U.S. representative, North American Research Inc., are working to reduce the size of the tags[9]. Taking this research one step further, Dr. Bromenshenk is now working with the Sandia National Laboratories on training bees to find what has been called the earth's worst form of pollution, plastic land mines[10]. From these studies, a company has been formed to take advantage of the commercial possibilites called Bee Alert Technology, Inc.[11]. The possibilities beekeepers might use RFIDs for are many, including inventory control down to the frame level and tracking bee products through the collection and preparation processes. Tracing food products to their source is becoming increasingly important in the modern food production environment[12].

"Since bees are vegetarians, they rely totally on plant food (nectar and pollen) and thus can be affected by shifts in the plants' genetic makeup."

Geographic Positioning Systems (GPS) are based on "a 'constellation' of 24 well-spaced satellites that orbit the Earth and make it possible for people with ground receivers to pinpoint their geographic location. The location accuracy is anywhere from 1 to 100 meters depending on the type of equipment used[13]." This is already in use for many agricultural applications, called Site-Specific Crop Management (SSCM). It "refers to a developing agricultural management system that promotes variable management practices within a field according to site or soil conditions. While this technology is only a few years old, various names have been used to describe the concept: farming by soil; farming soil, not fields; farming by the foot; spatially prescriptive farming; computer aided farming; farming by computer; farming by satellite; high-tech sustainable agriculture; soil-specific crop management; site-specific farming; and precision farming[14]."

Important GPS applications for beekeeping might include, determining the position of outyards or even single colonies, and monitoring the relationship between colony location and surrounding vegetation. Determining the quality (drought stress, blossoming, nectar secretion) of the vegetation through an allied technology called "remote sensing" is also possible. This is defined in part as "The practice of data collection in the wavelengths from ultraviolet to radio regions." Infrared photography is already in use to determine stress on plants caused by drought or disease[15].

Artificial intelligence is often linked to robotics, as anyone who's seen the Robocob movies can attest[16]. A major laboratory in this area is the Massachussetts Institute of Technology (MIT)[17] "Artificial Intelligence (AI) is defined as "a branch of Science, which deals with helping machines find solutions to complex problems in a more human-like fashion. This generally involves borrowing characteristics from human intelligence, and applying them as algorithms in a computer-friendly way. A more or less flexible or efficient approach can be taken depending on the requirements established, which influences how artificial the intelligent behaviour appears. AI is generally associated with Computer Science, but it has many important links with other fields such as Mathematics, Psychology, Cognition, Biology and Philosophy, among many others. Our ability to combine knowledge from all these fields will ultimately benefit our progress in the quest of creating an intelligent artificial being[18]."

Artificial intelligence in the beekeeping field exists mostly as a blending of basic information with computer manipulation. One is a

program called BeeAware. According the web site advertising this product, "A unique feature of BeeAware is an interactive diagnostic module designed to assist beekeepers in identifying unknown problems in their colonies. This module was recently rebuilt using NetWeaver, an efficient knowledge base construction, maintenance, documentation, and debugging tool written at Penn State University[19]."

Several software packages are available form the USDA Carl Hayen Tucson, Arizona bee laboratory. These include VarroaPop, which simulates the growth of *Varroa* mite populations in honey bee colonies. "The program demonstrates how *Varroa* mites influence colony population growth throughout the year. You can change many factors through the menus in the model such as the initial population size, queen egg laying potential, and mite reproduction rates, so you can see how these factors influence both colony and mite population growth." Another is Redapol, "a computer-based model simulating the interactions of weather, bloom and honey bee foraging activity that culminate in 'Delicious' apple fruit-set. The model predicts the percentage of blossoms setting fruit based upon weather conditions, orchard design, tree characteristics, and honey bee colonies per hectare[20]."

There are beekeeping databases that also might be the basic building blocks for other artificial intelligence applications[21]. An innovative example is a web site "created to help beekeepers keep track of their beehives by generating a convenient logbook of all their beekeeping activity. It's simple form entry allows you to see all your hives at a glance and to quickly update your records after a trip to your apiary." There a likely to be others as time goes on[22]."

New techologies have a surprising power to examine and manipulate in environments where humans have never gone before. As such they can be extremely helpful. However, there are also risks, especially in the biological realm. Once a biological system is changed, there is little way of predicting where it might go. Worse, there may be no way to change the system back to its original state. What I said in my article on the cracking the honey bee genetic code already referenced above bears repeating when in comes to employing any new technology: "In general, approach it with more humility than hubris." BC

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DRONE PRODUCTION AND PLASTIC COMB

Larry **Connor**

In the work Cornell's Tom Seeley has done in New York and New England, it is abundantly clear that natural colonies want drone cells, biologically 'need' drone cells, even if they do not fill every one of them with a developing drone.

You may recall that in April, friends and I installed two package colonies from Georgia into new equipment – all new wood with plastic foundation inserted into wood frames. My experience over the Summer with these two colonies has given me better insight into the nature of the problems hobby beekeepers face using all new equipment, using plastic foundation, and the colony's natural urge to produce drones as part of the normal season.

In a nutshell, I thought the plastic foundation worked just fine; that is, it is no worse than dealing in any all-foundation system. However, I have a huge concern about plastic foundation relating to normal drone production and the natural, instinctive behavior bees have to produce drones. I see this foundation as a huge source of frustration to new beekeepers (it certainly was to me) because the foundation does not provide a place for the bees to make drone-sized cells and raise drone brood.

In nature, bees build the size of cell where and when they need it. In the work Cornell's Tom Seeley has done in New York and New England, it is abundantly clear that natural colonies want drone cells, biologically 'need' drone cells, even if they do not fill every one of them with a developing drone. We know drone cells are usually produced below and beside the brood nest – perhaps as a factor of heat energy management – perhaps because these cells provide efficient honey storage when not used for drone rearing.

In the case of the two colonies we installed in April, the bees really suffered this Summer. In the hands of a learned professional with a terminal degree in apiculture and experience in teaching and commercial beekeeping (me), these poor colonies suffered through most of the season. They suffered from a generally poor Connecticut location (poor from a nectar production viewpoint), combined with a bizarre weather season with considerable cold rainy weather. In fact, the locust bloom, the purple loosestrife and other potential nectar sources were foiled by weather conditions.

Plus there were queen problems typical of a new beekeeper. After installation, one colony failed to accept the queen shipped in the package colony from Georgia. When given a frame of eggs and larvae from

A full box of plastic frames and foundation (wax coated) during a July nectar flow in Connecticut.

Plastic foundation in wooden frames showing excellent wax building during nectar flow.

the second colony, this same colony never got a queen mated and laying – perhaps due to another period of unfriendly weather. Yet these bees held out, living well over two months (reflecting both the excellent condition of the bees from Georgia, and the fact that without brood rearing, they did not physically age as fast), and finally accepted a queen from swarm cells taken from the second colony.

Obviously the second colony accepted their queen, but perhaps because they were being fed and were confined for so long they went into swarming behavior during June! Somewhere in Central Connecticut there is a colony with a queen with a bright green mark on her thorax! Who says new queens and colonies never swarm!

We now have two sister queens heading these two new colonies – both daughters of the second colony queen hopefully living in a bee tree somewhere in the nearby woods. Both colonies produced enough honey over the Summer (especially from purple loosestrife) to fill the corners of the brood frames, but as the purple loosestrife faded, they proceeded to eat it all up as a wet period held them inside the hive. In August, when I would have expected them to have surplus honey, they were on the edge of starving.

There is good news about these two colonies. In early September temperatures were in the 80s and low 90s with many cool evenings. This finally letting these poor girls (the bee population was good – not huge, but good) find enough forage from goldenrod and bamboo (*Polygonium*) to make honey for the Winter. They still may require supplemental feeding I suspect, but just as important, there are many frames containing pollen (goldenrod and early aster) that the bees are now sealing over with honey as the brood nest instinctively shrinks in size. This pollen will be essential for overwinter brood rearing, and needs to be in the frames where the bees are likely to raise brood from January through early April.

There were emerging drones in the mid September inspection, but no evidence of new drones being produced by the colony. This is as it should be, in my mind, although a few drone larvae in mid- to late September in Connecticut would not have bothered me.

Plastic Foundation

I see the real advantage of using plastic – uncoated or wax-coated – it does not seem to make much difference (I got to inspect another beekeeper's colonies where wax-coated combs were being used). The real advantage to the plastic over natural wax foundation is the lack of damage plastic experiences compared to the chance of breakage in the hands of moving natural wax, and the inability of the bees to chew up the plastic as they might wax foundation. This past Summer, with bees confined to the hive and with so little forage, a certain amount of wax chewing and moving would have been expected, and I suspect they would have used the foundation for a source for this wax. Where else would they find it? Once we optimistically stopped feeding the colonies in July there was no nectar flow to stimulate wax scale secretion. With plastic the bees had nothing to do but to patrol the plastic combs and wait for nectar.

All plastic frame with worker brood in frame, and drone brood in bee space below.

The human factor is not insignificant either. The plastic foundation was installed into the frames in the Spring and the last not added (optimistically even then, as it turns out) until mid-Summer. The extra frames were just stacked in a room, where it was moved a few times, stacks fell over and a coffee cup was placed on one by an unknowing person. No damage resulted; I suspect there would have been damage with foundation so handled.

I was using white embossed foundation. I found it annoying that I could not easily see eggs and new larvae against the white plastic. In fact, it took me a great deal of effort to see eggs in many light conditions. A contrasting color is certainly needed for brood-nest inspections. Also, once brood rearing has been underway for one cycle, fecal deposits stand out like ugly blotches at the bottom of the cells. I dug at more than one fecal deposit searching for *Varroa* mites. On the other hand, the few mites I have seen in these colonies visually "pop" as you inspect the colony.

I should point out that using foundation in package colonies has never been my favorite way to start a colony, but since most new beekeepers have no choice in the matter, I was determined to give it a good, honest try. I have always been a "centrist" comb arranger, trying to establish the brood nest in the center of the colony and let the bees expand the brood nest in two directions. In part, this reflects my use of a feeding jar over the hole in the inner cover. This really does not work well with plastic foundation (maybe wax foundation either, for that matter). If the bees from the package are arranged on one side of the brood nest, they can then build comb in one direction as they expand, and they seem to build better combs that way. As I said, we fed into July, and the sugar syrup was used to stimulate comb construction and brood rearing.

When a second box of frames was added, the bees just wanted to chimney the expanding brood above the existing nest. Do they think they are in some bee tree somewhere? The bees also seemed to develop one side over the other, and after a few inspections I let them –

Continued on Next Page

Green eggs and

becoming either left-leaning or right-leaning hives, depending on where I stood. These bees only became political when dealing with the ownership of the tiny bits of honey they worked to produce, with my expert help, of course.

Drone Brood Production on Plastic

I used 10 frames of worker foundation in each hive body. Both colonies went to great efforts to produce drone brood on these combs, and because they could not chew down the plastic base, they were forced to sandwich pieces of drone combs between two frames, basically re-engineering the space to give a one to 1½ inch piece of drone comb in the area where comb and bee space should be. These pieces of comb were located on either side of center, and at the lower one half of the comb. Sometimes the bees made a single row of drone cells out of the very bottom of the frame, where the plastic foundation lacks the embossed hexagon pattern provided in order to insert the plastic into the wood frame. Unfortunately, this did not allow enough drone production for either colony, and this appeared late Summer when the brood areas were expanded corner to corner. Something needs to be done to allow for natural drone production using plastic foundation.

A beekeeping friend is using drone comb foundation. All plastic and coated with beeswax, the bees did an excellent job of producing drones. The worker brood frames were then free from most drone brood, and there were few annoying crosspieces between frames. The manufacturer sent him green colored combs, which provided an interesting "radioactive green glow" for the photos I took of the combs. It was a nice change from the white foundation I had been using, especially for seeing eggs and small larvae. It was just enough color contrast for my "progressive-lensed" eyes to see. The camera often caught it better than I could see it.

Drone Removal For *Varroa* Management

The use of drone foundation is an excellent answer to my question about managing drone production. Placed to the left or right of center in the two, three or eight, nine position out of 10 frames, the drone brood did not interfere with normal worker brood production. When the bees were ready to make drones, they were able to do it without interference and with minimum inconvenience to the beekeeper.

Of course, these combs may be left in for drones for virgin queen mating, or removed for *Varroa* control. If removed for *Varroa* control the frames should be placed in a deep freezer for a period of time – I will suggest 48 hours until someone shows me data. It should be at or near 0°F Warmer freezer temperatures will require longer times in the lock box.

In August I removed some of the bits of drone comb from my colonies and watched the brood for about five days. There were *Varroa* mites crawling on the top of the comb. The mites were alive at 48 hours but dead at 96. I do not know when the drone brood died, but the mites were getting out because I was pulling out drones from the cells to look at them. I warn you – this was all very un-scientific! Oh, after five days in August, the smell was petty awful.

I wonder if some plastic comb washing system might be invented (but not by me). Maybe a high-pressure washer could be modified to wash out combs. Now, if you try this at home, I am NOT responsible for the mess you are about to make!

Plastic Drone Cell Recommendations

Two suggestions come to my mind about plastic foundation and drone brood production(other than comb washing):

1. Every kit for hobby beekeepers should have one sheet or frame of drone comb foundation 'bundled' in every box in a beginner hive kit. If three boxes of Medium depth combs are provided, then three sheets of drone foundation should be provided for that setup. Instructions should show the new beekeeper to place this special foundation in the two, three or eight, nine position on the side where the colony is naturally developing.

2. If these plastic sheets are being molded by injection (rather than by cutting a continuous sheet of embossed foundation as traditionally done in wax foundation production) then the sheets should be re-engineered to include drone brood cells at the bottom and sizes of every comb. While this eliminates the possibility of removal for *Varroa* control, it provides a place for every colony to produce drones.

In closing, I found plastic foundation fine except for drone production. Remember, providing a colony with drone foundation does not stimulate the production of extra drones (unless you feed for this purpose). Instead, it allows a natural space for drone production following a colony's instincts.

Based on the Summer of 2004, this includes some horrible weather conditions for bees. I hope you enjoy the photos of the radioactive bee larvae! BC

I'd like to thank Rollie Hannan, Jr. for the multiple joys of working bees with him one beautiful day last Summer, shooting photos of 'radioactive bees,' seeing a major nectar flow underway, and spending the evening loading 5,000 plastic frames into 500 supers.

Larry Connor is owner of Wicwas Press, New Haven, CT where he edits and publishes books on bees and beekeeping – LJConnor@aol.com or www.wicwas.com.

? DO YOU KNOW ?

Races of Bees

Clarence **Collison**
Mississippi State University

Honey bees in the U.S. are a heterogeneous blend of several races introduced from abroad. Prior to their introduction, these distinct geographical races or subspecies, were subjected to natural selection over a long period of time. In the different geographical regions they were subjected to different climatic conditions, flora and enemies. Over time they adjusted to their original environments and became adapted distinct races.

Two castes found within the honey bee society are responsible for reproduction. To be an effective manager of bees and to produce high quality queens, it is imperative to understand the colony's reproductive biology. Understanding the procedures of the instrumental insemination technique, a key tool in bee breeding and genetics, necessitates knowing the queen's and drone's reproductive anatomy and their reproductive biology, as well.

Take a few minutes and answer the following questions to see how familiar you are with these topics.

Level 1 Beekeeping

1. ___ *Apis mellifera*, the western honey bee, original homeland was:
   A. Europe, Africa and the Near East
   B. North America, South America and Africa
   C. Australia, South America and Central America
   D. Africa, Southeast Asia, and Europe
   E. Europe, Africa, and North America
2. ___ Both Caucasian and Carniolan honey bees are dark colored races of bees. (True or False)
3. ___ All of the following races of honey bees have been imported into the United States except:
   A. *Apis mellifera mellifera*
   B. *Apis mellifera lamarckii*
   C. *Apis mellifera ligustica*
   D. *Apis mellifera carnica*
   E. *Apis mellifera capensis*
4. ___ Carniolan honey bees have a low tendency for robbing and use small amounts of propolis. (True or False)
5. ___ Africanized honey bees nest in more diverse sites than the European honey bee. (True or False)
6. ___ The race of honey bees that are known for a fast, energetic reaction to any changes in the environment.
   A. Caucasian
   B. Buckfast
   C. Italian
   D. Carniolan
   E. Starline
7. ___ The following races of honey bees (*Apis mellifera monticola*, *Apis mellifera scutellata*, *Apis mellifera adansonnii*, *Apis mellifera litorea* are found in _____
   A. Europe
   B. Asia
   C. Australia
   D. Africa
   E. North America
8. Name an undesirable characteristic of the Caucasian race of honey bees. (1 point)
9. ___ The first honey bees introduced into the U.S were the black German bees and they were used for over 200 years before a second race, the Italians were introduced. (True or False)
10. ___ The black German bee had a high degree of excitability and was highly susceptible to European foulbrood. (True or False)
11. ___ The various races of *Apis mellifera* are unable to interbreed. (True or False)
12. ___ Both *Apis mellifera carnica* and *Apis mellifera caucasica* are known for their gentleness. (True or False)
13. ___ The largest of the races of *Apis mellifera* found in the United States are Italian honey bees. (True or False)

Advanced Beekeeping

14. ___ Egg development occurs within the queen's ovarioles and each egg originates from the primary female germ cells or oogonia located in the terminal filament of each ovariole. (True or False)
15. Name two internal structures of the queen whose positions must be altered in order to have a successful instrumental insemination process. (2 points)
16. Please indicate where you would find nurse cells or trophocytes and describe their function. (2 points)
17 What is the primary potential contaminant of semen collected from drones in preparation for instrumental insemination? (1 point)
18. ___ Comparison of instrumentally inseminated queens to naturally mated queens indicates that they are typically similar in reproductive performance. (True or False)
19. Name the cells that are responsible for secreting the chorion of the egg. (1 point)
20. During the instrumental insemination process, semen is injected directly into the queen's spermatheca. (True or False)
21. What are the positive and negative impacts of carbon dioxide narcosis to the instrumentally inseminated queen. (2 points)
22. As eggs descend from the ovarioles into the oviducts and enter the vagina they undergo the last act of their maturing process. (True or False)
23. Since drones receive chromosomes only from their mother, all of a queen's sons are identical. (True or False)

ANSWERS ON NEXT PAGE

?Do You Know? Answers

1. A) Europe, Africa and the Near East
2. **True** Both the carniolan and caucasian races of bees are dark colored in appearance. Both have a black chitinous skeleton with bands of grayish/brownish hairs on the dorsal surface of the abdomen.
3. E) *Apis mellifera capensis*
4. **True** Carniolan honey bees are known for their low tendency to robbing and their use of propolis is very small.
5. **True** Africanized honey bees accept a wider range of nesting sites than European honey bees. Africanized honey bees often nest below the soil level unlike European bees.
6. D) Carniolan
7. D) Africa
8. The use of excessive amounts of propolis, makes the cleansing and management of the hive more difficult.
   Their dark color, makes the recognition of queens more difficult.
9. **True** The first honey bees introduced into the United States were the black German bees. They were used for over 200 years before a second race, the Italians, were introduced in 1860.
10. **True** The black German bees proved to be undesirable because of their high degree of excitability and their lack of resistance to European foulbrood. The Italian honey bees, the second race to be imported, was resistant to European foulbrood.
11. **False** Races in bees are like breeds in animals and varieties in plants. Being of the same species, these races can interbreed and produce viable offspring.
12. **True** Both Carniolan and Caucasian honey bees are known for being calm and gentle on the combs.
13. **False** The Carniolan race, not Italians, are considered to be the largest race of honey bees.
14. **True** In the narrowed inner end of each tubule (ovariole) in the queen's ovary are the primary female germ cells or oogonia. Further down the tube these cells multiply and differentiate into larger cells, or oocytes, which become the eggs and into smaller cells called nurse cells.
15. Stinger, Valveflold
16. Nurse cells or trophocytes are found within the ovarioles of the queen's ovaries. An ovariole or egg tube is a succession of egg chambers alternating with nurse cell chambers. The nurse cells provide nourishment to the developing eggs. The full grown eggs in the lower ends of the tubes have absorbed practically all their nurse cells.
17. Mucous
18. **False** High supersedure rates are often associated with instrumentally inseminated queens. Research has shown that naturally mated queens normally lay more eggs per day and live longer than instrumentally inseminated queens.
19. The chorion of the egg is produced by the follicle cells that surround the egg during its development within the ovariole of the ovary.
20. **False** The syringe containing semen is lowered into the queen's sting chamber. A little of the saline solution is discharged from the syringe to lubricate the tip and the syringe tip is slipped into the vagina about 1 mm. The semen is injected into the vagina just beyond the valvefold. Muscular contractions following insemination force the semen into the spermatheca.
21. Positive Stimulates the queen to begin oviposition soon after insemination.
    Negative Carbon dioxide causes weight loss in queens. Reduces the production of "queen substance" in queens.
22. **True** As the eggs descend the oviducts and enter the vagina they undergo the last act of their maturing process. This consists of two consecutive divisions of the egg nucleus, one of the new nuclei becoming the definitive egg nucleus, the others being absorbed. At the first division of the egg nucleus half the chromosomes go into each newly formed nucleus, the persisting egg nucleus being thus reduced to 16 chromosomes. At the second division the chromosomes split so that 16 are retained in each nucleus.
23. **False** The drone has no father, and has only a single set of chromosomes from his mother. The fact that drones receive chromosomes only from their mother does not mean that a queen's sons are all identical. The queen has a double set of chromosomes and in the reduction division (meiosis) some of her mother's and some of her father's chromosomes go into each egg, but not the same assortment. Thus, although her drone eggs are not fertilized, her sons will have a variety of different genes.

There were a possible 13 points in each test level this month. Check the table below to determine how well you did. If you scored less than 6 points, do not be discouraged. Keep reading and studying – you will do better in the future.

Number Of Points Correct
13-11 Excellent
10-8 Good
7-6 Fair

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

For more of Clarence's questions, see his book, available from BeeCulture.com

RESEARCH REVIEWED

Explaining • Defining • Using

Steve Sheppard

"Honey, mites and Africanized honey bees."

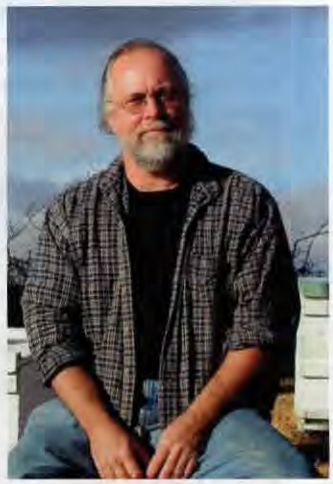
The reports cited for this edition of Research Reviewed were taken from the 775 page Proceedings of a recent "paired" meeting; the 8th International Conference on Tropical Bees and the VI Encontro sobre Abelhas held in Ribeirao Preto, Brazil in September 2004. The meeting included an international cast of characters from the bee research community. However, in this case, the diversity of bees themselves took center stage and papers were presented on numerous bee species, including tropical stingless bees, beautiful orchid bees, many other solitary bees, *Apis* species from South and Southeast Asia and our Old Friend, *Apis mellifera*. Even the talks on *A. mellifera* covered topics as diverse as the conservation of European honey bee populations, sustainable apiculture in honey hunting societies, Africanized honey bee issues in South and North America and research directed toward solving problems common to beekeepers worldwide.

Feeling good – honey and wound healing

We often hear the story that, due to antibacterial properties, honey was one of the first dressings used in ancient times to promote wound healing. A paper presented by R. A. Cooper, together with references cited therein, describes more recent trends that promote the use of honey in "wound management." The author mentions several health care issues that have combined to improve the chances that honey will become more widely accepted by the mainstream medical community. These include the development of antibiotic resistance among wound-infecting organisms leading to a need to seek alternatives, a realization that certain types of wounds benefit from "moist healing" and, lastly, growing scientific evidence that honey can actually stimulate cells that are involved in the healing process. The latter evidence comes, in part, from demonstrated beneficial effects of honey on "non-infected, chronic wounds" The author reports the registration of a honey-impregnated wound dressing in the United Kingdom that became available in March of 2004 and concludes that "the use of honey products for wound care is expected to increase."

The Old Home Place – *Varroa destructor* seeks older spacious living quarters

It has been shown previously that, when given a choice, *Varroa* mites preferentially infest slightly larger cell sizes. This is "especially evident when European sized combs are tested side by side with Africanized combs (Message and Goncalves, 1995)." However, it was recently reported that, when given a choice between old, small cell-size comb and new, larger cell-size comb, *Varroa* mites preferred smaller combs (Piccirillo and DeJong, 2004). As old comb contains absorbed odors from brood and adult bees, along with cocoons, debris, propolis and pollen, there was the possibility that an attractive chemical signal could reside in older comb. In their Proceedings presentation on the subject, Junqueira et al (2004) reported the results of two different experiments designed to test extracts from both old and new combs for mite attractiveness. In the first, they used a laboratory behavioral assay to compare mite attraction to the extracts. The extracts of the combs were soaked onto small pieces of filter paper that then were placed in wax queen cell cups, set up in such a way that an introduced mite could choose between a cell cup with either old or new comb extract. A significantly higher proportion of mites preferred the old comb extracts. In a field trial with honey bee colonies, the researchers tested the extracts using new combs that had never been used to rear brood. They treated different parts of these new combs with the two extracts and allowed bees to rear brood on the comb. They reported that brood that was reared on the areas of comb treated with "old comb extract" had about 18% of the cells infested with *V destructor,* while brood reared on comb treated with "new comb extract" had only 8% of the cells infested, a significant difference. The researchers concluded that the "strong preference for old combs could provide a new means for controlling this important bee parasite..." Although not mentioned by the authors, one can speculate that it might be possible to use "old comb extract" to enhance the attractiveness of "trap combs" used in an IPM program. (Recall that comb trapping is a non-chemical integrated pest management tool, whereby a comb, such as drone brood combs, is removed after capping and frozen to kill the entrapped



Continued on Next Page

mites inside. The comb can then be returned to the beehive for cleanup and reuse).

Here to stay – Africanized honey bees in the U.S.

The introduction of the honey bee subspecies *Apis mellifera scutellata* from southern Africa into Brazil in the mid 1950's, led to two well-publicized phenomena. First, the Brazilian descendents of *A. m. scutellata* (known as Africanized honey bees or AHB) exhibited an increased level of defensive behavior relative to European honey bees. Secondly, AHB have expanded their range steadily in the Americas for almost 50 years. Unsurprisingly, the biology and ecology of AHB often has been a topic of presentations at previous Encontro sobre Abelhas meetings in Brazil. AHB arrived in the United States about 15 years ago and therefore, it was timely that University of California researcher P. Kirk Visscher reviewed the progress made by the bee in its northern meanderings. Visscher discussed the range expansion of AHB within the U.S., a range that now includes parts of the states of Texas, New Mexico, Arizona, Nevada and California. In his presentation, Visscher pointed out the "greatest puzzle" concerning the expansion of AHB in the U.S. That it, although AHB reached east Texas about 10 years ago, they have not moved farther east into other southern states such as Louisiana, Mississippi, Alabama or Florida. Meanwhile, AHB populations exist in the southern states westward of Texas, including all southern California counties. In terms of human impact, Visscher reported that there has been very little negative impact in the U.S. from AHB defensive behavior (severe stinging incidents, deaths). However, as AHB increases its range in California into more urban areas, he concluded that bee problems would likely increase. BC

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Cooper, R.A. 2004 *The development of honey products for the management of wounds in the United Kingdom.* Proceedings of the 8th International Conference on Tropical Bees and the VI Encontro sobre Abelhas. pp 308-311

Jungueira, E., G. A. Piccirillo and D. DeJong. 2004. *Size and age of brood comb cells affects* Varroa destructor *infestation in Africanized bee colonies.* Proceedings of the 8th International Conference on Tropical Bees and the VI Encontro sobre Abelhas.pp 394 -395.

Visscher, P.K. 2004. *Africanized honey bees in the United States.* Proceedings of the 8th International Conference on Tropical Bees and the VI Encontro sobre Abelhas.pp 247-250.

Piccirillo, G.A. and D. DeJong. 2004. *Old honey bee combs are more infested by the mite* Varroa destructor *than are new brood combs.* Apidologie. 35:359-364.

GLEANINGS

NOVEMBER, 2004 • ALL THE NEWS THAT FITS

By Hand!

POLLINATING PLUMS

The Queensland Department of Primary Industries has recruited bees to cut the labor requirements of cross-pollinating experimental plum lines.

Experimentalist Dougal Russell said that in the plum breeding program bees had replaced humans in performing hybridizations by transferring pollen from male to female lines.

Russell said manual pollination was both tedious and time consuming, taking about three hours to complete the job on up to 10,000 flowers on a mature plum tree, and repeated every second day while the tree was flowering.

"In a season we might cross-pollinate 150,000 flowers on 15-20 female parents, which makes hand pollination very expensive," he said. "Bees visit each flower three or four times in four hours for very little cost."

Russell said plums differed from peaches in that they were not self-fruitful and needed pollinisers – male parents – placed at strategic intervals in commercial plantings for successful fruiting.

"Peaches are self-fruitful, which in a planned crossing program means flowers have to be emasculated."

Russell said to stop indiscriminate cross-pollination, about 2,000-3,000 bees in a small nuclear hive were contained in a 10 foot high by two square yards pollination tent under which a polliniser bouquet of flowers was attached to the female seedling.

The bouquets were made up of cuttings taken from selected lines and stored in a glasshouse until needed.

The bees were introduced in nuclear hives to each pollination tent and left for three or four days to complete the pollen transfer.

Because plums contained little nectar, the bees were fed a supplement of sugar syrup to maintain their food supply. – *Alan Harman*

SMITH WINS AWARD

Bart Smith, a member of the Beltsville Bee Lab, was presented the Beltsville Area's "Support Scientist of the Year" Award at a ceremony held at the U.S. National Arboretum in Washington, DC, September 23. Presenting the award was Dr. Phyllis E. Johnson, Area Director.

Bart retired from his position as State Apiary Inspector for Maryland recently, and also from his long-held position as Secretary for the Apiary Inspectors of America.

The Beltsville Area consists of 35 laboratories engaged in animal, plant, and human nutrition research and employs nearly 1,700 people. The area awards are highly competitive, and we congratulate Bart on his selection.

HOW HIGH IS IT?

Long time beekeeper Odra Turner, Knoxville, TN, set a personal best honey production record from one of his nine colonies this Summer. As you can see from this picture, he had 18 shallow honey supers on the hive. When removed in late June, there were 17 full supers! His 2004 Spring honey crop from the nine colonies came to a total of 2,200 pounds. That averages out to 245 pounds per hive. He moved his hives to the Cumberland Plateau for sourwood production in July; unfortunately, that crop is not expected to set any records.

Odra has been keeping bees for 35 years. At one time he maintained 180 hives. When health problems struck four years ago, he sold 150 of them. Since that time he has not managed over 36 colonies in any one year. He anticipates reducing his colony number to five in 2005.

He is one of Tennessee's most avid supporters of new, upcoming beekeepers.

SAME OLD STORY

The Marlborough (NZ) Beekeepers Association criticized the government's planned Varroa management strategy to keep the mite out of the South Island as an expensive exercise with negligible benefits for their area.

President Will Trollope said he was pleased the strategy maintained the movement control line between the North and South Islands but said he didn't think the planned extensive surveillance program was needed.

"If they find *Varroa* on a log coming over on the line, then fine, it can be eradicated straight away," he said. "But if they find *Varroa* in Spring when there's a lot of nectar, chances are they can't do a poison or eradicate till Autumn and by then it's too late."

Trollope said beekeepers in the Marlborough region of the South Island were well aware that it was only a matter of time before *Varroa* reached the area.

"We're educating ourselves," he said. "The good beekeepers around here will survive. It will definitely cost more in the first few years with the initial eradication of *Varroa* but I think Marlborough will cope because of our climate and crop of manuka."

The association believes an eradication attempt in the area would be unsuccessful because of the number of feral bees in the area. There were large areas of scrub country and it would be impossible to find every single feral hive. – *Alan Harman*

NHB NEWS

Secretary of Agriculture Ann M. Veneman appointed 21 members to the National Honey Board Nominations Committee. The Committee nominates individuals for appointment to the National Honey Board.

Newly appointed members are: Elmore Herman, Winter Haven, FL; Michael McKinnon Kilks, Honolulu, HI; David Shenefield, LaFontaine, IN; Donna Brahms, Cumberland, IA; Myrna Burchett, Grand Rivers, KY; Suzanne Quirk, Blackstone, MA; Milton Henderson, Ellisville, MS; G. Warren Nelson, Lincoln, NE; W. Graham Yelton, Sandia Park, NM; Bill Waddell, Reidsville, NC; Jack Meyer Jr., Madison, SD and Peggy Miller, Crowheart, WY. These members' terms begin immediately and end June 30, 2007.

Reappointed members are: John Williams, Jonesboro, AR; Jay Miller, Blackfoot, ID; Stan Wasitowski, Flemington, NJ; Darryl Rebuck, Montoursville, PA; Peter Genier, Fair Haven, VT and Sue Olson, Yakima, WA. These members' terms also begin immediately and end June 30, 2007.

Newly appointed member Lloyd Snyder of White Hall, MD has a term beginning immediately and ending June 30, 2005 while newly appointed members William Hummer, Shreveport, LA and Chuck Sowers, Canby Jr., OR have terms beginning immediately and ending June 30, 2005.

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Seven honey industry associations have qualified for the December 2004 National Honey Board-sponsored roundtable including the American Beekeeping Federation, American Honey Producers Association, California State Beekeepers Inc., Eastern Apicultural Society, National Honey Packers and Dealers Association, Sioux Honey Association and Western States Packers and Dealers Association. The roundtable will be held December 2-3, 2004 in San Antonio.

Each roundtable gives honey industry leadership the opportunity to discuss issues of common concern and identify strategies that may be cooperatively implemented. The qualifying organizations prioritized economic adulteration, standard of identity for honey and beehive treatments as discussion topics, among others.

To quality for voting seats at the roundtable, organizations submitted documentation to validate that their membership represents significant scope in the honey industry. Qualified organizations may seat two voting members at each roundtable, with the National Honey Board reimbursing up to $2,000 of expenses for these two people. Unless an organization's status changes, these seven associatiosn are eligible to attend NHB-sponsored roundtables through 2006.

OBITUARY

Mildred Carlisle Weaver of Navasota, Texas passed away September 27.

She was born in Brenham, Texas and was a homemaker. She was a member of First United Methodist Church, where she belong to the Ladies Auxiliary. She also was a charter member of Edgewood Country Club and was involved with the march of Dimes, American Heart Association, Texas Beekeepers Association and American Beekeeping Federation.

Survivors include her husband, Raymond "Morris" Weaver of Navasota; a son and daughter-in-law, Jeff and Cynthia Moody and daughter and son-in-law, Alice and Tom DeOlloz of Navasota, a sister, six grandchildren and seven great-children.

A PLAGUE OF POISON

An unprecedented plague of locusts is threatening in western New South Wales, raising fears that control measures will kill commercial bees.

Conditions are perfect for the locusts and the NSW government has increased its spray stockpiles in readiness for the plague expected to reach its peak in October.

Apiarists fear the insecticide used against the locusts will kill their bees.

The smallest hint of insecticide drift from a neighboring landowner could easily kill a hive and beekeepers have been warned that it was vital for them to put their hives out of harm's way.

SAVING ACRES

Although many areas of the country experienced budget shortfalls last year, states and communities continued to spend steadily to protect farmland through Purchase of Agricultural Conservation Easement (PACE) programs. PACE programs compensate farmers and ranchers for the development value of their land, while permanently protecting the land for agriculture.

According to new PACE statistics released by American Farmland Trust's Farmland Information Center, states and communities spent $189 million to protect 185,175 agricultural acres in 2003. The combined investment in PACE remained virtually unchanged from 2002, and state spending on PACE rose five percent.

"Even in tight budget years when elected officials have to make tough choices they are still choosing to put money toward farmland protection," said Bob Wagner, senior associate for American Farmland Trust. "Americans are clearly concerned about sprawling development and want to ensure a future that includes farm and ranch lands."

In addition to the $137 million that states spent to protect farmland directly in 2003, the new data reveal that local governments, private land trusts, foundations and the federal Farm and Ranch Lands.

Protection Program (FRPP) are playing a large role in financing farmland protection. For every dollar spent by state programs to protect farmland in 2003, an additional $1.02 cents came from these other sources. In some states, the availability of matching funds from the federal program likely drove state spending on farmland protection.

"Increased FRPP funding in this region has clearly influenced the level of state and local PACE spending," said Cris Coffin, American Farmland Trust's New England director. "Given our high real estate values, the availability of federal funds to pay up to half of the cost of a farmland protection project is an enormous incentive for states and towns to find the needed matching funds, even during tough budget seasons."

Nineteen states currently have established PACE programs at the state level, meaning they have dedicated funds and/or purchased easements. An additional four states have at least one PACE program at the local level.

American Farmland Trust's Farmland Information Center conducts an annual survey of state and local PACE programs throughout the country. The results are available online at: www farmlandinfo org/ farmland_preservation_literature/ index.cfm?function=article_view&articleID=29942 and www.farmlandinfo.org/ farmland_preservation_literature/ index.cfm?function=article_view&articleID=27749

HONEY BLEND PROBLEMS

Italian honey producers are warning of a flood of contaminated Chinese honey after what they said was a mistake by European Union officials.

"Consumers beware, check the label on the honey you buy, and choose the one stating the origin," the Italian Honey Producers Association said in a statement.

"The very honey that has been adulterated and that was banned all over the world, including Europe, because it contained a toxic antibiotic – chloramfenicol – now it is authorized again because a Chinese exporter just auto-certified his product. It's a careless decision by the EU, which goes to the detriment of consumers' health and follows commercial interests."

New EU rules on labeling since Aug. 1 now require country of origin labels from Aug. 1 but association president Francesco Panella said this was not the total answer.

"Only certain products clearly show their origin," he said. "Industrial products use the term 'honey mixture' and consumers should know that when it comes to 'honey mixture, Chinese honey might be included."

– *Alan Harman*

CALENDAR

♦INTERNATIONAL♦

Apimondia 2005 – August 21 - 26, 2005 Dublin, Ireland. For information visit Apimondia2005.com

Apimondia 2007 – September 9 - 13, 2007 Melbourne, Australia. For information visit Apimondia2007.com

Tour Costa Rica and Panama January 28 - February 6, 2005. Visit commercial beekeeping operations and have an opportunity to work with the Africanized bees. Visit coffee, citrus, banana, sugar cane and pineaplle farms. Visit an Indian village, take a jungle walk, and see both the Atlantic and Pacific Oceans.

Cost is $650 person, double occupancy, and $750 per person, single occupancy, plus airfare. Group size is approximately 15.

For more information or brochure, contact Tom McCormack, 724.495.6310, Fax 724.495.6198 or TLMCCOR@CCIA.COM.

♦CALIFORNIA♦

California State Beekeepers Association will hold their 115th Annual Convention November 9 11 at the Red Lion Hanalei Hotel, San Diego.

Speakers on vairous topics will be there, an appearance by the National Honey Queen, auction, awards banquet and more.

For information contact Patti Johnson, 7220 E. Grayson Road, Hughson, CA 95326, 209.667.4590.

♦FLORIDA♦

The Florida State Beekeepers will meet November 12-14 at the Agricultural Center in Chipley, just off Interstate 10 between Tallahassee and Pensacola. The meeting begins at 3:00 p.m. with a beekeeper's yard sale, followed by a fish fry and shrimp boil for registered attendees.

The Friday program includes several prominent scientists doing research on *Varroa* and Small Hive Beetle. The meeting concludes Friday evening with a banquet and the business meeting.

For information contact Laurence Cutts, 850.596.0348 or beeactor@earthlink.net or visit floridabeekeepers.org.

♦INDIANA♦

The Indiana State Beekeepers will hold their annual Fall Conference November 5-6 at McCormick's Creek State Park, 14 miles northwest of Blommington.

For more information call 812.951.3737.

♦MAINE♦

The Knox-Lincoln County Beekeepers will hold their 4th Annual Bee School starting March 30, 2005 for six consecutive weeks at Medomak Valley High School in Waldoboro.

To register call Adult Education, 207.832.5205. For more information, 207.563.7564, or visit klcbee.com.

♦MARYLAND♦

The Maryland State Beekeepers Association will hold its annual Fall meeting and honey show November 13 at the Maryland Department of Agriculture building located on Harry S. Truman parkway, Annapolis. The featured speaker will be Charlie Harper. He is currently responsible for raising Russian breeder queens in Louisiana.

For more information contact Allen Hayes, 410.489.2835 or thehayeshouse4@aol.com.

♦NEW YORK♦

The Empire State Honey Producers Association will their fall meeting November 12-13 at the Treadway Inn and Conference Center in Owego, NY.

Please visit www.eshpa.org/event_1.htm for further details. The page is updated as information is available, so check frequently.

Organic Beekeeping Workshop will be held at the Pfeiffer Center for Biodynamics and the Environment in Chestnut Ridge. The date is April 29, 2005, 3:00 p.m. to 9:00 p.m. and April 30, 2005, 9:00 a.m. to 6:00 p.m. This workshop is for active beekeepers and also beginners. The presenter will be Gunther Hauk.

For more information contact The Pfeiffer Center, 845.352.5020, ext. 20; email: info@pfeiffercenter.org or visit www.pfeiffercenter.org.

♦OHIO♦

The Ohio State Beekeepers Association will hold their annual Fall meeting November 13 at the Kingwood Center, in Mansfield, OH. Registration begins at 8:00 a.m. The keynote speaker will be Floyd Alexander talking about Apitherapy.

For further information contact Sonny Barker, 419.683.1478 or sonnyb@bright.net.

♦PENNSYLVANIA♦

The Chester County Beekeepers Association will hold their meeting November 6, at 7:30 p.m. at the Borough Hall, 401 East Gay St., West Chester. Dennis keeney will be the speaker talking about queen stock.

For further information contact Jarl Mork, 610.793.2564 or jwmork@earthlink.net.

♦TENNESSEE♦

The Tennessee Beekeepers Association will hold their annual meeting October 22-23 in Memphis at the Agricenter International. Topics from queen rearing to mead making will be covered by Robin Mountain and others.

Discounted rooms are available at the Comfort Inn and Suites, 7787 Wolf River Boulevard, Germantown. Reserve by calling 901.757.7800 and asking for the TN Beekeepers Association rate of $62 per night.

For information or to register please visit www.tnbeekeepers.org.

♦TEXAS♦

Texas Beekeepers Association will hold their meeting November 11-14 at the Arlington Crowne Plaza Suites hotel in Arlington. Speakers include John Talbert, Jimmie Oakley, Cling Walker, Dr. Frank Eischen, Dr. Tanya pankiw and more.

To make reservations at the special rate of $69 call the hotel at 817.640.0440 by October 10. Registrationf or the meeting is $50 by November 6 and $65 after that date.

For further information or to register contact Jimmie Oakley, 1799 Goodson Court, Round Rock, TX 78664, 512.388.3630.

♦VIRGINIA♦

The Virginia State Beekeepers' Association will hold their Fall meeting November 6, in the Plecker Center at Blue Ridge Community College. Speakers include Dennis vanEnglesdorp of the PA Dept. of Ag, James Haskell from the USDA, Richard Fell of VA Tech and George Clutter of the WV Dept. of Ag.

For information contact Keith Tignor, 804.786.3515.

♦FORMIC ACID SEMINARS♦

Nationwide Seminars on *Treating Varroa and Tracheal Mites with Formic Acid* will be held at various locations throughout the U.S. The speaker is Bill Ruzicka, who is a professional engineer in the Okanagan Valley of British Columbia.

Locations & Dates:

Iowa - November 12-13, Iowa State meeting, Marshalltown. Contact Steve Hanlin, 515.294.1936, sjhanlin@iastate.edu.

Florida - December 2, Escarosa Beekeepers Association. Contact Bill Ruzicka, 250.762.8156, billruzicka@mitegone.com

Louisiana - December 4, Louisiana State Meeting, Shreveport. Contact Steve Bernard, 337.228.7535, SbernHoney@aol.com

Texas - December 5, East Texas Beekeepers Association. Contact Dick Counts, 903.566.6789, dickcounts@bigplanet.com

Texas/New Mexico - December 6-15. Contact Bill Ruzicka, 250.762.8156, billruzicka@mitegone.com

For further information or if you wish to organize and reserve a seminar in your area visit www.mitegone.com or contact Bill or Susanne at billruzicka@mitegone.com, 250.762.8156, fax 250.763.1206.

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Happy Thanksgiving

In George Orwell's classic essay *Looking Back On The Spanish War*, he wrote: "Early in life I had noticed that no event is ever correctly reported in a newspaper "

Maybe you've noticed. The paper always gets it wrong. But is it always the paper's fault?

Some years back the local rag did a little feature on my wife Linda. The thrust was that she taught writing at the University of Colorado during the week. Then on the weekends she rushed home to my arms, and to pick apples and teach her private piano students at our place in Peach Valley. It was a cute little "this woman does it all" story.

To round out the piece, the reporter included a little bit about me. It mentioned that I ski patrolled and kept bees, and that the little darlings had had a great Summer, averaging "200 pounds of honey per hive." The article was flattering and all, but it sort of made me out to be a venerable old master beekeeper, which I'm really not. I just muddle along and then call Paul when I'm really confused.

The 200 pounds was also something of a stretch. It's true that my Crystal Springs yard had had what around here is a very good season indeed, averaging 100 pounds of honey per hive. One hive did in fact produce probably way over 200 pounds. I don't know why that one colony did so well. With six or seven honey supers stacked on it, it towered over the others like a honey bee Empire State Building. I had to stand on cinder blocks to look inside.

Here on the farm, the home bees didn't do as well. Overall, though, I had what I consider excellent honey production that year, averaging 70 pounds per hive for my two beeyards. It was in fact my best year ever. Naturally I was pretty pleased, and I'm sure I mentioned this repeatedly to Linda, especially the part about the 200-pound hive.

It's undeniably true that I sometimes don't listen to Linda. Take yesterday. As I drove her through town, Linda said, "You weren't listening when I said I have to drop off a book at the library, were you?"

There wasn't much I could say, but the truth is that I was thinking about a pesticide bee kill and the likely culprit who wouldn't return phone calls or answer my polite emails. So you can understand why "a book at the library" didn't sink in. Linda doesn't understand, but you do.

I'm not sure Linda listens carefully to everything I say, either, but she almost always catches the highlights. Whenever I say, "What did I just say?" I can almost never catch her totally spacing out.

But anyway, she picked up the part about the hive that made the 200 pounds, and she really did tell the reporter that my bees "averaged" 200 pounds per hive.

The public will believe anything. Why wouldn't they? What's so unreasonable about 200 pounds? Or 500? Maybe that's what bees make in a Summer. Who knows? But I was a little embarrassed, because I was afraid that the handful of beekeepers around here would think that somebody – probably me – was blowing some smoke. And you're nothing without your reputation.

When I read about the 200 pounds, I said to Linda, "Why in the world would you ever say such a thing?"

Linda looked at me like I didn't have good sense. She said, "Well, you did say you got 200 pounds from that one hive, didn't you?"

My ski patrol buddy Nic grew up with honey bees and spent his high school Summers working for Paul. His dad is a schoolteacher, wildfire fighter and lifelong sideline beekeeper. So both Nic and his dad know bees, and they know baloney.

Nic's mother is a professional counselor and does not keep bees.

In the patrol locker room, Nic tipped back his cowboy hat. His eyes twinkled when he said, "Mom and Dad were fascinated by the article about Linda."

"Oh?" I said.

Then Nic started chuckling the way he does. He said, "So Mom and Dad are in the kitchen, and Mom's reading the article, and Dad's reading the sports. She says to Dad, 'Look, Honey, it says here that Linda Colby teaches at the university in Boulder and that she also plays classical piano concerts here in the valley.'

She hands the article to Dad. He reads awhile and then says, 'Two hundred pounds per hive? How does anybody get a two hundred pound average? Around here.'

He hands back the paper, and Mom says, 'And look, it says she studied at Indiana University and that she has a doctorate in piano performance.'

Dad says, 'I wonder where he keeps his bees. I just don't see how anybody can average 200 pounds per hive on the western slope.'

Mom says, 'Larry, she sounds so interesting. And they live right in Peach Valley.'

Dad just stares at the paper and doesn't say anything. Finally he shakes his head and mutters, 'Two hundred pounds. I just don't get it.'"

Ed **Colby**

200 Pounds