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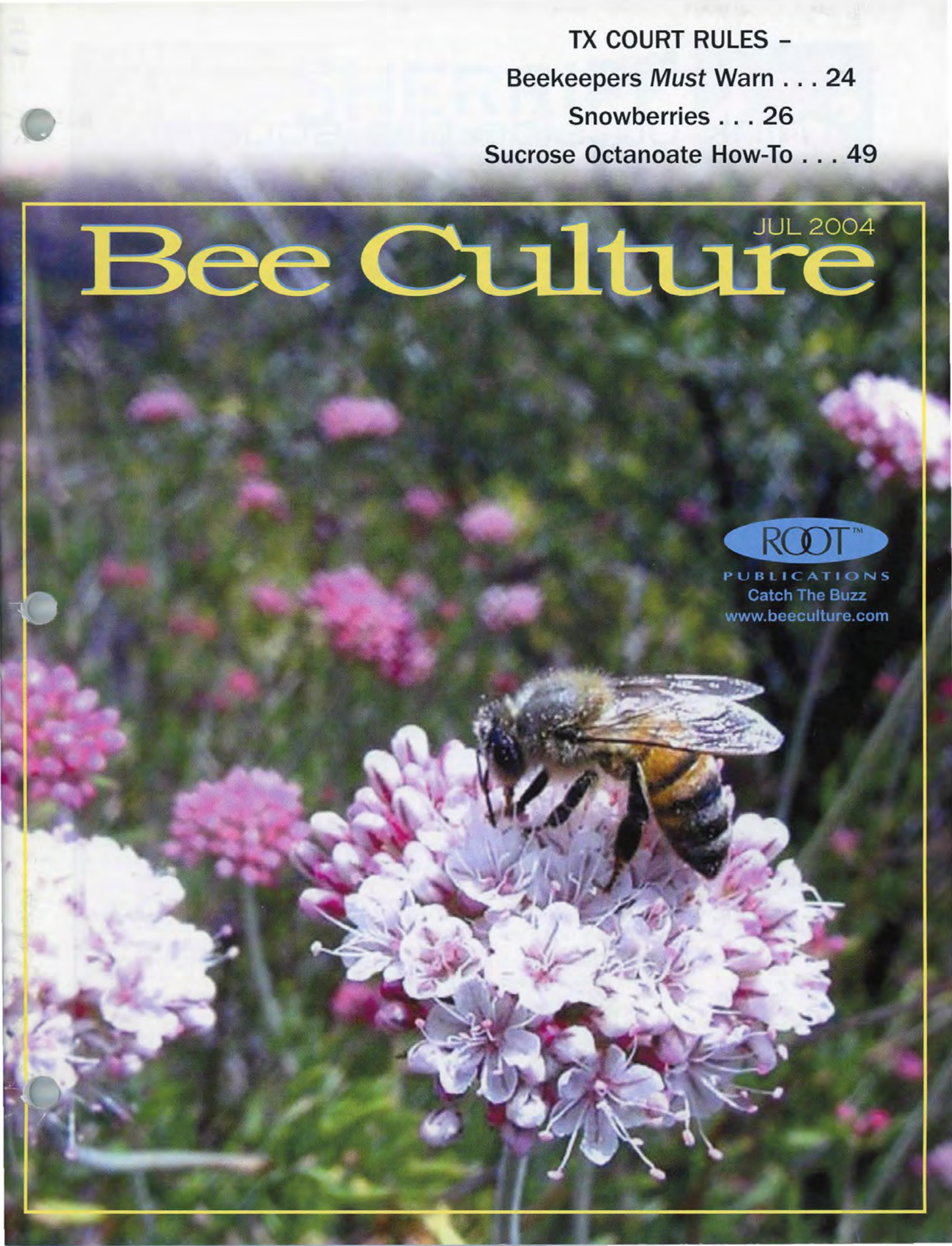
Bee Culture

JUL 2004



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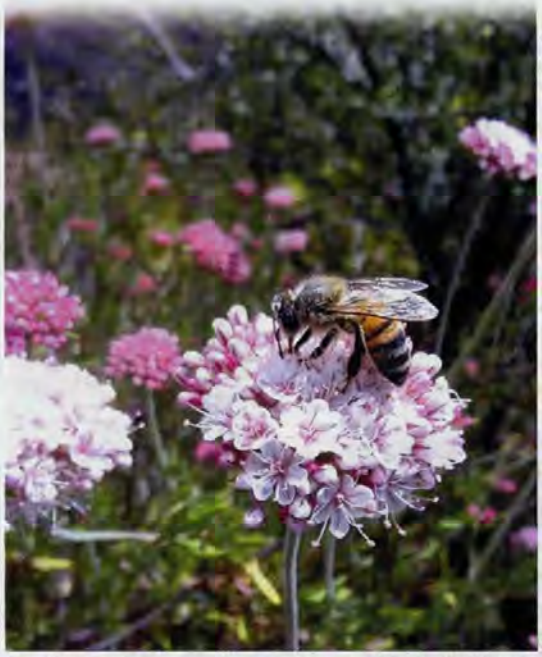
JULY 2004 VOLUME 132 NUMBER 7



*For those of you on the east coast, this is California Buckwheat (*Eriogonum fasciculatum*) not nearly the same as the buckwheat we are so used to. It is sometimes called Wild Buckwheat, and blooms July onward.* (photo by Ken Kirtley) *Check out his website at honeybeesonly.com*

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FEATURES

DEPARTMENTS & COLUMNS

KEEP IN TOUCH

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MAILBOX

Bees On Burlap

I had some burlap left in the beeyard after unpacking the hive from the Winter One piece was in a bit of a hollow, and the bees figured out that it was an easy place to gather moisture. I noticed that it was an easy opportunity to get some really close photos.

Frank Reiter
Carp, Ontario, Canada

A New Home

Last 4th of July a windstorm blew down this tree limb filled with bees. My son, Carlos, was called to the rescue. He brought the limb home and set a hive on top. Eventually the bees moved up into the hive, but a few stayed below.

Jan Donaldson
Fennville, MI

Fischer's A Gem

I'm enclosing my subscription to *Bee Culture*. I was so impressed with the recent article written by James Fischer regarding the nitrofurans found in blended Australian honey that I felt that it was mandatory to subscribe to your journal.

Warren Taylor
Blayney NSW, Australia

Cheapskate

I really liked the Bottom Board article in the May issue, *Cheapskate*.

We need more men who truly value their wives' advice, and more "Linda" type wives who can truly be a helper to their husbands as God intended. Proper order and contentment always bring more happiness than getting what we want.

Melvin Yoder
Delano, TN

Return Your Calls

I enjoy your magazine and the very helpful articles you publish obviously written by people who have much more experience in beekeeping than I do – a mere sideliner, but teachable!

Now the complaint: Concerning some of your advertisers. I know it's a very busy time of year in the Spring but please take a little time to return your phone messages. I needed some equipment and queens and over the course of two critical weeks I called eight advertisers. Only once did I talk to a live person – obviously a child – who said they were booked up for the season – a reply that was obviously coached. I finally resorted to an old company – an old *reliable* company that I have used many years and spent many dollars with (also an old advertiser in *Bee Culture*) – and they were glad for the business and not in the least inconvenienced. So much for branching out. For those other folks I would state the obvious – "either you're in business, or you're not."

Dave Crouch
Browning, MO

Northwest Honey Plants

The article by Ann Harman "Honey Plant Plans" in the May 2004 issue talks a lot about honey plants of the East and Midwest states but has only a few lines about the Pacific Northwest. I would like to point out that the Wild Blackberry is the major honey plant here in the northwest and produces a large honey crop. The Vine Maple, Large Leaf and Norway Maple all produce high sugar nectar but come early in the year and weather is a factor that affects the honey crop. My favorite honey plant is Poison Oak which produces a dark wonderful honey and does bloom during better weather There is an excellent book *Nectar and Pollen Plants of Oregon and the Pacific Northwest* by Beryle Stringer of Honeystone Press (which is still in print). This book is just the facts, with 250 wonderful illusions. So you can see there is more to the Pacific Northwest than Fireweed and Vine Maple.

Ken Ograin
Elmira, OR

Hive Trash

Watching honey bees in observation hives for years it seems the honey bee who cleans the cell takes the debris to the outlet to discard. Because of rain, wind or cold the trash may be left close to the outlet and she then returns to continue to clean out the same cell or another cell until the cell is clean. It seems she doesn't leave a cell unclean before going to clean the next cell.

Kathy Corfley
Darien Center, NY

Continued on Next Page

MAILBOX

Info On Old Queens

I have been reading Larry Connor's series in *Bee Culture* with great interest, having raised many thousands of queens in the far distant past.

In the April article, Dr Connor wrote, "Sperm stored in the queen will remain alive for many years, at least five years in the literature."

Robbin Thorp and I were interested in the question, since we still had (as of a couple of years ago) apparently two colonies that were still alive on Santa Cruz Island and had survived the *Varroa* mite introduction – even though we have tallied no swarms the past seven seasons. We questioned whether queens could live that long, producing enough brood for the colony to persist but so much that such colonies could emit swarms, etc.

Quite long records did exist in the past.

After a diligent search of the literature, I located a 1961 note by K.D. Bozina published (in Russian) in Pchelovodstvo (38(6):p.13) and obtained a copy that a student here translated for me. Later I found an abstract of that note in ***Apicultural Abstracts,*** which read as follows:

"In normal colonies 50% of queens lived two to three years and were normally superseded; 30-35% lived four to six years, and a few over six years. In the Institute apiaries two queens lived eight years; one, still living is nine years old."

That pretty much helped explain the mystery of why two colonies could persist all these years on Santa Cruz Island.

Today, of course, with all the pestilence and chemicals used, queens likely live far shorter lives.

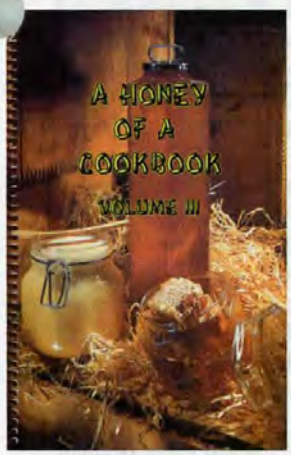
Adrian Wenner
Santa Barbara, CA

Flight of the Bumblebee

A friend took this photo while he was visiting Bernheim Arboretum here in Kentucky. Like all good photos, it was purely by accident that he caught the bumblebee in flight.

Denise Hubler
Elizabethtown, KY

New Things For The Summer



A Honey Of A Cookbook, Volume III. Published by The Alberta Beekeepers Association.

I now have all three volumes of this cookbook, and, along with the one we did and the many the NHB has done, few products have been so well explored as an ingredient in cooking.

This book is well thought out, has a wide variety of recipes covered, plus preserves and jams, and lots of good information on cooking and using honey. It also has home remedies and some excellent beeswax skin care concoctions.

You can get this 156-page, spiral bound, 6"x 9"cookbook from ABA, 11434-168 St., Edmonton, AB T5M 3T9, Canada for $12 + postage. Email honeybee@AlbertaBeekeepers.org for more information. Bon Appitite.

Dutch Apple Pie

Dough:
1¾ cup (425 ml) butter
1½ cup (375 ml) sugar
2 eggs
1 tsp. (5 ml) vanilla
1/2 tsp. (2 ml) salt
4 cups (1 l) whole wheat flour

Filling:
½ cup (125 ml) rolled oats
9 cooking apples
1 tsp. (5 ml) cinnamon
¼ cup (50 ml) honey

Cream together butter and sugar Mix in slightly beaten egg (leave some to glaze the top) and vanilla. Add flour and salt and knead until dough becomes a ball. Set apart half of the dough and roll out the rest. Cover bottom and sides of your 9" x 13" (22 x 33 cm) pan. Sprinkle rolled oats over bottom. Peel and dice apples, spread over dough. Sprinkle cinnamon and drizzle honey over apples. Take the rest of the odugh and roll it out. Cut into long and zig zag those over the apples. Bake at 300°F (150°C) for 50 minutes.

Bee & Back Saver

An interesting idea, this. Crack a super, a heavy super with your hive tool so you can lift it off a colony. Remove the hive tool, the super, though once cracked, seals itself up again nicely with all that warm, sticky propolis. You go to lift and ouch. But stick this cool tool in between the supers and they don't stick, and, you have both hands free to smoke the bees, move the super, insert medications or whatever And, if you lift the super, the Bee Saver falls away, but only as far as the string tied to your beesuit will let it. Notched top and bottom so it doesn't get squeezed out. $15.00 includes U.S. postage from Atkinson Bee Culture, 3846 Kenwood Avenue, Gurnee, IL 60031, 847.662.7644.

Uncapping Tub

Pierce Manufacturing has an uncapping tub you should check out at your nearest dealer The heaviest duty food grade polyethylene on the market makes up the two-piece container A queen excluder grid fits in the bottom of the top piece to hold cappings wax, while the honey drips through to the calibrated container below, complete with bottling valve. Top holds 100 frames worth of wax, bottom five gallons of liquid honey.

Call 714.447.3855 for nearest dealer

INNER COVER

Where people live is changing. You knew that, but here's some numbers we've gleaned from our surveys, USDA, the Census Bureau, and a few other places.

For one thing, just over 50% of the U.S. population lives within 50 miles of a coast line – Atlantic, Pacific, Gulf or Great Lake. To see how that works, take a look at the Honey Report map on page 12. Take a Sharpie® marker and draw a line just inside the border of all those coastal areas. That's about a 50-mile deep swath from Maine to the tip of Texas, and the California, Oregon and Washington coasts, plus the Great Lake's shore from Minnesota to New York. That's where 50% of the U.S. lives. I live on that line, and lots of you do also. The rest of you live in that grand area in between.

Here's another way of looking at this. Fourteen years ago 40% of our readers lived in urban or suburban locales. This year it's 63%.

Yet another way. There's a saying that most of the bees are west of the big river, but most of the beekeepers are east. True? Let's see. According to our most recent surveys, 73% of U.S. beekeepers live east of the river, but the USDA says they only run 23% of U.S. colonies. That's an average of about nine colonies/beekeeper. Out west that average scoots up to 83 colonies/beekeeper Not quite a ten-fold increase. I guess it's true.

As a comparison to all the people, coastlines and otherwise, 58% of the U.S. population lives in the east, and 42% out west.

More numbers. Measure just the dry land out east, and we have one colony every four square miles. Out west – lots and lots of land, but lots of colonies – there is, minus a frame, one colony per square mile of dry land.

Well, where this is going is that, like I said at the beginning, where people live, and keep bees, is changing. There are way more urban beekeepers, keeping bees in areas with way more people real close. Not lots of bees, but any is lots to lots of people who don't keep bees.

Yes, there have always been people who live in town who have bees. Chapters in books have been written about how to be a good neighbor. That is going to have to change, because the rules are going to get stricter and tighter and safer Probably, they will only change in the direction of tighter restrictions protecting more neighbors. Certainly doable, but needing attention.

But the numbers tell a story that needs to be heard. And that story is, basically, that our industry needs to not only be aware of this demographic shift, but we have to be able to serve these people who live in urban and suburban environments because that's where the people are. That's where the buyers are. That's where the bee clubs will be. That's where swarms will be. That's where stinging incidents will be. That's where inspectors will have to go. And that's where the next generation of beekeepers is coming from.

If we, as an industry do not support and plan for this new face of beekeeping, there won't be a new face of beekeeping. It's that simple.

Here's the perfect comparison. Farms are getting bigger, but there are fewer farms. They go where the land is. But guess what. There are way more small gardens now, believe it or not, than there were 20 years ago. More than 30 million of them are out there dotting the mostly urban landscape. They aren't big, but they are gardens. Two apple trees out back and a tomato plant in a pot on the deck is a garden. You can disagree, but don't argue with guy who has two apple trees and that tomato plant. He's a gardener. Oh, and he'd maybe, kinda like to think about having some bees for those apple trees, by the way.

From where I sit, I want that person to be a beekeeper, and I want to provide him, and now more likely her, with absolutely everything needed to do it right. You should too.

Suppliers can, if they choose, choose to ignore that person. But they do so at their own peril. They can, if they choose, decide to sell pallets of stuff to those beekeepers out west. Some will, and survive. Fewer will survive.

Or, we can serve both, better

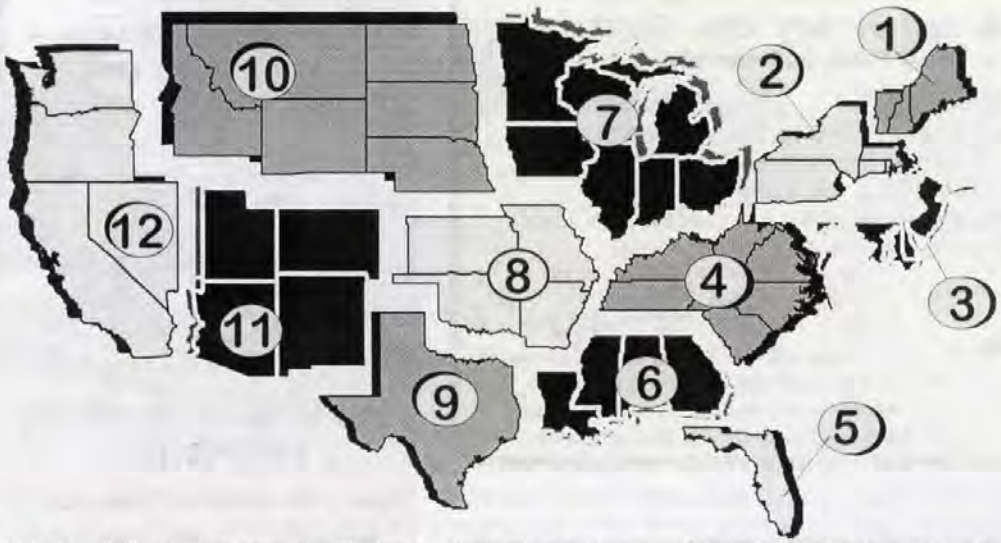
Here are a few things urban beekeepers tell me they'd like to see:

- **Smaller hives** – the eight frame equipment works here, but it's still not easy to get, and nothing has been written about 8 frame management in, what, 100 years? (That's changing soon though, and 8 frame hives and 8 frame beekeepers will have what they want.)
- **Preassembled equipment** – that's getting better but still not routinely available (perhaps that sounds somewhat familiar from other messages read on this page?)
- **A decent container** for package bees – nothing new in 100 years!! They leak bees and syrup and the post office hates them. Can't *something* be done about this?
- **Predictable bee stock** – gentle, disease and pest resistant – that's a crap shoot not worth taking at the moment. They want predictable

Continued on Page 48

Where People Live. And Late May, Early July.

JULY – REGIONAL HONEY PRICE REPORT



Region 1 – Bulk prices up about a dime since last month. Pail prices up strong, wholesale prices up, but retail prices tailing off just a bit.

Region 2 – Bulk prices rock steady since last month, but pail prices up a bit. Wholesale and retail prices rising slightly.

Region 3 – Both bulk and pail prices have climbed slightly since last month, while prices at both wholesale and retail remain steady.

Region 4 – Bulk prices up just a hair since last month, pail prices steady, but both wholesale and retail steady.

Region 5 – Bulk prices have fallen nearly 10% since last month, but pails remain steady. Wholesale down but retail remains steady.

Region 6 – Bulk prices down over 7% since last month, but pails remain steady. Wholesale and retail remain unchanged.

Region 7 – Bulk prices up nearly 8%, but pails have dropped nearly 20%. Wholesale and retail are unchanged.

Region 8 – Bulk and pail prices both up strongly this month, but wholesale down. Retail steady.

Region 9 – Bulk prices up strong since last month, and pails up just as strong. Wholesale and retail up slightly.

Region 10 – Bulk prices up just slightly, but pails down a bit this month. Both wholesale and retail down slightly also.

Region 11 – Bulk prices steady since last month, pails down. Wholesale steady, but retail prices up slightly.

Region 12 – Bulk prices up a bit since last month, pails up also. Wholesale steady and retail up a bit.

	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	1.23	1.35	1.23	1.24	1.05	1.08	1.41	1.23	1.23	1.38	1.40	1.25	1.05-1.59	1.31	1.39	1.36
55 gal. Amber	1.15	1.25	1.12	1.10	0.89	0.85	1.31	1.12	1.12	1.25	1.48	1.00	0.85-1.48	1.14	1.12	1.32
60# Light (retail)	110.00	105.93	110.69	92.00	110.69	107.50	105.43	101.67	129.00	115.00	100.00	120.00	92.00-129.00	108.99	106.74	93.55
60# Amber (retail)	100.00	100.60	109.20	95.50	109.20	97.50	97.60	105.00	120.00	109.20	100.00	109.20	95.50-120.00	104.42	102.79	84.96
Wholesale Case Lots																
1/2# 24's	39.92	42.50	36.59	34.06	36.59	32.50	39.90	36.59	36.59	35.76	25.15	36.59	25.15-42.50	36.06	40.36	45.25
1# 24's	55.59	58.70	64.28	51.14	59.40	55.33	59.73	59.60	51.25	71.84	75.55	68.40	51.14-75.55	60.90	62.89	54.93
2# 12's	50.68	53.72	70.30	49.79	55.20	79.15	53.80	66.00	47.90	55.92	55.00	60.90	47.90-79.15	58.20	51.06	49.38
12 oz. Plas. 24's	49.38	51.26	52.88	39.95	37.18	48.10	47.39	47.20	45.60	47.76	50.45	52.20	37.18-52.88	47.45	51.27	46.93
5# 6's	52.16	59.24	63.54	51.23	66.00	60.00	56.98	50.00	63.54	56.43	46.16	75.28	46.16-75.28	58.38	56.10	53.03
Quarts 12's	69.50	104.00	80.79	63.90	54.60	74.00	80.26	75.40	74.00	84.44	74.20	96.00	54.60-104.00	77.59	82.11	71.71
Pints 12's	46.00	52.48	46.27	37.50	35.40	50.00	49.32	46.60	44.00	61.12	45.00	54.00	35.40-61.12	47.31	46.55	46.81
Retail Honey Prices																
1/2#	2.25	2.65	2.75	2.52	2.75	3.25	2.32	2.74	2.91	2.78	3.85	2.80	2.25-3.85	2.80	2.69	2.28
12 oz. Plastic	3.00	3.12	3.37	2.98	3.50	3.37	2.95	3.56	3.30	3.14	3.54	3.85	2.95-3.85	3.31	3.18	2.94
1 lb. Glass	3.50	3.61	4.97	3.71	3.65	3.87	4.05	4.24	4.03	3.86	4.30	6.45	3.50-6.45	4.19	3.88	3.50
2 lb. Glass	5.56	5.86	6.19	5.55	6.20	6.99	5.82	7.65	6.33	6.53	6.03	6.19	5.55-7.65	6.24	6.26	5.80
Pint	5.38	6.47	6.50	4.50	4.85	5.06	5.41	5.48	5.35	6.48	5.57	6.25	4.50-6.50	5.61	5.55	5.56
Quart	9.52	9.70	11.57	7.00	7.20	9.06	8.27	8.76	9.20	12.18	8.30	11.57	7.00-12.18	9.36	9.05	8.40
5 lb. Glass	12.54	12.72	11.28	12.88	14.00	12.75	11.19	14.90	11.28	13.22	11.60	11.28	11.19-14.90	12.47	12.53	11.71
1# Cream	4.00	5.25	4.50	4.35	4.50	3.95	4.09	4.81	4.50	4.65	5.05	4.00	3.95-5.25	4.47	4.46	4.11
1# Comb	4.67	5.04	5.65	5.30	5.65	4.35	5.15	4.44	5.65	5.79	6.55	5.00	4.35-6.55	5.27	5.12	4.63
Ross Round	4.25	3.66	4.51	4.80	4.51	3.75	5.00	4.00	4.51	5.90	5.40	4.51	3.66-5.90	4.57	4.62	4.19
Wax (Light)	2.05	2.50	1.53	1.63	2.90	2.03	2.19	1.10	2.31	1.53	1.45	1.50	1.10-2.90	1.96	1.95	2.07
Wax (Dark)	1.50	1.73	1.46	1.75	1.10	1.98	1.60	1.00	1.67	1.46	1.25	1.46	1.00-1.98	1.91	1.66	1.66
Poll. Fee/Col.	47.50	38.40	40.09	33.50	40.00	42.50	43.94	40.00	30.00	25.00	47.00	35.25	25.00-47.50	38.60	39.06	39.10

RESEARCH REVIEWED

Explaining • Defining • Using

Steve Sheppard

"All in the (sub) family . . ."

The fact that a honey bee queen mates with numerous males means that some of her daughter workers have different fathers and some of them share the same father Thanks to the genetic contribution from their father, these latter workers have an additional 50% of their genes in common and are known as "super-sisters" In contrast, workers who do not have the same father share only a subset of the genes contributed from the queen's side and are half-sisters. Overall, half-sisters have about 25% of their genes in common, while super-sisters share an average of 75% of their genes. This substantial difference in relatedness between different groups of honey bee workers within a colony leads researchers to consider that a honey bee colony consists of multiple "subfamilies." The existence of such structure within honey bee colonies leads to the possibility of both competition and specialization at the subfamily level. A recent paper by an Australian research team studied the phenomenon of competition in relation to the differential success of subfamilies in contributing to the final drone population output of hopelessly queenless colonies (Martin et al. 2004).

In the typical honey bee colony, workers and drones are derived from eggs laid by the queen. After the eggs hatch, the resulting larvae are fed and tended by workers. The ovaries of workers are generally inactive (suppressed) during the normal course of events due, in part, to the presence of a chemical signal (pheromone) from the queen. However, if the queen is killed (or removed) and something happens to prevent the colony from successfully rearing a new queen, ovary activation can occur in some young workers that lead them to develop into laying workers. These workers then lay unfertilized eggs that develop into drone larvae that are reared to adulthood by their sisters. In a genetic sense, this can be seen as a "last gasp" by the colony to reproduce, as it uses its figurative dying breath to make a crop of male reproductives that may be able to pass

genes on to future generations. To investigate this phenomenon within the context of "typical" subfamily structure, Martin and colleagues used four colonies headed by open-mated queens of commercial origin. They removed the queens, marked an age-cohort of about 400 emerging workers with paint and returned the marked bees to the colonies. After three weeks they began collecting samples of unmarked workers to dissect and determine the activation status of the ovaries. Once they found that ovary activation had commenced in some workers, marked workers were recollected and dissected to determine their ovary status. From the experimental colonies, the researchers also collected a sample of worker laid eggs on day forty, a sample of larvae a few days later and finally a sample of pupae. To determine the subfamily status of the colonies and to assign individuals (adults, eggs, larvae or pupae) to various subfamilies, the authors examined genetic variation in the sampled bees at a particular set of genetic markers known as microsatellites. Microsatellites are regions of DNA that contain repeated fragments of DNA sequences that often vary in the number of repetitions. By analyzing variation at a number of different microsatellites, the authors were able to show that the workers within the four colonies represented from eight to 17 different subfamilies. Another way to think of this is to realize that from eight to 17 different fathers could be determined to have fathered the offspring in the colonies. The reproductive contributions of the subfamilies were found to be unequal in all the colonies. That is, the proportion of adult workers belonging to different subfamilies was significantly different from the subfamily proportions found for pupae (in three of four cases) and larvae (in the one case where pupal sample numbers were too low for analysis). Further analysis showed that there were significant differences in subfamily proportions of workers with activated ovaries, suggesting that some subfamilies tended to activate their ovaries more rapidly. In addition, the proportion of workers from subfamilies with activated ovaries differed significantly from the proportions of subfamilies represented by the eggs in three of the four colonies. Finally, the subfamilial proportions of eggs and larvae were also significantly different in three of the four colo-

Continued on Next Page

nies, likely indicating differential survival of the eggs.

Overall, the authors conclude that their research provides "strong evidence for the reproductive competition among subfamilies in queenless honey bee colonies..." There were apparent differences in the speed of ovarian activation and the resulting probability of success of the different subfamilies to produce drone offspring. However, differential survival of eggs to the larval stage also appeared to be important in determining the overall success of any given subfamily. The discovery by a beekeeper that a colony in their apiary is "hopelessly queenless" usually brings about the feeling that the colony faces a sad fate indeed. However, it is instructive to realize that Martin and her colleagues were able to resolve fundamental questions about the genetic interactions among subfamilies in honey bee colonies through close examination of the winners and losers in this end game of genetic dice. BC

Dr W Steve Sheppard, Thurber Chair, Department of Entomology, Washington State University, Pullman, WA 99164-6382, shepp@mail.wsu.edu; http//apis.wsu.edu

Martin, C.G., B.P Oldroyd and M. Beekman. 2004. *Differential reproductive success among subfamilies in queenless honeybee (*Apis mellifera *L.) colonies.* Behavioral Ecology and Sociobiology. 56:42-49.

Mark Winston

Gesundheit, Beekeeper Style

"About 30% of commercial beekeepers surveyed reported chronic respiratory problems, including eye, ear, nose or throat irritation, allergic responses, and difficulty breathing."

Here's a little statistic that caught my eye the other day. A study conducted in Alberta, British Columbia during the mid-1990s found that about 30% of commercial beekeepers surveyed reported chronic respiratory problems, including eye, ear, nose or throat irritation, allergic responses, and difficulty breathing.

That's a lot of sneezing and wheezing for any group, but seemed unusual in an industry where reactions to stings and thrown-out backs are considered to be our major health concerns. Interest piqued, I immediately filed the 30% factoid away in that remote place in my brain where future *Bee Culture* articles ferment. Who knows, perhaps there might be something there to write about?

You know what inevitably happens when a new bit of information emerges from the vast soup of facts, data, and ideas that bombard each of us in today's information age. Yes, the very next day another allergy factoid whipped across my e-mail, this one about a novel allergen of unique concern for beekeepers. A pattern was starting to develop

This latest report comes courtesy of a scientific journal called, appropriately, *Allergy*. The authors are all from Germany, but more interestingly represent the kind of interdisciplinary collaborations that have come to characterize modern science. Some are Immunologists, others Pneumologists, a third batch Molecular Biotechnologists, and the final bunch from the Institute of Apidology at Friedrich Schiller University

This curiousity-driven group of scientists began their research after encountering a respiratory allergy presented by one patient who in their words "worked with hives." They were intrigued by his case, because his allergic reactions didn't test out as coming from any known source.

The intrepid scientists went where no research had gone before, analyzing his blood through immunoblotting, enzyme-linked immunosorbent assays, and isoelectrofocusing to find 2QIEELKTRLHT12, an allergen attached to a bigger molecule called 13 kDa.

This allergy-causing protein was found in bee larvae and adults. What I found coolest in their report, though, was that a similar allergen was found coming from *Varroa* mites. Their conclusion: a bee and *Varroa* mite allergy should be considered for any beekeeper coming in to their doctor's office with inhalation/respiratory symptoms.

That seemed to add insult to injury for us poor beekeepers suffering from the devastation caused by the *Varroa* mite in our hives. Not only will *Varroa* kill our bees, but they can make us sneeze as well.

The phenomenon of a parasite having cuticular components similar or identical to its host is common among social insects and their bloodsuckers. The parasite benefits from smelling like its host, making them harder to recognize and remove. Perhaps the medical research community has uncovered one of these smell-alike compounds that may explain in part why *Varroa* are not removed from *Apis mellifera* hives with any useful frequency by infested worker bees.

Allergy researchers have a different focus, however Inhalation allergies from pollen, house dust mites, mold, and other sources are becoming epidemic, with serious consequences for public health. Thus, identification of allergens in the world around us has become an important direction for medical science, as molecular biology and other technique-driven disciplines develop the ability to identify a cascade of substances that induce mild to serious allergic reactions.

The identification of this particular bee protein is novel, but the beekeeping community has been aware of allergic reactions for some time. The first formal report came in 1932, when physicians described two cases of beekeepers with allergy symptoms that did not test positive for the suspected culprit, pollen. The doctor-scientists performed skin tests on their patients in which they scratched in tiny amounts of local pollen, which failed to elicit any reaction.

They then tested extracts of bee

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"That seemed to add insult to injury for us poor beekeepers suffering from the devastation caused by the *Varroa* mite in our hives. Not only will *Varroa* kill our bees, but they can make us sneeze as well."

heads and thoraces, removing the abdomens to eliminate the possibility of a venom allergy. Sure enough, the patients reacted, and moreover one patient was desensitized from his allergy by gradual exposure to increasing concentrations of head-thorax extracts.

Subsequent studies revealed mild allergies to bee body parts in many beekeepers and their families, with the occasional serious allergy erupting, particularly in those working in honey houses. The Alberta study mentioned at the beginning of this article concluded that allergy symptoms were associated particularly with scraping equipment or sweeping up in the honey house.

The Alberta group was not looking to find a good reason to leave that old equipment unscraped, or the honey house unswept. Their study was stimulated by concerns that beekeepers in Canada who overwintered their bees within indoor facilities might be exposed to high levels of airborne fungi and mold, with potentially serious health consequences.

Of particular concern were dead bees, piles of which accumulate in wintering buildings and/or in areas where hive equipment might be stored and cleaned up during the Winter. Dead bees in warmed buildings are an excellent substrate for mold to grow on, which could be allergy-inducing if the air supply becomes contaminated with high spore counts.

Their 1996 study, published in the American Industrial Hygiene Association Journal, found exactly that. They sampled 10 overwintering buildings before and during routine beekeeping activities, and found average spore counts that ranged from 238 to 1442 units per cubic meter of air during undisturbed periods. Values were considerably higher, 2200-14,000, when workers were sweeping up dead bees, and really high when workers were cleaning up hive equipment, 300-54,700 units per m^3 For reference, anything higher than 150 counts per cubic meter is considered unacceptable for indoor air

Even more disturbing were the identities of some of the airborne molds. Many of the spores are toxigenic or pathogenic, including various species of *Aspergillus* and *Penicillium*. Even the less toxic molds are worrisome, since most can cause allergic reactions following repeated exposure.

Thus, it's not surprising that 30% of Alberta beekeepers were exhibiting allergy symptoms. Even those that wintered their bees outdoors were vulnerable, since they spend much of the Winter indoors scraping, cleaning, and renovating used hives.

The study's authors recommended a number of protective measures, including wearing a respirator and eye protection to reduce exposure to spores while indoors. Other common-sense steps they suggested included washing overalls and gloves each day after work. Use of a rubber squeegee rather than a broom to sweep the floors also could reduce airborne spores.

Good ideas, although I can't say I've ever seen a beekeeper cleaning equipment or sweeping the floor while wearing a respirator. And, we're notoriously proud of having the dirtiest bee suit in town, apparently to our detriment.

These studies also suggested that beekeepers' families might be more susceptible to allergies as well, induced by beekeepers coming home with lots of mold spores on their clothing. There has always been a subliminal perception among beekeepers that family members are more likely to develop allergic reactions to venom, perhaps induced by low levels of venom on bee suits serving to expose family to venom allergens. Although neither of these situations have been confirmed through rigorous science, it seems prudent to wash yourself and your clothing before bringing potential allergens into the home.

Are today's beekeepers any more likely to develop allergies, or become ill due to exposure to toxic molds, than the beekeepers of yesteryear? Bee management hasn't changed much in respect to potential respiratory symptoms; beekeepers have always scraped equipment and swept honey houses.

However, we are exposed to many more substances today than in the past, and this over-exposure to allergens from myriad sources may weaken our immune system generally so that any assault on our respiratory systems through bee-related work could trigger a reaction.

As to those pesky *Varroa* mites: make me sneeze as much as you want, but please leave my bees alone.

Gesundheit. BC

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High Fructose Corn Syrup: A Revolution in the Making (Part II)

Malcolm T Sanford

"Is there more to HFCS than meets the eye?"

Last month I discussed how using High Fructose Corn Syrup (HFCS) revolutionized one of the most labor intensive and messy jobs in beekeeping, mixing and providing food to bees. One of the reasons for this is that HFCS is less expensive than honey and often sugar cane as well. This certainly is true if one factors in the costs of mixing by hand cane sugar and water to make sugar syrup. The low cost is only true, however, because of the vast scale of the highly subsidized corn-producing industry, and new technological advances to process the corn's starch (complex sugars) into its simpler sugars like fructose and glucose (dextrose) as I discussed last month. The driving force to reduce manufacturing costs of HFCS continues to be use of the material in the human food chain.

A few years ago, research showed that diets high in fats and a substance called "cholesterol" were found to be responsible for a condition called atherosclerosis, clogging and the arteries leading to heart attacks and strokes. A landmark work in this area, the Framingham Study, revolutionized how physicians looked at fat and cholesterol in the diet.[1]

From the Framingham and other studies, came routine screening of blood to determine cholesterol levels. If elevated, physicians and others recommended reducing fats and cholesterol is the diet. If this didn't work and it often didn't, then the medical and pharmaceutical companies engaged in research to get those numbers down in other ways. The result of that is the phenomenal success of the so-called "statins," drugs that in essence interfere with the liver's production of cholesterol, thus reducing its presence in the bloodstream.[2]

The food industry quickly picked up on this trend. Suddenly, the words "fat free" and "no cholesterol" were found everywhere. My favorite continues to be "cholesterol free- never had it, never will" on foods of vegetable origin. Left out of this message is the fact that cholesterol is an animal product; it never will be found in vegetables; as such this claim is misleading and redundant at best. Also left out in the cacophony was the fact that people, as animals, make their own cholesterol. It doesn't come just from foods containing the substance. Certain foods containing fat and cholesterol, nevertheless, were immediately suspect, like eggs and cheese (dairy products), and it was not recommended to consume much of them, if at all. As one can imagine, the egg and dairy industry were not happy with this situation.

Drawn into the "no fat" and "no cholesterol" fads were a variety of institutions, including the U.S. Department of Agriculture and the Food and Drug Administration. From this came the now infamous food pyramid, which showed that instead of a lot of animal fats, people should instead consume complex carbohydrates (starches) like bread, pasta, rice, and potatoes. There are many now who are reconsidering how to draw the pyramid as fats and proteins are no longer considered quite as "bad" nor carbohydrates quite as "good" as noted by the Messenger-Inquirer concerning suggestions to the USDA: "The national debate on carbohydrates was reflected, with carb-friendly industries cautioning against sticking them with the dreaded top of the pyramid – the smallest slot, reserved for foods deemed less healthy. Walnut growers were the most prolific, with more than 20 letters touting the nut's alpha-linolenic acid, an essential fatty acid that cannot be manufactured by the body."[3]

There's a problem with no fat foods; they don't taste very good. The food industry, in search of something to improve the taste of its products, while reduc-

1 National Library of Medicine JAMA. 1987 Apr 24;257(16):2176-80 www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3560398&dopt=Abstract, accessed May 4, 2004.

2 British Heart Association web site www.bhf.org.uk/professionals/index.asp?secondlevel=72&thirdlevel=945?, accessed May 4, 2004.

3 Messenger-Inquirer web site www.messenger-inquirer.com/news/usworld/7031511.htm, accessed May 4, 2004.

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ing or eliminating fats, came to the conclusion that the best way was to sweeten the product line. HFCS is a perfect vehicle for this, being cheap and readily available. The result of this is that almost all processed foods have some amount of HFCS. These include things like "no fat" salad dressing. It's also found in things not normally thought to contain sweets at all: pizza, yogurt, and beer.

Enter the newest thing to catch the public's and physician's attention, the obesity epidemic. People are over weight because they eat more calories than they burn. Surprise, carbohydrates are a big reason for this; they contain a lot of energy and if it isn't used up, it turns to fat. Added weight also brings on other conditions like diabetes, the inability to maintain a balanced sugar level in the blood, often directly influenced through consumption of carbohydrates.

In an effort to loose weight some are re-examining the wisdom that fats and cholesterol are all bad. Suddenly, an old, but now resurrected dietary regimen proposed by Dr. Atkins has taken hold. This states that carbohydrates must be minimized and one can often do that by substituting proteins and fats. Foods like eggs and cheese, anathema to the "no fat" philosophy, have been given a new lease on life.[4] At the same time, concentrated orange juice, once considered "healthy," is now being eschewed because it has a high carbohydrate level; it is full of fructose.

Carbohydrates can be measured by something called the glycemic index (GI). Rick Mendosa, a writer on diabetes concludes: "Before the development of the glycemic index beginning in 1981, scientists assumed that our bodies absorbed and digested simple sugars quickly, producing rapid increases in our blood glucose level. This was the basis of the advice to avoid sugar, a proscription recently relaxed by the American Diabetes Association and others.[5]

"Now we know that simple sugars don't make your blood glucose rise any more rapidly than some complex carbohydrates do. Of course, simple sugars are simply empty calories, and still should be minimized for that reason. Many of the glycemic index results have been surprises. For example, baked potatoes have a glycemic index considerably higher than that of table sugar."

Honey and fructose have moderate to high GI's. And then there's HFCS. Nobody eats this solely of course and that's a problem when one attempts to determine health benefits. But there is a lot of it consumed. An article in the Washington Post concludes, "That switch largely reflects the steady growth of high-fructose corn syrup, which climbed from zero consumption in 1966 to 62.6 pounds per person in 2001."[6]

Much of the HFCS story is not well studied and so it is "murky," the title of one article on the World Wide Web by Weston A. Price Foundation Board Member Linda Forristal, "Consumers trying to avoid genetically modified foods should avoid HFCS. It is almost certainly made from genetically modified corn and then it is processed with genetically modified enzymes. I've seen some estimates claiming that virtually everything – almost 80 percent – of what we eat today has been genetically modified at some point. Since the use of HFCS is so prevalent in processed foods, those figures may be right.

"But there's another reason to avoid HFCS. Consumers may think that because it contains fructose – which they associate with fruit, which is a natural food – that it is healthier than sugar. A team of investigators at the USDA, led by Dr. Meira Field, has discovered that this just ain't so.

"Sucrose is composed of glucose and fructose. When sugar is given to rats in high amounts, the rats develop multiple health problems, especially when the rats were deficient in certain nutrients, such as copper. The researchers wanted to know whether it was the fructose or the glucose moiety that was causing the problems. So they repeated their studies with two groups of rats, one given high amounts of glucose and one given high amounts of fructose. The glucose group was unaffected but the fructose group had disastrous results. The male rats did not reach adulthood. They had anemia, high cholesterol and heart hypertrophy – that means that their hearts enlarged until they exploded. They also had delayed testicular development. Dr. Field explains that fructose in combination with copper deficiency in the growing animal interferes with collagen production. (Copper deficiency, by the way, is widespread in America.) In a nutshell, the little bodies of the rats just fell apart. The females were not so affected, but they were unable to produce live young.

"The medical profession thinks fructose is better for diabetics than sugar," says Dr. Field, "but every cell in the body can metabolize glucose. However, all fructose must be metabolized in the liver The livers of the rats on the high fructose diet looked like the livers of alcoholics, plugged with fat and cirrhotic.

"HFCS contains more fructose than sugar and this fructose is more immediately available because it is not bound up in sucrose. Since the effects of fructose are most severe in the growing organism, we need to think carefully about what kind of sweeteners we give to our children. Fruit juices should be strictly avoided – they are very high in fructose – but so should anything with HFCS."[7]

A recent article in the *AARP Bulletin* has a title, "What's Worse Than Sugar." According to author M.F. Cohen quoting Dr. George Bray, Professor at Pennington Biomedical Research Center in Baton Rouge, "There's something important in the fact that the increase in the use of high fructose corn syrup coincides with the obesity epidemic..."[8]

Not so says the Corn Refiners Institute on its web site, where it put responses to three myths that it

4 Atkins Nutritionals web site atkins.com/howto/, accessed May 4, 2004.
5 www.mendosa.com/wolever.htm, accessed May 4, 2004.
6 Washington Post, March 10, 2204, www.washingtonpost.com/ac2/wp-dyn/A8003-2003Mar10?language=printer, accessed May 4, 2004.
7 Weston A. Price Foundation web site, www.westonaprice.org/motherlinda/cornsyrup.html, accessed May 4, 2004.
8 Cohen, M.F. 2004. AARP Bulletin/April 2004, "What's Worse Than Sugar?" pp. 18-19.

sees in many published reports attacking HFCS:

"America's obesity problem is a complex issue that can be traced to numerous factors, the most important of which are a major lack of physical activity concurrent with a large increase in daily consumption of calories. Experts agree that the best way to combat obesity is by achieving a balance between fitness and nutrition. Unfortunately, the message of 'balance' has largely been overlooked in recent news stories, in favor of targeting a variety of foods and food ingredients as the culprit(s) behind our country's obesity problem.

"As a result of this 'good food/bad food' debate, there have been a number of recent inaccurate news reports regarding a product found in many of the foods we consume each day: high fructose corn syrup (HFCS). Following is a list of the three major inaccurate 'myths' contained in recent news reports, accompanied by the corrected technical facts:

MYTH #1. Studies performed on pure fructose can immediately be extrapolated to HFCS.

FACT: HFCS and pure fructose *are not* the same product. HFCS is made up of only about half fructose (and about half glucose). Humans rarely consume pure fructose. "Fructose in the absence of other dietary sugars is unrealistic," said John S. White, Ph.D., of White Technical Research Group. "Fructose has always been in the human diet and there's nothing extraordinary about it. But it's always found in about a 50 percent ratio to glucose. The percentage is what's important, not the total amount of fructose in grams. The sugars have a buffering effect on one another and don't act independently." As such, *it is scientifically inaccurate to apply results of studies on pure fructose to HFCS.*

MYTH #2: HFCS and table sugar (sucrose) are vastly different products.

FACT: Table sugar (sucrose) is made up of equal parts fructose and glucose – essentially the same composition as HFCS. HFCS and sucrose are both four calories per gram, and both contain about an equal amount of sweetness. According to Guy H. Johnson, Ph.D., of Johnson Nutrition Solutions, LLC, *"Once absorbed, the body has no way of knowing whether a molecule of fructose came from sucrose, HFCS, honey or fruit. Since the proportion of glucose and fructose in HFCS and sucrose are similar, these two sweeteners are virtually indistinguishable by the body."*

MYTH #3: A rise in HFCS consumption during the past few decades has resulted in a rise in the consumption of pure fructose.

FACT: That assertion is patently false. While there has been a rise in HFCS consumption during the past two decades, there has been a *concurrent decrease* in the consumption of sucrose during that same time period. Remember – both HFCS and sucrose contain about an equal portion of fructose. As a result, the ratio of fructose in the diet (especially as it relates to HFCS consumption) has not changed considerably. In fact, *a study by the Office of Special Nutritionals, Food and Drug Administration, found the total amount of fructose in the diet has remained relatively constant since 1977, accounting for about 7 to 9 percent of our caloric intake.*[9]

The debate rages on, but I can't forget Richard Anderson at the Human Nutrition Research Center in Beltsville, MD[10] quoted by Mr. Cohen in the AARP article mentioned above as stating, "High fructose corn syrup is metabolized differently than other sugars and it has a different effect on health." If we also see this in bees, as I discussed in last month's article, is it not conceivable there could be a parallel in humans? I am left to conclude no one yet knows for sure what this revolutionary product really means to either the bees or ourselves. BC

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9 Corn Refiners web site www.hfcsfacts.com/hfcsmyths.htm, accessed May 4, 2004.

10 www.barc.usda.gov/bhnrc/nrfl/nrflsci.html>, accessed May 4, 2004.

These colonies have Varroa, and they still thrive.

This is a progress report on the study of the feral colonies of honey bees living in the Arnot Forest of Cornell University that I began in the Fall of 2002 and reported on in this magazine in January, 2003. As was explained in the previous article, this study grew out of the following simple question: Have the wild colonies of honey bees been eliminated from the eastern forests, killed by the parasitic mite, *Varroa destructor*? To answer this question, I mapped out the colonies of bees living in trees in the 4000-acre Arnot Forest, the one location in the eastern U.S. where the population of feral colonies had been censused before the introduction of *Varroa*. Surprisingly, this work revealed as many, if not more, wild colonies living in this forest at present (Fall 2002) as in the past (Fall 1978).

The discovery of bees still alive in this forest raises many questions. For example, are these feral colonies infested with *Varroa*? If so, are these colonies thriving despite the parasitic mites or are they dying because of them? And if they are indeed thriving with the mites, how can this be? Last Summer, I began to answer these questions and would like to share with you my initial findings for they provide hope for all who long to return to beekeeping without chemical treatments against *Varroa*.

The critical first step toward learning more about the bees in the Arnot Forest was to get some of the colonies into movable-frames, where they could be studied closely. This was accomplished by establishing in the forest 5 bait hives to catch swarms. Each bait hive consisted of a single deep hive body equipped with 10 frames of comb. The hive body was mounted on a standard bottom board and was covered with a standard inner cover and telescoping outer cover. A block of wood was inserted in each hive's entrance to reduce it to a small opening (approximately three inches wide by three-fourths of an inch high), which is what the bees prefer when choosing a nest site. When assembling each of these bait hives, I inserted between hive body and bottom board a *Varroa* screen (purchased from Dadant and Sons, Inc.) so that later on I would be able to insert a sticky board beneath each colony and so measure the level of mite drop over a 48-hour period. Each bait hive was mounted at least 12 feet off the ground, with the entrance facing south, for previous work has shown that these arrangements help make a bait hive attractive to bees (Seeley and Morse 1978). The main swarming season in central New York runs from about mid-May to mid-July, so the bait hives were installed in the forest in early May. By mid-July, three of them were occupied by bees. Indeed, these three

hives seem to have each attracted a good-sized swarm, for there was strong flight at each one, with many of the incoming bees bearing pollen. Success!

The first question to address was whether or not these forest-dwelling colonies live in such isolation that they are not exposed to *Varroa*. The answer came quickly and clearly. At the beginning of August, I installed a sticky board in each hive and waited 48 hours to see which colonies, if any, would have mites. All three did. The mite counts were 30, 14, and 21 for bait hives 1, 2, and 3.

Now that there is no doubt that the colonies living in the Arnot Forest are exposed to *Varroa*, the next question to address is whether these colonies are thriving or dying with these parasites. This question cannot be answered quickly, for it requires long-term monitoring of the forest colonies. Early indications, however, suggest that these bees are actually thriving with the mites, despite the fact that no one is treating them for the mites. There are two lines of evidence. The first is that six out of the eight bee-tree colonies that were found in the Fall of 2002 were still alive and strong (judged by their flight activity) in the Fall of 2003. The two that died did so over the Winter of 2002-2003, and this level of mortality (25%) is typical of what was found for feral colonies back in the 1970's, hence before *Varroa* was in North America (Seeley 1978). It seems clear, therefore, the colonies found in the Fall of 2002 were not weak and dying from *Varroa*.

The second line of evidence that the Arnot Forest colonies are thriving despite the mites comes from what I found when I repeated the mite-drop counts for each bait-hive colony in early September and early October. For bait hive 1, the August, September, and October counts of mites dropping in 48 hours were 30, 16, and 36. For bait hive 2, they were 14, 21, and 3. And for bait hive 3, they were 21, 39, and 22. Thus we see that even though these three colonies were all infested with *Varroa*, in none did the mite population show a lethal, late Summer explosion.

It is tempting to hope that the population of bees living in the Arnot Forest has evolved resistance to *Varroa*. This is certainly a possibility, for there are few, if any, beekeepers' colonies within several miles of this remote forest, and nobody has been dosing the colonies in this forest with chemicals for mite control. Presumably, only the colonies that are able to contend with the mites over the past decade or so have been able to survive and reproduce. There is, however, a second possibility for how the bees and mites are coexisting (evidently) in the Arnot Forest: the mites may have evolved avirulence. The evolutionary theory of diseases suggests this possibility. In a population of wild colonies of honey bees, the hosts of the parasite are widely dispersed, hence the mode of transmission of the mites among colonies is probably mostly "vertical" (from parent colony to offspring colony) rather than "horizontal" (between unrelated colonies), hence selection is predicted to favor strains of parasites that do not kill their hosts. (In contrast, in a population of beekeepers' colonies, where hives are crowded together, there is probably easy transmission of parasites between unrelated colonies and in this situation we expect natural selection to favor virulent strains of *Varroa*.) It is also possible that both changes have occurred together· increased resistance has evolved in the bees and decreased virulence has evolved in the mites.

Are the bees changing or are the mites?

In the Summer of 2004, I will continue monitoring both the bee-tree and the bait-hive colonies in the Arnot Forest, to see if these colonies can survive with the mites for longer than one year, and to monitor further the population dynamics of the mites in the bait-hive colonies. If this work continues to indicate that these colonies are thriving without treatments for mites, despite being infested with mites, then the next step will be to conduct studies that will test the two possible (and not mutually exclusive) explanations mentioned above: evolution of host (bee) resistance and evolution of parasite (mite) avirulence. I will continue to let you know what I learn. BC

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TEXAS COURT RULES

"The appellate court concluded that the evidence was sufficient to support the jury's finding that [Wilhelm] had a duty to warn of the dangers associated with bee stings."

Joseph J **Devanney**

An October 2003 decision from the Court of Appeals of Texas has held, as a matter of first impression for the courts of that state, that a beekeeper has a duty to provide a warning about the danger of bee stings. Although the decision is binding only within the Court's Texas jurisdiction, it should be of interest to all persons involved with beekeeping.

The facts behind the lawsuit began on September 7, 1994, when honey bee business owner John Black and his employee, Alejandro Mercado, decided to move some beehives that Black was buying from Curtis Wilhelm. Wilhelm, a member of the Rio Grande Valley Beekeepers Association, was, like Black, active in the local beekeeping industry.

To assist in the moving of the hives, Black asked Santos Flores Sr to assist him and Mercado on a one-time basis. Flores agreed and Black provided him with a protective suit and veil. At no time, however, was Flores told about possible medical risks associated with bee stings.

The three men first stopped at Wilhelm's house to pick up a hive and then proceeded to another property, also under the control of Wilhelm, where additional hives had been set up. At the second site, Flores, who was feeling nauseated, walked into nearby brush to relieve himself. Within a few minutes, he returned, yelling and staggering, with his suit open. Black and Mercado immediately realized that bees had stung Flores. Unfortunately, Flores suffered an anaphylactic shock reaction and died before an ambulance could reach the site.

Flores's estate and his adult children sued Wilhelm, Black and Joan Reichert, who was Black's business partner. Reichert settled her case with the plaintiffs, but Black and Wilhelm choose to take their chances with a jury. Five broad allegations of negligence were presented by the plaintiffs at trial. Specifically, they argued that Wilhelm and Black (1) failed to have a reasonable safety program; (2) should have had Flores tested for bee sting allergy; (3) failed to provide proper equipment and training in the equipment; (4) failed to get timely medical attention for Flores and (5) failed to warn Flores about the dangers associated with bees and bee stings. It was the last of these upon which the Court's decision against the defendants ultimately rested.

As it turned out, the testimony of four witnesses was especially crucial in determining the outcome of the case. One of these witnesses was the pathologist, Doctor Dahm, who had performed the autopsy on Flores. It was Dahm who testified, "There are a few people, who, when they get stung by a bee, have a violent allergic reaction, which is called anaphylaxis. The bee sting causes a chain reaction of allergic symptoms in the body which leads to massive release all over the body of compounds that cause severe damage and collapse of blood pressure. And this is called anaphylaxis. This reaction can be fatal if untreated. It's not terribly common, but by no means rare. It's frequently seen in hospital emergency rooms and doctor's offices."

In addition, Doctor Mayorga, an expert witness and physician called to testify by the plaintiffs, stated, "Bees are probably the number one cause of insects deaths [sic] and you don't have to be an expert to know that in any way, form or fashion because medically we

know for a fact that bee stings is [sic] the number one cause of death, followed by fire ants, . . . we know it's potentially a hazard for anyone working [with bees]."

Both Dr. Dahm and Dr. Mayorga insisted in their testimony that nausea and the urge to relieve oneself, specifically the urge to defecate, are indications of anaphylaxis. A third witness, state entomologist and chief apiary inspector Paul Jackson, also stated that protective suits were never 100% effective and that persons could receive stings through suits.

It was Curtis Wilhelm himself, however, who provided portions of the evidence that would eventually work against him. On the witness stand, Wilhelm stated that he had a degree in entomology and was an expert in matters concerning insects. He also acknowledged that he had owned beehives for about five years and that he had more knowledge about bees than the average person. In addition, Wilhelm conceded that he knew some people are allergic to bee stings and that the majority of people who die from such stings were unaware of the effects of anaphylactic shock.

After hearing the testimony, the jury returned with a verdict against Wilhelm and Black, proportioned 50 per cent against each, in the amount of $1,591,000, for negligence. In addition, the jury awarded $75,000 against both Wilhelm and Black for gross negligence. This last award occurred because the plaintiffs successfully argued that Wilhelm and Black, in addition to their being simply negligent, were consciously indifferent to the safety of Flores.

Black took no further action in the case, but Wilhelm appealed the jury's decision to the Court of appeals of Texas. Interestingly, although all five different allegations of negligence were before this appeals court for review, the court, in its opinion authored by Chief Justice Rogelio Valdez, choose to focus entirely on the question of whether a legal duty to warn about bee stings and their effects was violated by Wilhelm. This issue had never been decided in Texas courts. The fact that the appellate court chose to first consider this question, in lieu of the other negligence arguments that the plaintiffs had raised, suggests that it was deliberately seeking to set a precedent concerning beekeepers in the state.

Justice Valdez, in his analysis, initially noted that hived bees are in the category of "ferae naturae," or wild animals that have been domesticated. Citing earlier cases unrelated to bees, he observed that the law does not make an owner liable for such a domesticated animal unless (1) the owner knew that the animal had a history of creating harms or (2) the owner created a negligent situation leading to an injury. Judge Valdez observed that creating a specific duty in law requiring beekeepers to warn about the danger of bee stings involved "complex social and economic policy considerations," but, in order to decide if such a duty should be imposed, the Court had to weigh the risk and foreseeability of injury against the costs and consequences imposed on the defendant in guarding against the injury.

In this case, Doctor Dahm had testified to the "not terrible common, but by no means rare" nature of anaphylactic shock caused by bee stings. Doctor Mayorga had testified to the fact that bee stings were the number one cause of insect-related deaths and a well-known hazard to anyone in the bee industry. Paul Jackson had testified that protective suits were never completely effective. Finally, and perhaps most importantly, Wilhelm himself had acknowledged that he was an expert on insects, knew about allergic reactions to bee stings and the possible dangers associated with anaphylactic shock. With this factual record in front of it, the appellate court concluded that the evidence was sufficient to support the jury's finding that "[Wilhelm] had a duty to warn Flores of the dangers associated with bee stings, including the danger of an adverse allergic reaction, and that [Wilhelm] breached that duty."

"Any employee, customer, visitor or other person who may have contact with bees should be clearly told in advance about the dangers of bee stings and the possible failure of protective suits.

Since this finding that Wilhelm had a duty to Flores to warn him about the effects of bee stings was sufficient to uphold the finding of the jury that Wilhelm was negligent, the appellate court did not review the other four separate arguments raised by the plaintiffs about Wilhelm's alleged negligence. The only concession made by the Court of Appeals to Wilhelm was it's overturning of the jury's finding of gross negligence and the resulting $75,000 award. According to Justice Valdez, in order to find gross negligence in Texas, it has to be shown that "[T]he defendant knew about the peril, but his acts or omissions demonstrate that he did not care." In this case, Wilhelm provided Flores with a bee suit and there was no evidence that he knew Flores was allergic to bee stings. The Court therefore determined that Wilhelm committed no gross negligence.

The award of $1,591,000, however, was not overturned and, barring any future successful appeal by Wilhelm, it will stand. So also will the determination by the Texas Court of Appeals that bee owners have a duty to warn others about the dangers of bee stings. A close reading of Justice Valdez's decision, however, arguably leaves some minor exceptions. If, for example, an individual, who does not otherwise know anything about bees, inherited beehives from a deceased relative, he might not be held responsible for injuries until he had a reasonable opportunity to learn about dangers associated with bee ownership. Even this is by no means certain.

For the vast majority of bee owners who either know or can be reasonably imputed to know about the danger of bee stings, this case presents a warning. Any employee, customer, visitor or other person who may have contact with bees should be clearly told in advance about the dangers of bee stings and the possible failure of protective suits. If possible, these warnings should even be in writing and viewed by an attorney before being finalized. Although this decision does not extend to other states, once a court issues a "first impression" decision like this, it often opens the door to similar lawsuits in other jurisdictions. The bottom line for all bee owners is "be careful." BC

Joseph J. Devanney has been an attorney for over 20 years, and is a freelance writer, from Paoli, PA

Honey Plants

Connie Krochmal

Marleen® Coralberry
(photo courtesy of Monrovia Nursery)

Snowberries

Leave it to others to rave about the spectacular snowberry fruits. What beekeepers care about are the flowers. First-rate honey plants, these adaptable deciduous shrubs bloom for long periods during the summer months when nectar is sometimes scarce. They are native in all regions of the U.S. from cold northern areas to the Southwest desert and warm, humid Southern states.

Formerly there were 15 to 17 species, some of which are now considered varieties or subspecies. Besides the wild and naturalized ones, numerous cultivated forms exist.

Snowberries, members of the honeysuckle family, are in the genus *Symphoricarpos*, which refers to their clustered fruits.

Habitat

When growing wild, these tough plants are found in a range of habitats, such as open woods, banks, rocky locations, dry areas, sunny slopes, thickets, old fields, and woodland margins.

Value To Bees

What makes snowberry bushes so valuable is the long flowering period. Though they produce no masses of blooms, a few nectar-rich flowers open each day for several months.

Depending upon the species and the location, flowering may take place from March through September However, this typically is from June through July. Exceptions are noted below under the plant descriptions. Whenever the weather permits bees can be found on the blossoms.

Snowberries are dependable honey and pollen plants. During drought years, they still manage to produce enough nectar to feed the bees with the possibility of a small crop for the beekeeper The shrubs are significant sources of honey in Canada, the Northwest, Idaho, Utah, and Massachusetts, averaging around 25 pounds of surplus per colony in the Northwest.

The mild flavored honey, either white, amber, or extra light amber, remains liquid for several years with little to no granulation. Among mead makers, it is the honey of choice.

General Description

Regarding their growth habits, snowberries are either upright or suckering. Though size varies somewhat from one species to another, snowberries are generally three to eight feet in height. Upright forms are usually several feet wide. Suckering types – capable of forming thickets – extend to 10 feet. Plants growing in poor soil will be smaller.

The tiny, inconspicuous flowers, ¼ inch across, consist of five flared petals fused at the base to form a bell or bowl. For the most part, they're pink, white, or pinkish-white. Initially, small flower clusters containing three or more blooms appear in the leaf axils, developing in terminal spikes on the new growth later in the season.

The opposite leaves, about one to two inches long, are egg-shaped to round. Edges are sometimes toothed. It is hard to distinguish one kind from another by the foliage.

Hairs may be present on the stems, interior of the blooms, and underside of the foliage.

New stems are greenish-brown to light brown, later becoming dark brown.

Clusters of marble-like fruits ripen during the late Summer and Fall. Bushes with white fruits are known as snowberries, while those with red, pink, or purple ones are often called Indian currants. (None of these are considered edible. They can cause stomach distress. Some individuals have developed skin irritations from handling them.)

Eastern Species

Most species are native to the western U.S. and Canada, but several occur in the East.

Eastern snowberry, also known as waxberry and wolfberry (*Symphoricarpos albus*), is a cosmopolitan species that feels at home in both eastern and western North America. Its range extends from Canada to Alaska, California, Colorado, Nebraska, Wisconsin, Minnesota, and Massachusetts, south to Virginia and West Virginia. They

grow in dry rocky woods, gravelly spots, on outcrops, and chalky ledges.

This shrub, four feet tall with an equal spread, features gray wiry stems. The leathery, light green foliage is dark blue-green and downy on the underside. Fruits are white.

Eastern snowberry tolerates a range of moisture levels from dry to moist and soil types from limestone-rich to clay. Eastern snowberry is recommended for shady, wooded areas, and as a quick-growing hedge (USDA zones 3b-7).

Indian currant, buckbush, or coralberry (*Symphoricarpos orbiculatus*) is a wild or naturalized species in much of the U.S. Its range goes from New York and New Jersey south to Florida and Mexico, through the Midwest to South Dakota and Colorado. Among its habitats are dry woods, banks, roadsides, thickets, and outcrops.

Often cultivated, this shrub is two to five feet in height and eight feet across. The foliage is blue-green on the underside with tiny hairs. Opening June through August, its blooms are green, yellow-white, pink, or pinkish-purple. Fruits are red, purple, or pink (USDA zones 3-6).

Western Species

Wolfberry or western snowberry (*Symphoricarpos occidentalis*) was originally a native in the Midwest, the western U.S., and Canada. Now naturalized in the East from New England to Pennsylvania, its native range is from Canada to Michigan, south to Illinois, west to Colorado and New Mexico. It frequents bluffs, dry prairies, and plains. A suckering plant with stiff branches, wolfberry is usually three to four feet in height. The pinkish-white blooms are seen from late May through September (USDA zones 3-7).

Mountain snowberry or whortleberry (*Symphoricarpos oreophilus*) is native from Oregon to California and Arizona in mountain canyons from 4,000 to 10,000 feet elevation. An upright plant, this shrub is three feet high with an equal spread. It features slender, arching stems that are hairy when young. Flowers are pinkish. Frequently seen in cultivation, it is noted for its abundant fruit. Mountain snowberry is resistant to mildew (USDA zones 6-8).

The mountain or Utah snowberry (*Symporicarpos oreophilus* var vaccinioides) is found in granite-based, rather dry rocky soils of Utah in wooded areas. This shrub also grows well in full sun (USDA zones 4-8).

Roundleaf snowberry (*Symphoricarpos rotundifolius*) grows wild from Washington south to California and New Mexico. Only three feet tall, it has a spreading growth habit. Flowers are pinkish. Its downy foliage may be slightly toothed (USDA zones 7-9).

Symphoricarpos White Hedge (photo courtesy of Monrovia Nursery)

Desert or long flower snowberry (*Symphoricarpos longiflorus*) grows wild throughout much of the west from Oregon to Nevada, Utah, Colorado, New Mexico, Texas, and California. Thriving in the desert, it is also found in rocky foothills and canyons from 4,000 to 8,000 feet elevation. Desert snowberry will withstand drier conditions than mountain snowberry. Once established, this adaptable plant spreads. It is three to four feet tall. Flowers open over a long period from May through July (USDA zones 6-10).

Creeping or trailing snowberry (*Symphoricarpos mollis*) is native from Canada south to Washington, Oregon, and California, east to Idaho. This species includes three varieties and one subspecies having restricted ranges within the region. Typically creeping snowberry grows in evergreen forests, chaparral, floodplains, and dry sunny slopes to around 6,500 feet elevation. This shrub began spreading throughout the Cascade Mountains of Oregon about 40 years ago as a result of clear cutting and controlled burns. Only about one to two feet in height, creeping snowberry is named for its trailing branches that can extend six feet. The leaves are very downy. In Oregon flowers open in June and July, while in California it's from March through August (USDA zones 7-9).

Sharp leaf or spreading snowberry (*Symphoricarpos acutus*) is native to Oregon, Nevada, and California. This low-growing shrub has hairy stems. The slightly toothed foliage is white to gray on the underside. Fruits are white (USDA zones 5-10).

McKinnick's snowberry (*Symphoricarpos guadalupensis*) grows wild in Texas, and is cultivated elsewhere. This rather tender species is suited to warm climates (USDA zones 9-10). Generally about five feet in height, it blooms June through August.

Palmer's snowberry (*Symphoricarpos palmeri*) is found on rocky slopes and canyons from Colorado, New Mexico, and Arizona to Texas. This shrub with arching or sprawling stems is three feet tall. Its whitish flowers open from May through July. Fruits are white (USDA zones 6-10).

Continued on Next Page

Small leaf snowberry (*Symphoricarpos microphyllus*) is native to Mexico. Introduced to the U.S. in 1829, it naturalized in the Southwest. This upright shrub is nine feet in height. It features hairy branches, and blue-gray leaves with hairy undersides. The pinkish blooms appear somewhat late for snowberries – in August and September. Fruits are pink, or white with pink tinges. A tender species, it is best for regions with mild Winters (USDA zones 9-10).

Western snowberry (*Symphoricarpos albus* var laevigatus) was once considered a separate species. Native to Canada and the western U.S., it occurs from Quebec to Alaska and California, east to Montana and Colorado. It has naturalized along the Pacific Slope. This suckering variety is taller than the species, and has larger leaves and fruits. The foliage is usually lobed – an unusual feature for snowberries. Blooms are pink (USDA zones 4a-7a).

Cultivated Types

Chinese snowberry (*Symphoricarpos sinensis*) is often seen in cultivation. Introduced to the U.S. in 1907, this upright shrub is four to five feet tall. Stems are reddish-brown. Expect the white flowers from July through September The bluish-black fruits have a bloomy coating (USDA zones 6-9).

Chenault coralberry (*Symphoricarpos x chenaultii*) is a cross between small leaf snowberry and Indian currant. This upright shrub with arching branches is three to six feet tall and across. Its dull green leaves become yellow in the Fall. The half-inch-wide fruits are mostly red with the side facing the shade turning white. Chenault coralberry is recommended for USDA zones 5a-8b. 'Hancock' is a vigorous, dwarf cultivar. Only two feet high, it can be 10 feet wide. It is slightly less hardy (USDA zones 5b-8b).

Doorenbos snowberry (*Symphoricarpos x doorenbosii*) is a cross between Chenault coralberry and western snowberry. This plant with upright branches is best known for its large blooms, opening July through September. It becomes twiggy with age. Doorenbos snowberry is well suited to full sun and partial shade (USDA zones 3-8).

Nurseries offer several cultivars of this plant, including 'White Hedge,' a compact, erect, non-suckering form. Reaching about five feet in height, it has white fruits. 'Mother of Pearl' is a bushy, dense shrub with heavy crops of pink-tinged white fruits. 'Magic Berry' has an arching growth habit, and is three feet tall and four feet across. 'Kordes' is a new introduction from Germany. Reaching three to five feet in height, it has deep purple-pink fruits. 'Ariso,' another new cultivar, produces lots of pale pink blooms from June through September. It grows three to four feet tall and across.

Tips On Growing Snowberries

Few shrubs will tolerate such a wide range of growing environments. If the spot is unsuitable for other bee plants, chances are that snowberries will do fine. Recommended for open exposed spots, woods, and coastal areas in full sun to complete shade, they're adapted to most every kind of soil and pH level. Though a slightly neutral soil is ideal, they grow in acid and alkaline ones.

About the only condition most snowberries won't tolerate is swampy or boggy soil with the exception being the mountain snowberry.

Snowberries are undemanding plants. Once they're established, these fast-growing shrubs require minimal upkeep from busy beekeepers. Very little supplemental watering and fertilizer is needed.

Diseases and insects normally pose few serious problems for snowberries. Mildew and leaf spots can occur if the plants are grown in extremely humid spots.

If desired, suckers can be removed as needed to prevent the bushes from spreading.

About every four years or so snowberries benefit from heavy pruning. Cut stems back to about six inches in height. This encourages an abundance of flowers, which are produced mainly on the new growth.

Beekeepers can propagate snowberries by taking cuttings from late Spring through Fall. Suckers may also be used. Seed germination is slow and uncertain.

These valuable nectar/pollen plants can serve various purposes in the landscape. They're often grown in shrub borders and as informal hedges. Snowberries are an ideal ground cover for areas where erosion is a concern – exposed sites, banks, and hillsides.

Whether you are choosing shrubs for the back forty or a hedge, the snowberries are excellent Summer-blooming bee plants. BC

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

It's Official . . . There Is No Standard Beekeeper

James E **Tew**

We are all the same but yet all different

When a dog chases a car...

What does the dog hope to do with the car he's chasing when he catches it? Somewhat like this eager animal hopelessly chasing a car, I asked you to write me telling of your genesis in beekeeping. What made you keep bees when so many others have no interest? Well, you wrote me, in considerable numbers. Now that I've caught that car what am I to do with it?"

Each story is surprisingly unique

Many of you were kind enough to write with answers to my questions.[1] I sense a need to obscure your identities, but in many cases, you had some interesting comments and histories.

I suppose I was not surprised that there was no "standard" story. Beekeepers are of all ages, both sexes, some started young, some started later in life, some had mentors, others did the bee project on their own; in general, there seemed to be every conceivable variation. Read some of the following comments I've received to see if you can find a trend in the responses to, *"Why do people become beekeepers?"*

Started beekeeping at 30 years old. (Surface mail)

As you know, more has been written about beekeeping than any other subject except for religion. We may not be "called" to beekeeping in the religious sense, but I submit that destiny has a part to play in the selection process *somehow*. I was about 30 when I got the notion of keeping bees, but I waited 25 years to actually start. Well, that was destiny. I got a good dose of bee fever, even dreaming about bees. I now have seven hives and have built a honey house. Destiny won't leave me alone. So sure, let's talk to kids about bees, but it really makes more sense to proselytize to middle-aged men.

Started beekeeping at 40 years old. (Surface mail)

I was interested in beekeeping as a boy growing up on our farm and would've had an opportunity to keep a couple of hives if I had persisted. My Dad kept a few colonies during WWII – to draw an extra sugar ration as he told me many years later He was a "bee-haver " We would occasionally saw down a bee tree to rob it with the usual results: angry feral bees, the honey mixed with sawdust, chain saw oil, brood comb larvae, drowned bees and many stings. My interest waned. Then there were other interests to take up my time – cars, girls, school activities, etc. After 20 years of living in the city, I bought my own place back here in rural Missouri and my desire to have a few colonies rekindled. I became a self-taught hobby beekeeper with the help of the late Walter T Kelley and his excellent book.

Started beekeeping at 10 years old (email)

I had my first colony of bees in 1941, I was 10 years old. I had spent 1939 and 1940 as an apprentice to a local beekeeper. I had to find my first colony in the wild in a tree and remove it. This was during the depression, I was born and raised in the coal regions of Pennsylvania and all the collieries[2] were closing down in 1939.

Started beekeeping at 17 years old (email)

I remember seeing a classified ad in Mother Earth News for Brushy Mountain with their web address. At the time, I had been raising pigs, beef, and renting land from my neighbor and growing corn. I searched on the internet, ordered catalogs, thought I'd make a small investment in a few books, and became hooked. After I had my first hives, I took a short course and began meeting beekeepers. I figured out what I had to do solely by reading those books. It's funny how in only a few short years of keeping bees they have totally taken over my life and have actually given me an identity. People know me as a bee person. Every year since I started beekeeping, I have had at least one great experience every year I started in 1999, I was the 2000 Pennsylvania Honey Queen, 2001 American Honey Queen, 2002 I went to Panama to experience Africanized Honey Bees, also worked for Strachan Apiaries for two months, 2003 I was an Apiary Inspector for the PA Dept. of Agriculture and this year I've started working as a Lab

[1] Tew, James E. 2004. *Kids at Bee Meetings.* Bee Culture, Medina, OH March, 2004. Vol 132 (3) pp 46-47

[2] Colliery – a coal mine (chiefly British)

Continued on Next Page

Tech at PDA in the bee lab and that will lead up to inspection time when I work as an inspector again this year

If you didn't have one, do you feel that an early beekeeping exposure would have made you a beekeeper at a younger age?

Probably not. Unless someone in my family would have had bees and I went along with them. I think at 17, I was young enough. It seems the majority of people became beekeepers during their retirement years. I have suited up many kids and taken them into my hives to show them the bees, and I tell them that they are so lucky because I never got to see bees like this when I was a kid.

Started beekeeping at eighteen years old (email)

When I was about five years old, there was an old man who kept bees next to my aunt's farm. I was amazed as I watched hundreds of bees circling him as he calmly scraped frames while sitting on his front porch. A couple years later my father had a few hives for alfalfa pollination. He had a hands-off approach to beekeeping because he didn't want to get stung. Nor was I ever directly involved at that time. It wasn't until my senior year in high school that I became interested in bees mostly because of a fellow classmate who had just purchased 50 hives. Even though I had exposure to beekeeping at a young age I do not recall any interest in it until I was 18. But I feel earlier childhood experiences somehow laid a foundation for later interest.

Started keeping bees "Most of my life" (surface mail)

My grandfather and father were beekeepers. I did an FFA public speaking contest on beekeeping. I married at 19 and didn't keep bees for a while, but I did help my Dad with his colonies. Dad never had more than ten hives. Now I am a hobby beekeeper with 40-50 hives and enjoy it very much. My wife and I go to schools whenever possible. We have built a honey barn now and are looking forward to harvesting honey this year Now the kids can come to us rather than us having to move our equipment around.

Started keeping bees as a high school freshman (surface mail)

My freshman year, I asked my father if we could get some bees. He wasn't interested but he didn't mind if I tried beekeeping. I asked him where I could buy some bees but he didn't know. Being from Sweden, he thought beekeepers found bees in trees. He suggested finding a bee tree and putting the bees in a barrel. I searched in the woods, but found no bees.

It then occurred to me to write the county agent. He sent a packet of information, but most of it went over my head; however, it did contain addresses for companies and bee magazines. So I began with two hives when I was a sophomore in high school. That was almost 60 years ago and I have been a commercial beekeeper all my life.

Now I am in prison for a few months and I have taught a course on beekeeping twice in prison. I am scheduled to teach it again this spring. I have had some very good inmate students in the classes. So that's my story.

Started beekeeping at 16 years old (email)

I am 16 years old. I became infatuated with bees about a year ago. I just completed building two hives from scratch and I am hoping to hive two packages in April. As a child, I was never exposed to actual beekeeping. I think that the defining moment, which planted the seeds of my future beekeeping escapade was a video about bees and other social insects. I was shown this video when I was in the fifth grade. I was fascinated while I was watching it, however I did not pursue it as I was only a child. When I got into high school, I developed a curiosity for ants and myrmecology. I set up a home-made ant observation colony. While I was in the bookstore looking for a book about ant farming, I discovered the book *Beekeeping for Dummies*. It all escalated from there. Now, I plan on attending a good entomology university, perhaps Cornell. Knowing my personality, I think that the world of apiculture will be hearing more about me in the future.

I would suggest not spending too much time trying to recruit people below the age of 10. Children of such an age are far too young to nurture an intensive hobby such as beekeeping. For such an age group, I would go no further than to whet their curiosity (with a video?). This will plant the seeds which might grow in the future. One might focus primarily on recruiting teenagers. Teenagers are more able to pursue their hobbies. Furthermore, teenagers are more equipped to understand the more interesting and complex elements of apiculture.

Keeping bees for five years. (email)

In answer to your March, 2004 *Bee Culture* survey, I have been keeping bees for five years, never had any contact with them as a child and would not have started sooner if I had.

[I recently learned my late grandfather had kept bees on a southern California citrus ranch before I was born but he'd stopped beekeeping when I was very small and I only learned this from my aunt after I got started; I started beekeeping after planting a dozen fruit trees, having heard about the *Varroa* problem killing off feral colonies, and having taken an extension office beekeeping course; that's what got me started, and I doubt that knowing about this hobby/avocation as a child (which a few of the beekeeping class students claim got them interested) would have made any difference to me.]

Started beekeeping at 40 years old (email)

I remember watching a bee tree when I was younger Even though I swelled from a sting I got when I stepped on a honey bee, they still fascinated me. I started keeping bees when I was 40. It was 2000. I gave my son a hive on his 11 birthday, just last July.

Started beekeeping at nine years old (email)

I started beekeeping at about nine years old when observing other beekeepers work colonies... about 16 years old when built and started own colonies.

I've kept bees for about 30 of the past 40 years, and it is often the pleasant memories and experiences of the past that provide pleasure and motivation for me. I can still remember, sense and smell

what it was like when I was 16 at times! (There were also not-so-pleasant times.. stinging incidents, hard, painful physical commercial work.. but the positives usually outweighed the negatives).

My 23 year-old son on the other hand, started helping me when he was about five or six, and still helps out a little at harvest time. But he never has shown a great deal of interest or curiosity about bees. He has never gotten comfortable with the prospect of an occasional sting, which was exacerbated by fear of stings by some of his friends and relatives... also at an early age of about nine or 10. So early experiences with beekeeping, both positive and negative, do seem to have lasting effects.

Time To Stop

I'm sorry, but I must abruptly stop. My allocated space in *Bee Culture* has been used up and then some. I was not able to reference all who corresponded with me. To all who wrote, but were not mentioned, thanks for adding to the mix. All responses were interesting and were used to add to my perception of why one becomes a beekeeper when another doesn't. A sincere thanks to everyone. BC

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SUPER SUPER Storage Rack

Serge **Labesque**

Easy to build, easy to use, easy to move. What could be better?

The storage rack main structure: two stacks of concrete blocks.

The structure is ready to receive the corrugated sheet metal roofing.

Summer is just about over Now that you have harvested and extracted the last surplus honey of the year, the beekeeping season is winding down. The excitement beekeepers experience when the honeyflows materialize, with Spring and Summer beehive management, and just when watching the tremendous activity displayed by strong colonies, they are all behind you now. As the size of the hives become less intimidating and less impressive, the stack of supers that accumulates in your yard grows into a challenging problem: What are you going to do with all this equipment until next season? You do not want to leave it exposed to the rain or snow, in piles that can get toppled by the Winter winds. Furthermore, you know that if you neglect the supers for any length of time, ***wax moths will invade and destroy the combs, turning them into an ugly mess***.

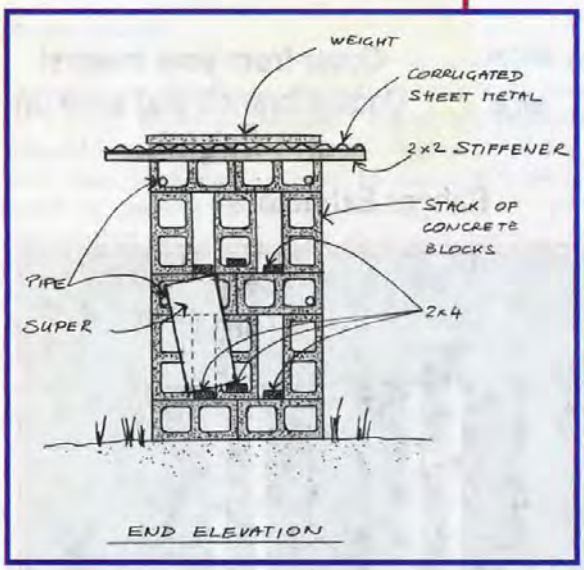
Until last September, storing supers and frames during the Winters was not a problem for me. I kept my beekeeping equipment in a small, wide-open garden shed. Well-ventilated and well lit, the shed could contain my modest stock. In it, the boxes were stacked in such a way that the wind could easily and freely circulate through the frames. ***Stored out of the rain, the combs also remained undamaged by wax moths***.

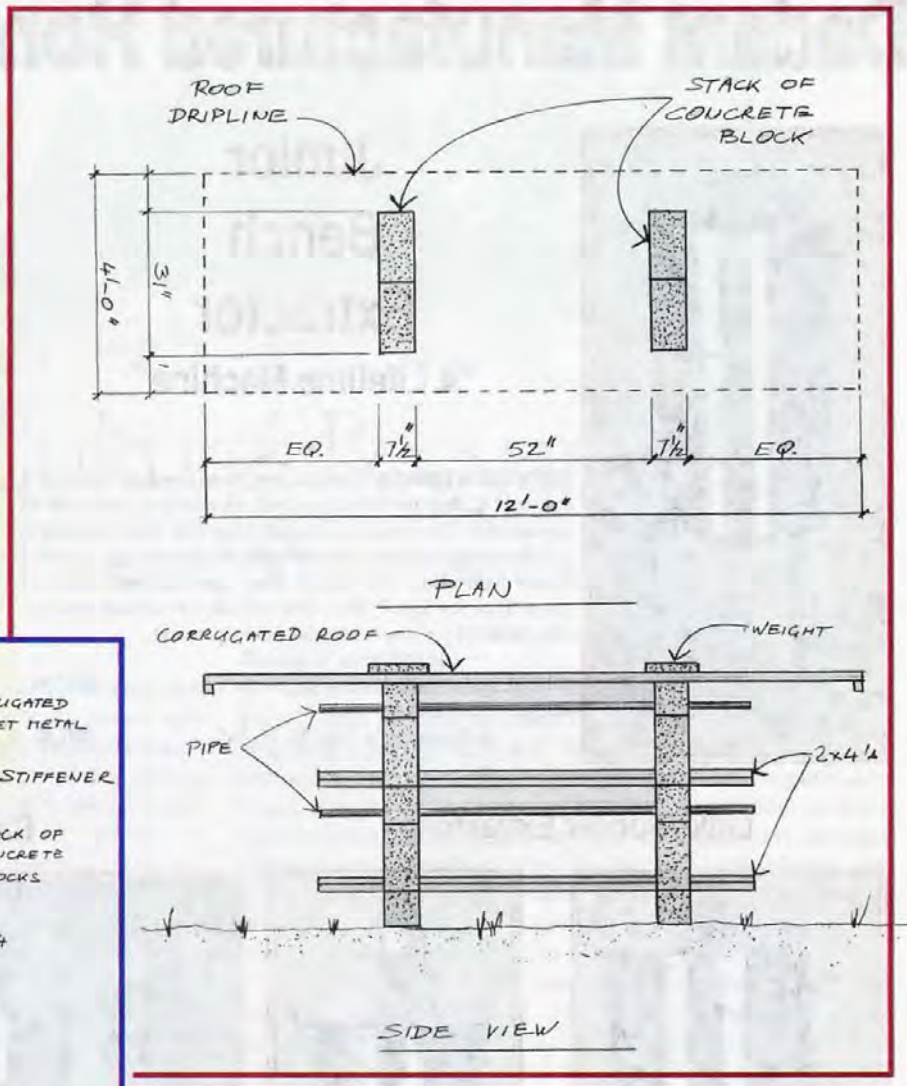
But during this past season, I increased my apiaries so much that the garden shed was not going to suffice anymore. I had to find another place to store the additional supers and frames. This had to be done quickly, and without resorting to a costly and time-consuming construction project. I happened to have a few concrete blocks and some sheets of corrugated steel (actually the original roof of our house). With these ingredients as givens, I drew a few sketches to figure out how to arrange the materials to house the supers. Then, the new storage structure was assembled in no time, and it was immediately put to use.

Winter came, winds and rains hit the storage rack, putting it to their test. I am happy to report that the supers have remained in excellent condition. The frames stayed dry, and most importantly, ***there was not a hint of wax moth damage***.

There are a few other, very practical advantages to this storage rack: For one, the materials and the location where you build it are not committed forever You can easily get any of them back if you want or need to; and you can move this simple structure or tear it down in no time. As a matter of fact, my original storage rack has already been relocated once. This took my son and me less than half an hour (teardown, moving of the components and supers 50 yards away, and re-construction included). Also, its roof is a good place to keep other materials off the ground.

End view showing the placement of the supers.





Construction of the storage rack

Here is an explanation on how to proceed, should you decide to assemble a similar storage rack, which, by the way, can accommodate 20 supers, deeps or mediums.

First you need to make two stacks of concrete blocks. Each of the two stacks, which are separated by a distance of approximately 52 inches, contains twelve of those 16" x 8" x 8" concrete masonry units.

Prepare the ground by removing rocks and grass, so that the stacks of concrete blocks can be set on a reasonably flat area. The two stacks do not need to be exactly at the same height, but you want them to be stable.

Arrange the blocks as shown in the drawing (I did not use any concrete or mortar, but I guess you could make it a more permanent piece of work by bonding the blocks, if you wanted to).

Then, slide the six 2 x 4's through the openings of the blocks, keeping about equal lengths outside of the stacks of blocks.

Two sheets of corrugated sheet metal are then set on top of the stacks. They are held in place by some heavy "stuff." This is a good place to store garden stakes and other materials out of the grass.

Fasten a piece of 2" x 2" such as an old garden stake along each end of the corrugated metal to rigidify the roof and to prevent rainwater from running along the underside of the roof. I painted these 2 x 2's with some white paint to make the edge of the roof more obvious and less dangerous (I have the tendency to bump my head into anything).

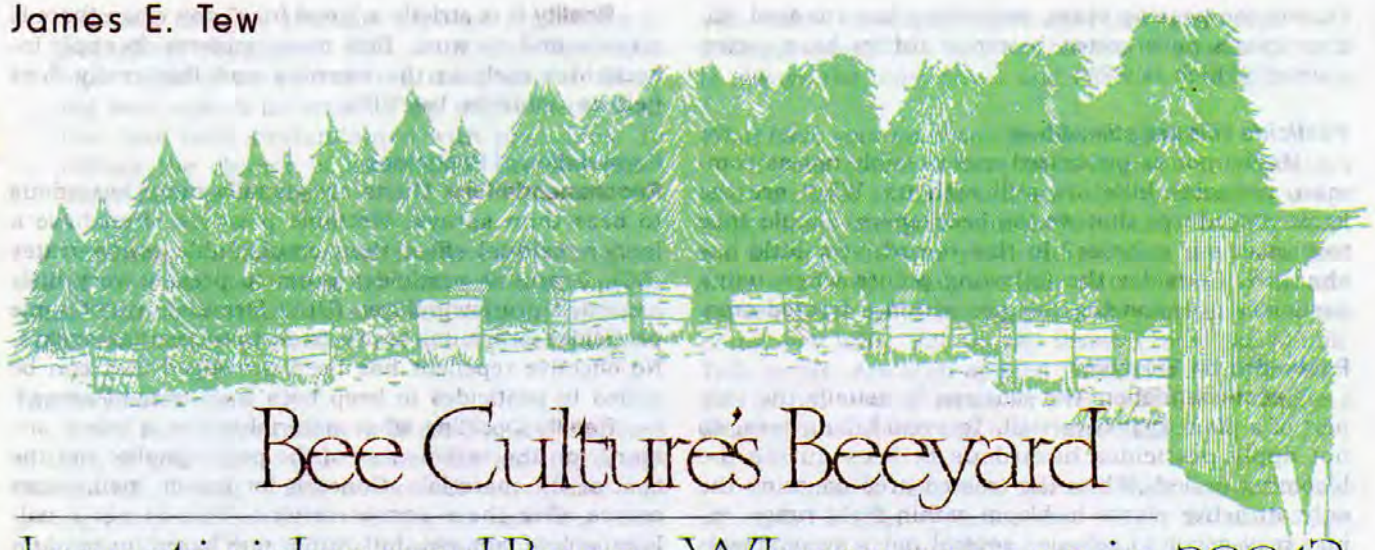
Four pipes are used to keep the supers in place. Slide them out of the way if necessary to place or remove hive bodies.

Conclusion

Well, this storage rack has been in use since last September. The supers have been kept out of the rain, and have not suffered any moth damage. So, it seems to be doing its job. What else could I ask from it? BC

Serge Labesque is a hobby beekeeper and ingenious designer who contributes to our pages not nearly often enough.

James E. Tew



Bee Culture's Beeyard

Insecticides and Bees Where are we in 2004?

Where to start

I don't really know where to start writing my thoughts on this topic. Should I go back 25 years ago to a time when beekeepers hated all insecticides? Should I go back about 15 years ago to the dawn of the time that beekeepers began to put miticides in their hives to control mites? Or, should I step outside of beekeeping altogether, and go to a time about 35-40 years when farmers whimsically applied insecticides to practically every thing that grew? Each timeframe has a different flavor and different characteristics.

At one time early in my career, I had a bit of pesticide background, but through the years, as I spent most of my time in beekeeping, I let my insecticide background lapse. (My wife would start punching me right about this point.... *"Don't start with all those old stories...."* she would say.) But here's a memory that is special to me. As a young child, it was my job on selected days to stand in the road and stop the very rare car coming along in order to keep the road open for the aerial crop duster to land at my Grand Dad's farm. Upon loading up with pesticides (Toxaphene and DDT as I recall), I would again stop traffic (I don't remember ever stopping one car, but to me, it was a real job anyway.) while the pilot took off to spray our cotton, corn, and peanuts. I remember a ground-based fellow who would mark the field location for the pilot to disperse spray. I shutter to think how many times that person was sprayed as he stood there marking the spot. This entire process was highly visible – even exciting. While I still see crop dusters around, they are much more low-key in their actions. No more landing in the road and buzzing the house. It was during these years that beekeepers grew to dislike pesticides so much. Bee kills were common. Entire bee meetings were spent discussing how to protect bees from the ravages of these pest-control materials. Ironically, some products like DDT, were surprisingly easy on bees, but terrible for the environment. Some of you may even recall the USDA Indemnity Programs that would pay beekeepers for insecticide-damaged hives. Those days have long gone away.

Today's pesticides

Today's pesticides are more like smart bombs. In years past, we just applied the material in a very general way. "Spray 'em, kill 'em, and count 'em" was a common dictum during those years. But insecticides today are (apparently) safer and more targeted in their approach to pest control, and it's no longer just straight chemical application. Also to be also considered are the new arenas of integrated pest management (IPM), biological controls, and genetic manipulation in conjunction with chemical applications.

It would be easy at this point to drift off my subject into any number of interesting – even controversial areas pertaining to pesticide applications, the environment and bees, but I don't want to go in that direction. For the sake of this discussion, pesticides are with us and we as beekeepers must co-exist with them until a future time when these materials are not here. I don't know when that time will come.

Something has changed

Though the years, something has changed within the pesticide/honey bee relationship. In the '70s, bee kills were common and were highly publicized. University and government research projects focused on selecting insecticides, how to apply insecticides, the fate of pesticides within the hive, and how to protect colonies from pesticide exposure. I have not encountered a major pesticide kill in our university bees in years. *(Now, here comes the mail!)* I know pesticide kills still occur, but discussion of these kills seem to have taken the back seat to unlimited discussions of *Varroa* kills and hygienic queens at present-day bee meetings. At The American Beekeeping Federation meeting last Winter in Jacksonville, there was not a single discussion of pesticide problems on the main agenda.

It could be that I am what has changed. Maybe I am not in the right places to hear the present-day pesticide problems. But if that is the case and in my defense, about 15 years ago, much of the industry talk was about Sevin SLR and Penncap-M. One could not help but hear the loud discussions. It was all the talk.

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During the passing years, something has changed. Either things have gotten better or things have gotten quieter Which is it?

Pesticide kills are still with us

Maybe not as publicized and possibly not as common, pesticide kills are still with us. What are the basic procedures that we, as beekeepers, should take to protect our colonies? In this regard, very little has changed. Consider the following points when using pesticides or managing colonies within a treated area.

Pesticides on Blossoms

Recommendation The blossom is usually the only part of a plant that bees visit. To avoid killing bees, do not apply pesticides hazardous to bees during the blooming period. When the treated area contains the only attractive plants in bloom within flight range, injury may occur to colonies several miles away. Treating non-blooming crops with a hazardous pesticide when cover crops, weeds, or wild flowers are in bloom within (or near) the treated field may also cause heavy bee losses.

Reality So much as possible, pesticides are applied only when there is no bloom, but this is not the real world. While most growers have high regard for insect pollinators, they also have great respect for insect pests. Using less hazardous pesticides is rarely a true option.

Some vintage insecticides.

Drift of Pesticides

Recommendation Drift occurs from nearly all spray or dust applications of pesticides from a short distance to miles downwind. Pesticide dusts drift farther than sprays. Pesticides applied by plane usually drift farther than those applied by ground equipment. Generally, it is less hazardous to apply pesticides near apiaries with ground equipment than by plane. Drift can be reduced by applying pesticides in the evening or early morning when the air is calm.

Reality The weather and the pest complex will dictate what material is used and when it is applied. Several days of rain at a critical time will sorely put the grower in a bind. Pesticides will be applied on some bad weather days regardless of recommendations.

Time of Application

Recommendation Ideally, pesticides should be applied when there is no wind and when bees are not visiting plants in the area. The time and intensity of bee visitation to a given crop depends on the abundance and attractiveness of the bloom. For example, apple trees or clover in bloom may be attractive to bees all day while cucumbers and corn are usually attractive in the morning and early afternoon hours. In general, evening or early night applications are the least harmful to bees.

Reality It is strictly a "good luck" day when there is no rain and no wind. But, many growers do apply insecticides early in the morning and this really does help to minimize bee kills.

Formulation of Pesticides

Recommendations Dusts are usually more hazardous to bees than sprays. Wettable powders often have a longer residual effect than emulsifiable concentrates (EC). Granular pesticides seem to present very little hazard. Ultra-low volume (ULV) formulations of some pesticides are much more toxic than regular sprays. No effective repellent has been developed that can be added to pesticides to keep bees from treated areas.

Reality Deciding what material to use is based primarily on the seriousness of the pest complex and the cost of the material. Concern for insect pollinators comes after these considerations. This is not a callous lack of concern, but rather one based on production costs and investments.

Toxicity of Pesticides

Recommendations Insecticides affect bees in one or more ways: as stomach poisons, as contact poisons, and as fumigants. Most agricultural pesticides have been tested for honey bee toxicity. However, laboratory and field results do not always coincide, due to peculiarities of bee behavior, length of residual life of the pesticide, or the effects of different formulations.

Reality There are literally thousands of pesticides available today When questioned, one of my primary sources for pesticide information is the Farm Chemicals Handbook[1]. It becomes confusing when trying to recommend appropriate control materials that both the grower and the beekeeper can agree upon for a pest complex. Add environmental variables and the confusion only grows. Just suggesting to a grower to use less toxic materials – for insect pollinator consideration – probably will not carry the day.

What can you, do to protect your colonies?

1. Place colonies where they will be away from fields that are routinely treated with hazardous pesticides and will not be subjected to pesticide drifts.
2. Identify your apiary. Post your name, address, and phone number in a conspicuous place near your apiary. Let farmers and custom applicators in your area know where your apiaries are located so they will not unknowingly poison them.
3. Be familiar with pesticides commonly used on what crops, in your area and what their application dates are.

[1] Meister Publishing Company, Willoughby, OH 44094

4. Relocate colonies that are exposed repeatedly to hazardous pesticides. Also, remember that soon after colonies are moved to a new location, foraging bees search for water. They may collect water that has been contaminated with pesticides. To reduce the chance of bee losses, provide clean water near the hives.

Confining your bees within the hive for short periods of time has been tried by beekeepers at various times. Due to overheating and suffocation, this is a really, really risky procedure. I don't recommend it.

The very bottom line

If you have large numbers of dead and dying bees in front of your hives, your colony has suffered a significant kill. Trying to find out who is responsible and getting compensation from the culprits can be a onerous task. Rather than all the suggestions about lower toxicity, spraying early in the morning, no dusts, yak, yak, yak, I would just move my hives to an area away from spraying. This may not always be possible, but it is always the most direct and effective procedure.

What have your pesticide problems been?

If your colonies have been exposed to pesticides and you have suffered setbacks due to chemical usage (other than bee pest control chemicals), would you let me know what your pesticide problem has been and with what crop. I suspect that cotton, sweet corn, and soybeans are crops having pesticide programs that can cause bee kills, but so can lesser crops like alfalfa. Talk to me. Are crop-applied pesticides a problem for you or not – occasionally or every year? I anticipate a follow-up article in the near future. BC

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SWAN'S HONEY

Blueberries, Honey Bees, Bee Supplies, and Packing Honey Make This New Business Stand Out

Karen **Baldauski**
Bob **Foster**

LINCOLN SENNETT has been working bees for 25 years. He is a honey packer/producer, Maine's Mann Lake dealer with a new shop full of beekeeping supplies, a producer of nucs for commercial and hobbyist beekeepers, a commercial pollinator, and a blueberry grower. His wife Karen is an integral part of handling the office management of SWAN'S HONEY and runs their Christmas wreath business which has developed over the years Lincoln is also Maine's delegate to the National Honey Board and the chairman of the advisory committee for the Maine Blueberry Commission. He has a degree in chemical engineering and an MBA from the Wharton School of the University of Pennsylvania. Lincoln has also served his own community of Albion as a member of the budget committee and the planning board.

Lincoln Sennett (photo by Karen Baldauski)

When you have the pleasure of chatting with Lincoln, as we did in the new post and beam addition to his home he designed and built by himself, you begin to realize the depth of his intellect and talent. Not only can this man talk the talk; he very comfortably walks the walk. The Albion homestead, where he and his wife Karen and their two children live, was his great grandfather's.

Tony Jadczak, our Maine state bee inspector and invaluable resource to the beekeeping industry in Maine and beyond, suggested we visit Lincoln to take a look at the SWAN'S HONEY brand new building which will house a state-of-the-art honey packing facility and showroom offering a full line of beekeeping supplies as well as honey products. A 40′ x 80′ 2-story steel building on a slab with radiant heat is framed out and ready for drywall...it's fantastic! Two years ago he acquired the rights to the famous SWAN'S HONEY brand from Harold Swan, a man our state bee inspector calls "the grandfather of beekeepers in Maine" Harold Swan and his wife Hilda continue to produce nucs and sell a full line of beekeeping supplies from their Brewer shop, R. B. Swan & Son, Inc., near Bangor,

A new Swan's Honey packing facility is under construction in Albion, Maine. (photo by Karen Baldauski)

Harold Swan, "grandfather of beekeepers in Maine," with his lovely wife Hilda. (photo by Karen Baldauski)

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The front "gate" on the pallet is designed to swing out to make it easier to handle hives. The pallets holds 12 nucs or four regular hives. (photo by Karen Baldauski)

Maine. Harold Swan originated SWAN'S HONEY in 1942. Handing over the reins, he has sold off most of his hives, keeping about 50 now, down from the 1200 he used to manage.

Lincoln Sennett greeted us at his 250-acre farm in Albion in late February on a beautiful, sunny, 37° morning. Lincoln explained the new building will house a beekeeping supplies showroom downstairs, a display area over half of the upstairs, a processing area on the ground floor with room enough to store pallets of supers in the "hot room," and a walk-in cooler for use in the production of creamed honey. Until the interior work was complete, honey packing continued at the Brewer packing plant, under the watchful eyes of Edna Gaudette who worked for Harold Swan for years.

Lincoln maintains 400 to 500 hives that are trucked between Maine and Florida each year. In the late fall when the bees have formed their winter cluster he treats them for mites before he ships them to Florida for their "winter vacation" This vacation theme is used for labeling the honey that is extracted in Florida. His 11-year-old son designed a special label for the orange blossom honey that reads, "Made by Maine bees on vacation in Florida"!

"In Florida the days are longer The bees sense this and think it's spring and the second they hit the orange groves, they build up like crazy," Lincoln said. The hives go down a story and a half (one deep and one medium). And by January they need a third box when he adds a super

The day we visited Lincoln he had pallets holding 200 nucs and 400 medium supers stacked high and destined for a semi-trailer to haul to Florida in the next couple days. "The orange blossoms are starting this week, just popping, and the nectar flow is just starting," Lincoln said. "I'd like to acknowledge both groups of beekeepers that work with me in Florida: migratory beekeeper Peter Genier of Vermont and the Jamison Family Apiary of Florida." Both groups of beekeepers help Lincoln to look after things, super the hives, and extract the honey later There's a 100 pound average of orange blossom honey per hive in a normal year when there is an intense nectar flow.

The day we visited his farm we found two of Lincoln's employees building nucs. These five frame nucs will be available at $69 each, with no frame exchange, plus a refundable deposit on each nuc box. The nucs are built a little differently from those most of us have seen. Note the change in the lid so a screen board can be accommodated to provide the ventilation necessary for the trip from Florida back to Maine, or to your own apiary, when just a screened bore hole and/or entrance is insufficient. Also, the overhang design of the screen board keeps the nucs separated from one another when they are stacked on bee pallets and packed closely for trucking. Notice in the photo how the front "gate" on the pallet can swing out to make it easier to handle hives. The pallet holds 12 nucs or four regular hives. Lincoln

Lincoln Sennett of Swan's Honey uses hundreds of free, recycled plastic fruit juice bottles to feed high fructose corn syrup to his nucs with hardly any robbing. The 1¾ inch borehole (with a yellow cap when not in use) accepts a white lid drilled with three holes (use smallest drill bit). (photo by Karen Baldauski)

Lincoln Sennett builds his own screens to ventilate nucs on trips back from Florida. (photo by Karen Baldauski)

has also incorporated in his nuc design an efficient and economical way to feed syrup.

While Lincoln Sennett was going to the University of Maine to earn a degree in chemical engineering, he worked 30 hives. He moved into the oil industry and lived in Alaska and Louisiana, still making time to raise blueberries and get back "home" to run the harvesting that employs about 80 people for the month of August. Nine years ago he left Louisiana to come back to Maine to raise wild blueberries and his family. "I was renting 200 hives a year and getting erratic pollination due to dead outs or hives that appeared too strong," Lincoln stated. He explained that when a hive appears too strong a lot of bees are clustering on the outsides of the hives and this may indicate that they don't have enough room inside to store any more honey "And so they get lazy and don't fly off to work the bloom. Those hives need supers on them," he said.

About six years ago, Lincoln bought 100 hives from Harold Swan and has since increased to the 400 to 500 he runs now. When he trucks his hives north in the spring, 200 hives are set out on the family's 150 acres of wild blueberries near Machias (75 acres bear each year), and the balance of hives are rented out to other blueberry growers, orchards, and after the blueberries, he pollinates cranberries.

The Sennetts are a very busy family. When Bob and I spoke with Lincoln, he had just returned from the National Honey Board (NHB) meeting in Sparks, Nevada, near Reno. He is Maine's rep and is on the nominating committee.

As a honey producer, Lincoln Sennett pays a one-cent-a-pound assessment to the NHB. He shares the concerns of the NHB, for

The importance of a good looking label cannot be overestimated in the world of marketing your honey or beeswax products. The Sennetts' young son designed this label. Besides packing under its own brand, Swan's Honey packs for private labels. (photo by Karen Baldauski)

instance:

1) Adulteration of honey by extending it with corn syrup;

2)"Ultrafiltered honey" which is being marketed as "honey sweetener"; and

3) Problems in labeling, that is, some products are being deceptively marketed by mentioning honey when no honey is used in the products, such as honey-baked products or some cereals and candies.

The new SWAN'S HONEY showroom will offer all kinds of honey products, beekeeping supplies including honey-processing equipment, and packaging supplies. And, if you can pick it up you'll save money and time because you get things at catalog prices without shipping costs. He also stocks Gamber glass and plastic containers, which he brings in by the truckload. He sells HFCS from his 4000-gallon tank and has it for his own use in feeding nucs, too. Both commercial and hobby beekeepers use this valuable service.

"Painting hives or using a preservative on them is essential," Lincoln stated, "otherwise, in seven years my hives would rot out, especially when wintering in the humid conditions in Florida. I have hives that are 25 years old that are still good that I used when I was a kid. They were primed and painted." Lincoln commented that the first hive he had was his great, great uncle's which dates back to 1800, and is on display.

The pallets of new medium supers shipping out for Florida looked stained green, like pressure-treated wood. They had been dipped in a new product Mann Lake offers to preserve the wood. Lincoln buys his woodenware from Humble Abodes, a Windsor, Maine manufacturer of pine boxes and frames milled to superlative tolerance. "They set-up so square, no jig is needed to assemble the boxes," Lincoln commented.

"The future of beekeeping lies in genetics," Lincoln says He points out, "Improvements are being made all the time in terms of mite resistance and hygienic behavior While these improvements are being made in our queen stocks, beekeepers must continue to operate in a hands-on manner and keep track of mite load."

SWAN'S HONEY is located at 332 Bessey Ridge Road in Albion, Maine. Contact Lincoln and Karen Sennett of SWAN'S HONEY by email: swans@uninets.net or phone 207.437.2251 if you want to visit, rent bees or buy some supplies. BC

Reprinted with permission of the editors of THE BEE LINE (busybee@dialmaine.com), the bi-monthly newsletter of the Maine State Beekeepers Association, Inc.

Beelining

The Way It Used To Be . . .

B I **Penley**

It was Springtime and every living creature seemed frantic to celebrate the resurrection season with new life. Birds preened. Squirrels dramatized their mating rituals. Chirps, squeaks and chatters animated the forest. In my Great Smoky Mountains homeland, I had hiked to a hidden place overshadowed by ancient hemlocks, suckled by a spring. Her cool waters beckoned me to kiss her surface and quench my thirst.

A Defining Sound

I lay prone touching my lips gently to the water when I heard a distinct buzz, then another. At the water's edge were honey bees. Each drank, rose, made its homing circle and began the "bee-line" flight home.

There in the wilderness, surrounded by honey bees, my unconscious kicked in, taking me back to my life prior to World War II. As a boy, I listened to adventures of mountain men who made their living gathering swarms of wild honey bees.

Doc Spencer was one of that vanishing breed. He tended about 60 stands of honey bees which were hived in logs. Because black gum trees hollowed themselves more readily than other species, they became the tree of choice for mountain bee-people to construct hives. It is believed the common word for hive became "bee gum," from the gum tree.

When I was a young sprout, in the 1930s, mountain beemen were experimenting with crude "plank gums." Without knowing how to build supers with frames, much honey was wasted in their robbing process.

I recall the old ones who pioneered beekeeping here in the southern Appalachian Mountains bemoaning the news that a package of honey bees and a queen were available by mail order Ordering bees with a factory-made hive and separate brood and honey supers was incomprehensible to their uncomplicated, do-it-yourself mentality.

A Vanishing Era

Five decades ago, before Doc went to the true land of milk and honey, he took me back into the mountains and taught me how he found and hived wild honey bees. I'm not an expert bee person. My terminology may lack that of an apiarist but I'll retrace the venture as best as I can remember

Old Art Of Locating Wild Bees

We searched for and found a source where the honey bees came for water. Doc had a little container of white flour which he sprinkled on the drinking bee's back. Pointing his gnarled finger, he said, "You see yonder, lad, you can't see the bees when they fly through the trees. Watch this one with the flour on it. Surely enough the bee stood out plainly as it flew through the trees. "Lad," Doc instructed, "run to the last place you saw the flying bee. I'll sprinkle another'n and hit'll fly exactly the direction of the first one, heading for home. I'll keep flouring 'em, you keep follering. Directly you'll see a hole in a holler tree where the bees enter. Whistle and I'll come to ye."

The bees were about 200 yards from the water, about 30 feet up in a hollow tree.

Doc adjusted his rumpled hat, scratched his unshaven tobacco-stained chin, and with a hint of excitement said, "Tomorrow the fun stops and the work begins."

Tools For Gathering Wild Bees

He wasn't wrong. We gathered wedges, sledgehammer, ax, cross-cut saw, shovel, butcher knife, lantern, a smoker full of burlap rags, string and a tub for honey. For me, we packed a veil and gloves. Not Doc, no-o-o-o! "I don't wear that stuff," he sniffed. "I work 'em slow and easy, and give 'em lots of smoke to settle 'em. They won't sting if ye do it gentle-like." Doc squinted with a mischievous twinkle in his eyes.

We loaded our tools on a horse-drawn sled, along

with a hive, that is if you call a hollow log with a board nailed on top and bottom, with an entrance hole, a hive.

We traveled a long-ago abandoned logging road which led us near our bee-tree. We set up for a full day's labor.

Gathering The Wild Colony

While we were sawing the tree, Doc explained, "The bees are loading their bellies with honey, knowing they might have to relocate. This gorging makes them less apt to sting."

When the tree fell, Dock lit the rags in the smoker. He sauntered in amongst myriads of bees, puffing the bellows, not too hard, lest the flames come out and scorch the bees wings. He moved at a snail's pace, enshrouded by a cloud of bees, confused by the invasion of their habitat. He puffed a time or two into their entrance hole. "See how the smoke calms 'em?" the experienced sage observed. "Inside their den, the bees reverse their wings to blow the smoke back out."

Me? I was 50 feet away tying my pant legs and shirt sleeves tight to keep any bee guards out. I completed my armor with veil and gloves. Encircling me was the eerie sound: "Wooooo," as umpteen thousand befuddled bees overshadowed me.

Doc moseyed slow as molasses. Having gathered hundreds of wild swarms, every step was methodical. Surprisingly, the bees seemed unaware of his presence. He sat on a stump and beckoned me to come.

"Doc," I questioned, "What if we get stung?"

"Lots of folks put tobaccer spit on the sting. 'Twon't work, I've tried it. The best thing I know is to put a little pee on the sting. Hit'll stop the pain then and thar. I swear to it," Doc affirmed.

When the bees settled somewhat, we sawed off the tree trunk, well above and below the entrance hole. "Let's roll this chunk over and bust it open. That's why we brung the hammer and wedges."

Inside the tree was a wash-tub full of honey, most of it dark in color. Over the years the colony had gathered poplar, persimmon, clover, locust, sourwood, you name it, if it had nectar, the bees collected it.

We saved all the honey we could carry. Most of what we left had leaves, trash, and countless drowned bees.

Working in low gear, we cut out a chunk of brood and eggs the queen had laid. This we tied inside the new log hive we had brought to house the swarm. We buried all the other brood to keep the bees from clustering around it.

These tasks completed, Doc searched around in the mass of bees.

The Queen's New Castle

Finally he struck gold. Lifting his tired eyes, he flashed a toothless grin and exclaimed, "Thar she is, lad, the mother queen herself!" With a down-soft touch, he herded her into a small box and carried her to the entrance of the hive. He fanned some smoke to get her started inside the new home. Behind her trailed thousands of bees, scrambling into the log gum.

Doc wearily straightened his aged back. "let's leave 'em alone for awhile. By nightfall the worker bees will return from the fields. They'll go to their queen and the brood that we tied inside the log. When we get 'em home, they'll start building new cells for the queen to lay eggs in and other cells for honey.

We lay back on a bed of leaves. Immediately Doc fell asleep. I stayed awake and listened.

Mountain Nightfall

As the gloaming came, the humming waned. The forest came alive with her night creatures. A lonely owl hooted. From afar his mate sent her assuring answer. High in a tree a turkey gobbler rattled his territorial dominance. Crows argued over their roosting spots. Then, they all hushed. Silence reigned. Our mountain world settled in. They only sound was a bobcat scream, rousing Doc with a jerk.

"Fire up the lantern boy. The bees are all in the gum." Doc's energy was renewed. "Let's nail this strip of wood over the entrance hole to keep our bees inside and take 'em home. Tomorrow we'll rig a superhive on top of the log, and let the bees out. They'll start making honey as if they'd never been bothered."

In route home, Doc talked about he value of a captured hive of wild bees. "I can trade 'em," he said, "for salt, sugar, coffee, gun powder, anything I can't grow here in the mountains."

This was his way of life, with a profession of capturing wild honey bees. It was a time in history never to be relived.

The inner drama ceased playing in my memory, returning me to the reality of nature's paradise surrounding me. I sat down beside the spring . to a rude awakening. I had placed my hand on one of the watering honey bees which stung me. I removed the bee's barbed sting, then unzipped my pants and put some of Doc's medicine on the sting. It worked! BC

Bee-Quick® 500

Beelining The Way It Is Today . . .

James **Fischer**

While pests and diseases have made feral hives a rarity for the last decade, there is a way to keep the art and science of lining bees alive.

EAS 2004 will be the site of this year's Bee-Quick 500 international bee-lining championship.

You may have never heard of the Bee-Quick 500, so we thought we should explain.

In recent years, bee-lining has been used to locate feral hives for hiving or eradication to prevent the spread of pests and diseases. Few people know that bee-lining has also been an actual organized professional sport, as this is the sort of thing one only sees on ESPN at 2 am, and competitive bee-liners have been unwilling to encourage others to compete for the fabulous cash prizes awarded.

One of the lesser-known recreational features of the Seven Springs Resort is an NCAA-approved bee-lining course.

The course has been played in the past by such celebrities as Lazlo Langstroth, Mark Twain, Harry Truman, and Frank Zappa.

Never played before? Don't worry All required equipment is provided, short instructional workshops will be offered, and there is no entry fee charged by the NCAA (the "National Collegiums of Apiary Athletics", a group with no connection to that other NCAA that does college football and basketball and has problems with steroid use.)

The goal is to find a hive that is hidden in a secret location, starting out from a feeding station that is being visited by bees from the hidden hive. The person who finds the hive in the shortest time and with the minimum number of bee releases from their bee-lining box wins.

Complete rules are available online at www.bee-quick.com/bee-quick/500 or via postal mail by sending a self-stamped, self-addressed #10 envelope to the attention of the editor (attach two first-class stamps).

Overall, the sport is much like golf, except that one is releasing bees and watching them fly off into the rough as opposed to hitting a ball and watching it fly off into the rough.

The rules are also similar to golf, in that contestants may not leave the "green." If one loses sight of a bee in "the rough," one must release another bee, which is taking another "shot."

The only skill that bee-lining requires is a keen eye. Contestants release bees from their bee-lining boxes one at a time, and watch them as they first circle a few times, and then fly off in what is hoped to be a "bee-line" for their hive. By releasing bees from different points on the course, contestants can narrow down the hive location.

This is, of course, not as easy as it sounds.

Those who wish can attempt to estimate the distance to the hidden hive by marking a bee, releasing it, and timing how long it takes for the bee to return, but there is a maximum time limit on the course, as other contestants will want their turn.

Physical strength and speed won't help anyone win, as bee-lining is not physically challenging. Running is discouraged. Any breathing contestant can win.

Performing-enhancing drugs won't help either In fact, NCAA rules not only permit, but actively encourage playing while consuming alcohol, tobacco, and whatever else you might have, just so long as you share.

Technology won't help you in the least either so feel free to bring anything you can carry. Compasses, range-finders, computers, binoculars, whatever If backpack radar units were possible, they would be legal.

Own an antique bee-lining box? Bring it and make use of it.

The Bee-Quick 500 is sponsored by Fischer Alchemy, the makers of Fischer's Bee-Quick. Who else would come up with an idea so completely bizarre as "competitive professional bee-lining?" BC

Queens . . .

A Meditation on Expectations and Age

Larry **Connor**

How long do queens live? And why?

But First . . .

In the past two articles I reviewed existing and new information about the queen's mandibular pheromone, and the alarm pheromone of worker bees. It seems like a good idea to take a break this month; at least *I* need a break from all this talk about pheromones! I also want to discuss an email I received. The communication discussed how long queens live, and possible biological implications of aged queens on beekeeping.

photo by Karen Hunter

Before I get into that matter it is time to keep a few bees. I must confess this Spring I am living the role of the new, beginner beekeeper, with two all new hives. After a few years of coaxing, two friends of mine have asked me to set up an apiary at their sanctuary in East Haddam, Connecticut. My friends, Pat and Karen, have been given the use of a beautiful piece of property as a spiritual center With the help of a lot of friends and supporters, they have recovered (partially) the fields from the brambles, erected a thirty-foot yurt (permanent tent), rebuilt extensive New England stonewalls, and started hundreds of chores that come with such a property. We put together a series of classes this spring, and more will continue throughout the year I hope to establish this as a learning center for new beekeepers.

New beehives, new bees, new equipment. Time to do it right this time, or so I hope. I decided to use all 6-5/8 inch deep equipment for everything – brood boxes and supers. That means that here in Connecticut I expect to over-Winter in three medium boxes instead of two deep (9-5/8 in) boxes. I have not been able to find any evidence that there is any particular disadvantage to the smaller boxes than the larger ones, but the real advantage is lighter weight of the boxes as we start moving them around. More equipment does mean greater cost; 30 frames and foundation per hive instead of 20, and that is just for the brood area!

We are using all plastic foundation in wooden frames. The wooden hive bodies, cover and bottom board were stained the color of the house. The colonies are on a single hive stand facing east, and facing the house. There is an un-repaired stonewall and fence row behind the colonies (and loaded with poison ivy). It is possible to sit in the house and watch the bees fly in and out by aid of binoculars. I encourage such placement to watch for problems.

The bees were transported as three-pound packages from Georgia. They were shaken from their Southern homes on Wednesday afternoon and installed Saturday morning. The Italian queens were checked, appeared to be large and vigorous, and installed by the use of their shipping cage. Bees were shaken from the package containers. There were very few dead bees, and a very small number of drones, maybe 50-100 per package, tops.

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We fed the bees 1:1 sugar syrup (by volume) and by noon good bee flight was underway. Soon drones were flying and making a great show for the new beekeeping students. It was a beautiful day and the class members should have a perfect memory of installing a package.

For me, the only disadvantage in this location is the location: it is about an hour's drive from my home in New Haven, regardless of the route I take. That means it is not easy to *drop in* and check the bees—it is more likely a half-day event if I am lucky. In late April we had some beautiful days, with maples in bloom, but there were at least two extensive periods of rain running 3-5 days each. Thankfully we had fed these packages sugar syrup, but no protein.

At the end of April the bees had drawn out 3-5, 6-5/8 frames. One colony had the queen laying in the hive, but it was clear to me that the last rainy period had resulted in extensive brood cannibalism, since there were no young larvae. There were relatively few eggs too, and just a few larvae.

These precious larvae were needed for the second colony, which had not accepted their queen. The bees were very busy building comb, and because they did not have any brood rearing underway, they had more stored pollen in the colony. (That does not mean they gathered more pollen). Students heard the gentle queenless roar or buzz colonies make when no queen is present.

At this point I am complementing myself on the decision to establish two hives instead of just one. My former advisor and friend Roger Hoopingarner has kept a single hive going for years. He wrote about them in his column in Michigan called *The Lonesome Hive*. I won't suggest that Hoopy ever 'borrowed' anything from the bee lab at Michigan State, but single colony management is one based on tremendous faith that things will turn out right.

This was, of course, an ideal teaching moment for the students. We had a queenless colony and eggs and larvae in the next colony. I moved one frame of brood from the queen-right colony and into the queenless one (we removed most of the bees on the comb when we did). We fed the bees and left them alone until the middle of May.

Mid-May Picnic

We set up an evening picnic in the Yurt. It was so hot we were outside on the deck. In mid-May we were experiencing summer-like temperatures. (Welcome to New England). The human population had grown from six students to 15 (food will do that; five were University of Connecticut students: one had just graduated the prior weekend).

On inspection, the first colony had its queen (she is marked) and the brood was emerging or had emerged from her first egg-laying cycle. I now understand why people complain about the white plastic foundation and how hard it is to see eggs at the bottom of these white cells. At 6:00 p.m., it was not easy for me to see eggs and new larvae, and the sun was too low to get a direct sunray into the bottom of the cells. I refuse to admit that my age or eyesight has anything to do with this matter There was comb building activity on seven of the 10 frames, so I decided we would continue to feed, but added the second box of foundation on the hope that they would have plenty of emerging bees to expand the forager population, and the ongoing Spring flowers would continue to produce plenty of pollen and nectar.

The second colony had some small queen cells with holes in their sides. To me, this means that a virgin had emerged and destroyed them. (Emerged cells are open at the end, but I did not find one). The cells were tiny by my standards and I did not see the virgin. I checked my records and figured that the bees must have selected a larva at least 24-36 hours old. That would explain the emergence a day earlier than I expected. The only new bees in the colony were from the single frame of brood we added to make a queen cell. There are more drones present in both colonies (fly-in drones from neighborhood colonies); worker populations are small yet, and have no drone brood in production so they will gladly support the 100-200 adult drones in each colony. Like the picnic for the humans, the colonies had more drones than when they were hived. Something about being fed a good meal, I think.

I am hoping for explosive growth from the first colony, and have my fingers crossed that the virgin queen mates before the dragonflies emerge in huge numbers at the nearby swampy lake (a special thank-you to the local beaver population).

Since that visit we have had coastal fog and drizzle for a few days, and we continue to feed the bees sugar syrup. In retrospect, a protein food would have helped sustain the brood rearing. While there are abundant nectar plants around – the black locust are ready to burst in my area – I continue to fret over the low 60 degree days with overcast skies and the warm but wet, rainy days. How and when do those bees find time to forage? And mate? That virgin should be mating now; at the time I am writing this article.

Ted Jones (photo by Karen Hunter)

Why?

So, why install bees at my friend's spiritual center? I saw it as a chance to share the beekeeping experience with others, including my friends, and to relax with bees again. I knew it would balance some of my commercial experiences, but mostly I consider it a meditation, working with the bees. There is something to be said for keeping a few colonies and sharing this experience with others. Already we have started to meet each other's friends and shared meals. I was again inspired by everyone's enthusiasm and awe of working with bees. It is too easy to forget that!

Pat and Karen tell me that the landowner who turned the property over to them was a hobby beekeeper years ago. So in a way we have returned the bees to where they belong. That's a key point; the bees belong there.

Of course, these bees certainly are giving me a lot to meditate about: Is the virgin mating with enough drones? Will she be large enough to lay all the eggs we need to pull this colony out of a month of queenlessness? Will the original bees from the package live long enough for this to happen? What about the weather and a supply of good pollen?

I think it was easier with large numbers of colonies. Stay tuned.

Very Old Queens . . .

Adrian Wenner contacted me about some of the articles I had written, especially about the queen's sperm storage. He had some interesting information to share. He has been working on Catalina Island (a natural preserve off the coast of California) with the feral bee population there, and reports the presence of at least two long-existing colonies with very old queens. He cited reports from Russia (from a 1960 abstract) of queens being reported as old as nine years.

As commercially motivated beekeepers, we tend to think of requeening every year or every other year. Some of us do it, many of us don't. But what happens in the wild, with unmanaged colonies?

There have been reports for several years that feral colonies maintain a separate genetic identity, even in areas of intensive commercial beekeeping. After the mite invasion, there continue to be reports of low numbers of feral colonies in areas where commercial colonies have wiped out.

This suggests that feral colonies have minimal contact with managed colonies. One might argue that there are few drifting bees, because the colonies are distant from each other.

Others have suggested that these bees are genetically different and have different mating behaviors. Perhaps they are descendants of the first bees to become established in the area – pre-commercial bee colonies. That suggests they have been maintaining a separate genetic identity for decades.

I recall one colony I saw in an early Spring inspection years ago. The Connecticut colony was in a beekeeper's yard, and while surrounding colonies had consumed most of the Winter stores and built huge populations, this colony had untouched stores, a small brood area, and a healthy looking queen. I suspected that this queen – from a bee tree – represented an entirely different genetic history than the other bees in the apiary. Every beekeeper has a "queen that got away" and this one is mine.

Was this queen genetically programmed to maintain a very small brood nest during the Winter, ignoring abundant stores, and then build in the Spring only as the nectar flow dictated? Or was this a very old queen who could not get her production up to the point where she produced a huge colony population. But, because the colony had abundant stores, the queen did not need to work that hard to maintain that food supply. I don't know how many eggs a queen needs to lay to maintain a minimum number of bees sufficient to keep the colony alive. This suggests behaviors I have seen in Carnolian stocks of some purity – these bees would stop egg laying the moment the nectar flow stopped. We first thought they had gone queenless.

A comparison of queens

Compare the demands on the queens in the packages I installed with the queen I observed years earlier. Dr. Tom Seeley reports that swarms will always select a nest with existing comb (where the bees died) over a comb-less nest site. Why? Because they must spend much less energy to build comb! The comb is already there. I suspect that in the wild more feral colonies die due to of lack of stores during a prolonged Winter than die due to disease. While we have the bias that wax moths would quickly consume these combs, it appears that this does not happen. It is just as difficult for wax moths to find isolated colonies as it might be for a honey hunter to find a living colony in a huge forest.

The packages I installed require a tremendous amount of energy to build comb, store syrup and nectar, and raise brood. If I had drawn combs to give them, I would, but I don't have them in 6-5/8 inches. Plus, I wanted this to be all new, and a learning situation.

The bottom line, of course is our expectations as beekeepers. I have tremendous expectations for these packages. They must build all these combs and also produce surplus honey. We are helping by feeding sugar syrup. Maybe it will be a good season, maybe it won't. These two colonies have a great deal to do to survive to their first anniversary in Connecticut!

When we think of old queens, of queens in feral nest sites crammed with previous year's honey, we realize that the requirements placed on these queens are greatly reduced. They do not need as many bees. They may produce very few drones. Because their population does not explode, they may have some natural population balance with *Varroa* mite populations.

I suspect that Adrian Wenner has found something useful to help us understand the role of queen longevity and colony survival. Certainly it helps me understand the vast difference between the biological needs of a new colony in a beekeeper's operation and the needs of an established colony in the wild. BC

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stock, not black Italians, or yellow Carniolans.

- **Inspection regulations that are written for them** - not the 1,000 colony operation that migrates every year.
- **Garden Center customer service** - whether on the phone buying supplies, or bees, or queens, or anything. (75% buy most everything on the phone).
- **Web page shopping** and email correspondence. (30% buy on the net).
- **Adequate parking,** good directions and clean and orderly shopping. (41% drive to the store for supplies).
- **Affordable and comprehensive insurance.**

This isn't to say they can't find these things, if they look hard and far, but the fact that they have to look says something.

The old way, the 'let them find out the hard way' doesn't cut it. The old way, the 'if you don't/can't put frames together you're not a beekeeper' doesn't cut it. The old way, 'well, a queens a queens a queen, right?' should have NEVER worked.

Your typical beekeeper isn't in the silver set anymore, either. Most are in their early to mid-50s, not 70s, many with kids at home and a pretty good income. Most don't sell much honey. Most want more help, and most want this to be as easy as it can be.

Troy-Bilt made it easy. John Deere made it easy. And Johnny's Seeds made it easy, for those who garden.

We can, as an industry, as a local, regional, or national organization, as a state regulatory agency, or as a supplier choose to keep our heads in the sand and ignore the change.

Or, we can make it easy for that urban gardener to start, and to keep on keeping bees.

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The weather here, in April and early May was spectacularly erratic. Nevertheless, on Memorial Day weekend Buzz and I harvested honey. Every colony save one we went to had at least one, and one in five had two, full medium supers. Rain, cold, wind and a general cussedness did not, for the first time in memory stop the locust from producing and the bees from collecting that delicate, exotic sweet.

Buzz has records going back the 30 years he's been doing this, and not once has he harvested any honey this early, let alone this much that soon.

And it's all water white, with bright white caps and a so-sweet smell when you pop the top. There are honeys I enjoy eating, and there are those that I hold sacred – star thistle and blackberry are two. Locust is in this group. So rare from here, and too often mixed with other, later, lesser crops.

By now it is too late to isolate and separate the early individual honeys your bees have made that are still in your supers on your bees. Maybe you can keep light and dark away from each other when you uncap. That's a good start. But you can certainly catch the rest of the crops if you have any crops left this year, one by one, and bottle each as its own true self.

With only a few frames to harvest it's hard to sort and set aside, though not impossible. But if you've lots to labor over it isn't so hard, and at the end of the day you'll have some light and some dark, and at least two good kinds to sell.

If, at the end of the year, you have just 20 frames or so to harvest and have, it is still the best honey there is. And it's different most every year. Sometimes light and mild, a delicate and subtle bouquet picked all summer long. Other years it's dark and strong, made mostly at season's end, but usually it's somewhere between, the best wild flower honey ever made. It doesn't matter, though, does it? It's always good.

But if you're selling this harvest of gold the people who buy are less enthused about how good you think it is because they have their own best kind, and want it just that way. And the customer, you know, is always right.

Even more important though, is that this is what separates yours from the generic store brand blends that inhabit super-centers and grocery shelves. Those, if you don't already know, are pretty much bland; and all the same, every bottle, every bear, every year. That honey wears the title – commodity. Yours, by care and selection, should wear this crown of Local, of Variety, of ***Mine***.

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I mentioned Memorial Day weekend earlier. Like many, it was a time for me to do chores with the bees, the yard and around home. And later, to get together with friends for a few (honey) beers and something off the grill out on the deck. And a couple of days to decompress from the rest of life.

This year was special though. Aaron, my youngest brother's oldest stopped by just a few days earlier. He was on his way from Wisconsin to points east and was going right by Medina. He's only been back from Iraq for a very short time, there a part of a construction outfit, fixing roads and bridges and buildings in the southern part of that country. He was mostly safe from harms way.

His stories of living there were as alien as anything I've ever heard, and his photos of the land and the people were stunning, and for me captivating. We see the video reports, read the news, and listen to the politics daily, but the stories behind his photos were the best and worst of all I've heard and seen.

You can imagine how thankful all of his family is that he is back. But none of us can imagine how hard it is for those families who have no one coming home.

That same weekend was the dedication of the National Memorial of World War II Veterans in Washington, D. C. Certainly due, those to whom it is dedicated tend to not be the pushy sort.

That was my dad, sure enough.

"Oh, it's ok. We know. We'll be all right."

This is the modest response from many of the Greatest Generation.

So at my home that weekend were distant memories and recent photos of two who went, were changed, and returned to families and jobs and the rest of their lives.

And this month, this July, we celebrate the birth of our nation that felt it necessary to send them to those distant places. To keep us safe, to defend our honor, to stop evil and restore good.

Were that it was so black and white.

But meanwhile, the old men still debate, and young men die.

Kim Flottum

SOAPY/SUGAR SOFT SPRAY STOPS *VARROA*

K m **Flottum**

The newest biopesticide on the market used to control *Varroa* mites is a simple sucrose octanoate ester solution, called Sucrocide. Essentially, it is a soapy water/sugar syrup solution applied directly to adult bees with attached adult *Varroa* mites. Used according to label instructions the solution affects *Varroa* mites but not bees.

The solution is mixed in a common garden sprayer and sprayed using a course droplet size so that the bees are wetted. Once applied, the solution acts directly on the mites, and in the process of cleaning themselves and each other the bees dislodge more mites. With a screened bottom board in place these mites fall and are lost.

Three applications are suggested, about a week apart, to make certain mites emerging from sealed cells after one application are sprayed. There are still some holes in our knowledge about its effects on eggs and larvae, but it seems to be relatively benign to these. Mites in cells are unaffected.

You can apply this anytime, which is its strong suit. If there's a flare up of mites in a colony during a honey flow you can apply when you have honey supers on. But you don't apply it to the honey itself. It is safe, but it appears to darken the honey and may affect the flavor Better to avoid this.

It's suggested that if a spot treatment is needed, smoke or drive the bees off the honey supers down into the brood boxes, remove the honey supers while spraying and treat the bees on the brood frames.

This takes some planning, especially if you are doing it alone, and even if you have help. One thing to consider. Time your treatment during the day so that the most bees are home – early morning or evening. You get the most mites treated that way.

My friend Buzz Riopelle had a colony this Spring that was rife with adult mites so this seemed a good chance to test this product.

Here's how we set it up so one person could do this fairly efficiently, with a minimum amount of frame handling.

Buzz's hive stands have room to set hive parts on. If you don't have this, rig something up so that you can set up an assembly line operation. First, prepare your solution and sprayer according to the label.

Bring an extra deep, maybe two. If you have honey supers, smoke the bees down to the brood chamber, remove honey supers and set aside, but don't start robbing!

Take the cover and place it upside down on the hive stand (or other support) next to the colony. Put an empty super on the cover Smoke the top of the exposed super and loosen the first few frames on one side with your hive tool.

A frame grip is excellent for this (or wear rubber gloves so you don't get spray on your skin). Grasp the frame nearest the edge, lift carefully, and spray all the bees on both sides of the frame. Set the sprayed frame in the empty super in the same position it was in originally. Spray the bees so they are wet. They will look wet, with hairs matted down. They become lethargic almost immediately and move slowly Grooming and cleaning begin soon. Continue lifting, spraying and moving frames. When the last frame is done, spray the bees on the inside of the box. Then, set the empty box on top of the one just filled.

For the second super, loosen frames as before, lift, spray and move to the empty box. Every once in awhile spray bees on the sides, and those on the landing board. When all frames have been sprayed reassemble the hive in the same order it was before you started, close it up and do it again in a week or so. A two-deep colony will take

A sprayer, frame lifter, and someplace to set the boxes are all you need.

Lift and spray with a course droplet size. Get all the bees on both sides and edges.

Sprayed bees look and act wet. The solution gets most exposed, adult mites, and grooming removes more.

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When to treat?

You should be using screened bottom boards to monitor mite counts when needed. If you're not, you're guessing, and if you're guessing you're probably wrong. COUNT MITES AND BEES! Here's how.

A deep frame has about 300 square inches on both sides and a frame covered completely with bees, top to bottom, bar to bar will have about 3000 bees on it. Though seldom the case, you can estimate down. For instance, a deep frame, half covered on one side, and only a few on the other has about 800 or so bees. Learn to do this on your frames.

Count mites on your sticky board for three (3) days, divide by 3 for average mites/day. Divide that number by number of bees to get mites/adult bee.

According to Drs. Delaplane and Hood, anything above 0.4 mites/bee means threshold and treat. This works nearly everywhere, most all of the time as a good estimate. Use it.

This new chemical is perfect for a spot treatment BEFORE regular fall treatments. You won't lose your colony, or your honey.

about 10, maybe 15 minutes. You'll get faster after you've done it a few times. A sprayer that holds pressure well is a big advantage. You don't want to be pumping a lot. The sprayer in the photo needed pumping at the beginning and half-way through.

This is a safe, non-toxic, but labor intensive way to treat your colonies for mites. A Fall treatment, after harvest, should (barring reinfestation) be sufficient to get your colony through the Winter relatively mite free. And, it works in a pinch anytime for those isolated colonies where mite populations flare up.

Left over solution can be saved in the sprayer for next time with no deterioration.

Thanks to Buzz Riopelle for the test, and Don Sewell at Dadant for additional information. BC

Winter Is Coming!

Don't be a left-behind beekeeper or an enthusiastic member of the Procrastinators' Society.

Ann **Harman**

Winter is coming. Yes, I realize that today is a very hot day in July.

Whether you live north, south, east or west, Winter is coming. In warmer climates it means finding a sweater and occasionally a jacket. In colder climates it means finding the down jacket you put somewhere last Spring.

Winter, to your bees, means a change in hours of daylight and in many places a change in food supply. Winter also means cooler temperatures. Winter preparations will necessarily be different in different parts of the country. But July is not too early to start thinking about the coming changes in your bees' lives.

In reality we are not managers of bees but providers for bees. We need to provide ample food, a suitable dry home, and ways to control diseases and parasites. The success of our beekeeping is in the results – a good honey crop (weather permitting) or a good strong colony for pollination.

That success depends on our preparations for Winter, no matter where you live.

In order to provide that ample food supply you need to be aware of the nectar and pollen producing plants in those thousands of acres surrounding your apiary. Your bees need both pollen and nectar If you have not surveyed the area surrounding your hives for food sources, now is a good time to do it. You can drive around or take a bicycle or horse or two feet and explore, going about three miles in each direction. Take a pair of binoculars to see into places you cannot reach. You are looking for late Summer and Autumn blooming plants.

Don't assume an overgrown pasture a couple of miles away that provided profuse goldenrod or other bloom for the past umpteen years is still a pasture. It may have turned into a shopping mall or housing development. Roadside weeds can be mowed or sprayed. Current campaigns to eradicate noxious alien invasive plants can alter the food supply for your bees. Conversely, the rampant spread of an invasive plant can change what was once suitable bee pasture into a useless monoculture.

Another factor in providing ample food for wintering is the weather Are you being a good weather watcher? Plants that depend on rainfall from Summer thundershowers will cut back on nectar production in drought conditions. We will pay attention to our vegetable gardens and provide water when conditions require but we need to think about what lack of water is doing to bee forage. You cannot go out and water the world but you can feed your bees. That is one part of being a good provider

If you have removed your honey supers, keep that late Summer and early Autumn forage in mind. Then check your hives for stored food. Don't take chances.

Offer your bees sugar syrup if you feel they need it. If they do not want it, they will ignore it. In the South, the warmer regions of the country, brood will continue to be raised well into the Autumn and may never cease completely.

Follow the needs of the bees; they know what they are doing.

July is a good time to review the hives themselves. Southern beekeepers have to contend with termites. These tiny critters can reduce a hive to a pile of sawdust and paint in no time at all. A hive stand made of rebar is a help. At least the termites cannot chew their way up metal legs. Keep the grass and weeds down around the hives so you can see what is going on. Termites do not work exposed above ground. They will build tubes for travel so keep watch for those.

Late Summer and early Autumn is usually not a good time for drawing comb. But you need to inspect your frames to see if poor comb is interfering with Winter storage of food supplies, as well as brood rearing. A red thumbtack pushed into the top bar will mark frames in need of better comb in the Spring.

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Several pieces of equipment you can improve are your hive bodies and covers.

In any wet-weather climates Winter is hard on woodenware. Scrape and paint your used brood chambers and transfer the frames and bees into that reconditioned equipment. The bees may not notice the improvement but you certainly will. If you are using inner covers and telescoping covers, take a good look at those inner covers. Some of them warp and sag and get stuck down to the top bars.

Consider buying from a different supplier when you need new ones.

If you are using the new screened bottom boards, check to see if they are clean or if they have places clogged with hive debris or propolis. In general the screen will be kept clean by the bees and by debris falling through, but while the weather is still warm take a look. A good hygienic colony will keep it clean. So accumulated trash on the bottom board or screen may indicate a change of queen.

Bees that are good housekeepers are good disease and parasite fighters.

Late Summer in the beeyard will mean tough weeds and overgrown grass. Have you been trying to keep it reasonably clear during the Summer? Give the bees a chance to come in for a landing without having to fight their way through a jungle. If you are combating the small hive beetle you will definitely want to keep the beeyard clean. A ground drench that can't get to the ground is of no use against the beetle. An additional bonus is that after you clean the beeyard up you will find the hive tool that you dropped two months ago.

At this time you might wish to take a good look at your beeyard, both its location and the placement of hives in it. If you have decided that another location is better – and have put off moving the hives – July and August may be the excellent time. Unfortunately we have a problem moving hives short distances.

If you have many hives a short move may not be practical. Perhaps there is something else you can do to improve the location. With a few hives the two-foot rule may work since you have plenty of time between honey harvest and Winter

For reasons unknown beekeepers tend to put hives neatly in a straight line.

Gardeners do the same thing in vegetable gardens. In both, apiary and garden, a different arrangement would be an improvement. If you are satisfied with the location of your beeyard then take a look at the arrangement of the hives.

Bees drift. A row of fairly closely spaced white hives is very conducive to drifting bees. You may not have to move every hive to achieve a better pattern.

Bees can figure out two hives close together. You can scribble some arrangements on paper and see how they fit into the area you have available.

If you have been keeping records of hive production you may have noticed that some colonies outproduce others. Such differences could be a result of colony populations. In a line of hives the central hives generally lose bees and the hives on the ends of the line gain bees. These are the field bees bringing in the nectar for your honey crop. Get your hives in a better arrangement and see if production improves.

Always keep in mind that you will want to work at your hives efficiently, be able to remove heavy honey supers easily and transport them to your honey house. Has your current hive arrangement been successful or frustrating? If the latter, then do something about it now.

Urban and suburban beekeepers may not have much choice in hive arrangement.

But shrubs can be planted and some landscaping may not only make the area attractive but also more helpful for the bees and for you. Do some planning now and the planting at a more appropriate time. Be certain to incorporate a water source in your plans.

The Summer months are a good time to review disease and parasite problems.

Many hobbyist beekeepers have little trouble with diseases but the parasites are always a problem. The best approach for both diseases and parasites is to treat only if necessary. Today both beekeepers and consumers are concerned with honey purity It is the beekeepers' job to make a clean, pure product.

Fortunately the tracheal mites are much less of a problem in the South than the North. If you suspect a problem you can always test your bees, or have them tested, to see if you need to treat.

Nosema is always present everywhere but again with the greater number of flight days during the winter months it is a lesser problem in the South than the North. If you are in an area where cold and rain keep the bees confined for long periods of time then Autumn treatment would be wise. The timing would depend on your climate. Late September through October would be the general period of time for a gallon of 2:1 sugar syrup with the rounded teaspoon of Fumidil-B®.

Bees are more apt to take the syrup if the weather has them confined to the hive for a few days. Here again being a good weather watcher pays off.

The continual exposure to oxytetracycline (Terramycin®) has caused the bacteria for American foulbrood (AFB) to become resistant. With the reductions on extension services and inspection services every beekeeper should attempt to recognize the signs of this disease. Disease recognition makes an excellent program for local beekeeping associations meetings. As more beekeepers are able to recognize AFB the spread of it can be better controlled, lessening the need for prophylactic use of

medicines that lead to resistance.

So far the main thing we have to deal with is *Varroa*. Here it makes no difference where in the country you live. *Varroa* will be present. One of the frustrations of dealing with *Varroa* is its unpredictability Therefore the combination of using queens for resistant stock, screened bottom boards and testing for the level of mites can give you a good idea of whether to treat or wait.

July is a great month for *Varroa* population explosions. Test those bees in mid-July The powdered sugar test is quick and easy and saves bees. The sticky-board mite count – the sticky paper placed under the screen – is excellent. Get yourself a magnifying glass if you cannot distinguish mites from junk.

Don't be a left-behind beekeeper or an enthusiastic member of the Procrastinators Society You will appreciate your Winter planning at the next harvest – well, weather permitting. BC

Ann Harman is looking for her down coat in the heat of July, somewhere inside her home in Flint Hill, VA.

?DO YOU KNOW?

AHB & Other Challenges

Clarence Collison
Mississippi State University

Beekeeping is a fascinating hobby for many beekeepers, unfortunately it is not without numerous problems and challenges. In the southwestern United States, beekeepers, queen producers and the general public now have to deal with Africanized honey bees. As Africanized honey bees have migrated westward, it is evident that we are experiencing a "collision" of two diverse populations of honey bees (Africanized vs European) and the consequences of this collision are not realized fully yet. Further studies in honey bee population genetics will be required to understand the invasion process and the ultimate impact on the U.S. beekeeping industry. A somewhat similar situation is found in parts of Asia where it is difficult to maintain *Apis cerana* and *Apis mellifera* together in the same geographic area. Other recent challenges for American beekeepers are concerned with parasitic mites and a possible relationship with viral diseases.

Please answer the questions to determine how familiar you are with these important topics.

Level 1 Beekeeping

1. ___ As feral Africanized honey bees have spread through the southwestern United States, European-type honey bees have been converted to Africanized honey bees. (True or False)
2. ___ In areas that have Africanized honey bees, the European queens mate disproportionately with African drones in comparison to European drones. (True or False)
3. ___ Virgin queens fathered by African drones emerge as much as a day earlier than European-patriline queens. (True or False)'
4. ___ The African queens that were shipped to Brazil in 1956, were accidentally released, and ultimately ended up in southwestern United States originated from:
   A. South Africa
   B. Ghana
   C. Sudan
   D. Congo
   E. Ethiopia
5. ___ Africanized honey bees are more selective than European bees in there choice of nest sites. (True or False)
6. ___ The bee geneticist that was responsible for transferring African honey bee queens to Brazil in 1956 was:
   A. Lionel S. Goncalves
   B. Warwick E. Kerr
   C. David DeJong
   D. Hilario Ibarro Gomez
   E. Ernesto Guzman-Novoa
7. ___ European honey bees in comparison to Africanized honey bees collect nectar with less sugar, carry smaller nectar loads, forage at lower temperatures and work a longer day. (True or False)
8. ___ The Africanized honey bee first entered the United States by natural migration from Mexico in 1990 and was found near _____.
   A. McAllen, Texas
   B. Brownsville, Texas
   C. Weslaco, Texas
   D. Hidalgo, Texas
   E. Harlingen, Texas
9. ___ Africanized drone honey bees migrate (drift) into European honey bee colonies in large numbers, thus indirectly impacting European drone production. (True or False)

The eastern honey bee (*Apis cerana*) and the western honey bee (*Apis mellifera*) are two species of honey bees that are closely related to each other.

10. ___ The eastern honey bee produces parallel combs that are closer together and have smaller cells in comparison to those produced by the western honey bee. (True or False)
11. ___ Crossbreeding between *Apis cerana* and *Apis mellifera* fails to produce viable offspring. (True or False)
12. ___ *Apis cerana* and *Apis mellifera* share the same sex attractant. (True or False)
13. ___ The western honey bee produces colonies that are larger in size than those produced by the eastern honey bee. (True or False)

Advanced Beekeeping

14. ___ The hemolymph of honey bees infected with this virus is milky white and contains many spherical to red-shaped viral particles.
   A. Acute Bee Paralysis Virus
   B. Filamentous Virus Disease
   C. Bee Virus Y
   D. Cloudy Wing Particle Virus
   E. Chronic Bee Paralysis Virus
15. ___ Virus associated with amoeba-infected

honey bees.
A. Chronic Bee Paralysis Virus
B. Egypt Bee Virus
C. Arkansas Bee Virus
D. Bee Virus X
E. Kashmir Bee Virus

16. ___ Continuity of sacbrood infection within a colony from year to year is provided by adult bees in which sacbrood virus multiplies. (True or False)

17. ___ Africanized honey bees found in the United States have been shown to be direct descendents of the Brazilian African queens through the analysis of mitochondrial DNA. (True or False)

Sex determination in honey bees is determined by a single gene with different alleles.

18. How many sex alleles does a drone have? (1 point)
19. Females (queens and workers) have how many sex alleles? (1 point)
20. Please explain what happens when you get an egg with identical sex alleles. (1 point)
21. For the following two genotypes, please give the sex of the resulting larvae. (2 points)
X_3X_4, X_2X_2

The Environmental Protection Agency (EPA) has granted several states a section 18 emergency request for the use of Apilife VAR for the control of *Varroa* mites.

22. Apilife VAR tablets can be used to make ___ treatments per year
A. Five
B. Three
C. One
D. Four
E. Two

23. Apilife VAR treatments should not be made when the temperature is above ___.
A. 90°F
B. 75°F
C. 95°F
D. 80°F
E. 85°F

24. An Apilife VAR treatment consists of ___ tablets.
A. Two
B. Five
C. Three
D. One
E. Four

25. Thymol, the major component in Apilife VAR is a commonly found constituent in many herbs. (True or False)

Answers On Next Page

?Do You Know? Answers

1. **True** When Africanized honey bees immigrate into an area where there are already established populations of European honey bees, over time only marker genes for the Africanized honey bee population can be found. Since European honey bees and Africanized honey bees can interbreed, the loss of European honey bee genetic markers indicates that the Africanized honey bees have some mating advantages over the Europeans.
2. **True** European queen honey bees mate disproportionately with African drones in areas that have both European and African honey bees. This results in rapid displacement of European honey bee genes in a colony. Part of the reason for this phenomenon is because African honey bee colonies produce and maintain more drones per colony than European honey bees, especially when queens are most likely to be mating.
3. **True** Virgin queens fathered by African drones emerge as much as a day earlier than European queens fathered by European drones. This enables them to destroy rival queens that are still developing within the colony.
4. A) South Africa
5. **False** Africanized honey bees have developed unique traits for both individual and colony survival. Africanized honey bees are far less selective than European bees in their choice of nest sites, which allows the rapid buildup of feral populations in an area. Africanized bees also accept smaller nesting cavities than the Europeans. Compared with European honey bees, the Africanized honey bees will nest almost anywhere it is protected from the weather, even underground. Except for rare occurrences, Europeans nest only in cavities above ground.
6. B) Warwick E. Kerr
7. **False** Africanized honey bees are opportunistic foragers in contrast to European honey bees. Africanized bees are more solitary foragers and excel when pollen and nectar are scarce and conditions adverse. Africanized honey bees collect nectar with sugar concentrations as low as 10%, carry smaller nectar loads, make longer trips, forage at lower temperatures and work longer days in comparison to European honey bees.
8. D) Hidalgo, Texas
9. **True** In areas where both European and Africanized honey bees coexist, Africanized drones may rapidly build up their populations at the expense of local European drones. Africanized drones extensively drift into European colonies, while Africanized colonies rarely accept foreign drones. Through a feedback mechanism controlling drone production, the reduced number of drones in the Africanized colonies from which the invading drones had come stimulates further Africanized drone production, and the excess number of drones in the invaded European colonies inhibits European drone production.
10. **True** Both the western (*Apis mellifera*) and eastern honey bee (*Apis cerana*) have nests that consist of several parallel, vertical combs. Dark cavities are usually used as nesting sites. The combs built by western honey bees are separated from each other by about ½ inch. Those of the eastern honey bee are slightly closer together. In addition, the eastern honey bee's comb is composed of just under seven worker cells per linear inch in comparison to five per linear inch for western honey bees.
11. **True** *Apis cerana* and *Apis mellifera* are separate species that are closely related. Crossbreeding between the two species does not produce viable offspring.
12. **True** Both the eastern honey bee and western honey bee share the same sex attractant, which makes it difficult to maintain them in the same geographical area.
13. **True** *Apis cerana* (eastern honey bee) does not produce as large a colony as *Apis mellifera* (western honey bee). Thus it is kept in smaller hives by beekeepers and produces less honey in comparison to the western honey bee.
14. B) Filamentous Virus Disease
15. D) Bee Virus X
16. **True** Sacbrood virus multiplies in several body tissues of young larvae but they continue to appear normal until after they are sealed in their cells and die. The disease normally is most noticeable at low levels in the spring and disappears in late summer. This is because adult bees detect many larvae in the early stages of sacbrood and remove them from the bee colony, and because the virus quickly loses infectivity in the dried remains of those that are left. Continuity of infection from year to year is provided by adult bees in which sacbrood virus multiplies in their hypopharyngeal glands without causing obvious disease.
17. **True** Numerous DNA (the chemical genetic code) studies have revealed that feral Africanized bees have largely retained their African genetic integrity as they migrated through Central America, Mexico and southwestern United States. The study of mitochondrial DNA has shown that Africanized honey bees are direct descendants of bees from South Africa (daughters and sons receive their mitochondrial DNA through eggs from queens but not sperm from drones). These results suggest a continual maternal lineage of bees in Central America, Mexico, and U.S with those imported into Brazil in 1956.
18. One
19. Two
20. Eggs with two identical sex alleles have a lethal condition and the larvae are removed by worker bees soon after egg hatch causing a spotty brood pattern.
21. X_3X_4 = normal female; X_2X_2 = diploid drone (workers recognize and remove the homozygous larva soon after egg hatch).
22. E) Two
23. A) 90° F
24. C) Three
25. **True** Thymol is a commonly found constituent of many herbs. It is found in thyme, oregano and basil.

There were 13 points in each level this month. Check to determine how you did. If you scored less than 6, do not be discouraged.

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

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GLEANINGS

JULY, 2004 • ALL THE NEWS THAT FITS

Here's How
U.S. QUEENS TO CANADA

The Canadian Food Inspection Agency (CFIA) announced the change of regulations to import bees into Canada from the continental U.S. The new regulations will allow the import into Canada of honey bee queens and their attendants from the U.S. The new regulations came into force on May 19, 2004. This change of regulation is in response to the requests of Canadian beekeepers, the changing animal health status of Canadian honey bees and a risk assessment undertaken by the CFIA. The risk assessment has determined that the importation of honey bee queens will pose a lower risk than packaged bees of introducing new bee diseases into Canada.

The new regulations require the following documents to presented at a port of entry in Canada: 1) Import Permit issued by the CFIA, 2) Health Certificate, and 3) Invoice. An additional provincial import permit could also be required as stated in provincial regulations

INSTRUCTION FOR PREPARATION OF DOCUMENTATION:

1. IMPORT PERMITS: Import permits are issued to the Canadian beekeepers by the CFIA. It is suggested to get a multiple entry permit that would allow to import several shipments through the season with the same paper work. To get a provincial permit, fax a copy of the CFIA permit to the provincial Apiculturist. For Alberta beekeepers contact Dr. Medhat Nasr (Fax number 780-422-6096) to get Alberta Permit.

2. EXPORT HEALTH CERTIFICATE. The export country issues the health certificate. It must include all statements and information as required by the Import Permit. It should clearly describe the imported animal (Honey Bee Queens with attendants in 3-hole cages) and country of origin. It should also state that queens originated from apiary *certified free from Africanized genetics* based on Mitochondrial Polymerase Chain Reaction-DNA (PCR_DNA) test results of the progeny of the breeder queens. Africanized bees should not, in the past year, been detected *within 100 miles of which the queens originated*. The queens are also originated from apiary certified free from visible clinical evidence of American Foulbrood, European foulbrood and *small hive beetles*. *Varroa* is not detected or is under 1% (1mite per 100 bees tested). Canady in queen cages does not contain honey. *Inspection should be done by an inspector of the US Animal and Plant Health Inspection Service (APHIS)*; or, by an inspector designated for such purposes by APHIS and endorsed by an official APHIS inspector. For details about inspection protocols please check this Website: airs-sari.inspection.gc.ca/airs/airs_requirements.asp

3. SHIPPING QUEENS: Exported queens and attendant workers should be hand picked and placed in 3-hole cages. Packing of the queen cages into containers for export should be done in an enclosed indoor area that is not accessible to the small hive beetle. Queen candy in shipping cages must not contain honey, or, if honey is used, the honey must have been irradiated to an approved level.

ADDITIONAL INSTRUCTIONS: Upon arrival at the first port of entry, the animals will be subject to inspection by an inspector of the CFIA and if found acceptable, will be eligible for entry into Canada.

CFIA Regional Office in Western Canada, Dr. Ken Orchard, **Veterinary Program Officer 403.292.5825 Fax: 403 292 6629,** orchardk@inspection.gc.ca Room 654, 220 4 AVE SE, Calgary, Canada AB T2G 4X3

BUT P.E.I. DOESN'T WANT THEM

A Prince Edward Island beekeeper called for the province's ban on importing bees from the U.S. to be ended.

Daniel Ficza told the Canadian Broadcasting Corp. that he buys his queens from Australia and New Zealand and they can't live through the Canadian Winter.

He said the number of new bees living through the Winter is dropping – he has lost 25% of the queen bees since last Fall.

Ficza said the imports are of poor quality. "I had many queens that were just no good," Ficza said. "Legs missing off queens. They just don't build up."

He said U.S. bees make more honey than other imports.

"They made a tremendous crop," he said. "I'm talking 250 pounds the very same season."

The CBC said while the Canadian Food Inspection Agency is lifting the U.S. bee ban put in place 15 years ago, the P.E.I. government won't be lifting its provincial ban.

Bees from the U.S. may carry the tracheal mite and thus far the mite has not been found in P.E.I.

P.E.I. ag. dept. spokesman Chris Prouse told the CBC that the province's beekeepers will be able to breed stronger bees this year.

P.E.I. is allowing the import of eggs and sperm from Ontario produced by bees that originated in Russia, giving them a better chance of surviving a P.E.I. Winter. – *Alan Harman*

OBITUARY

Dr. Patti Elzen, Research Entomologist at the USDA Weslaco, TX Honey Bee Research Lab, passed away unexpectedly on June 5, 2004. A memorial service was held on June 10. Dr. Elzen was involved in a wide variety of research projects ranging from Small Hive Beetle, AFB, *Varroa* and other pests, all from a sustainable agriculture and IPM perspective. Her work in Florida, with James Baxter and others on Small Hive Beetle led to most of the current knowledge U.S. beekeepers have on this newest pest.

Dr. Elzen received her BS at UFL, Masters at TX A&M and PhD at LSU. She had been at the Bee Lab since 1996.

Beekeeping Qualifies
SARE GRANTS

The Northeast Region Sustainable Agriculture Research and Education (SARE) program recently awarded $580,961 in grants to train Cooperative Extension and other agricultural professionals who work with farmers in the methods and concepts of sustainable agriculture.

This year, the seven funded projects include training in forest farming, organic production, legal issues in farming, improved nutrition, institutional purchasing of local food, pasture management, and the use of high-tunnel greenhouses to extend the growing season.

Continued on Next Page

4th Year In A Row

SUGAR USE DOWN

U.S. deliveries of sweeteners for 2003 are estimated at 20.629 million tons. Sweeteners include refined sugar, corn sweeteners (high fructose corn syrup (HFCS), glucose syrup, and dextrose), honey, and other edible syrups. With the exception of edible syrups, deliveries are down from 2002 in each of the sweetener categories. Especially notable is the decrease in domestic deliveries of refined sugar of 216,000 tons and of HFCS of 176,000 tons. On a per capita basis, U.S. sweetener deliveries for 2003 are equal to 141.8 pounds, down 4.4 pounds from 2002, and down 7.2 pounds from the per capita high, set in 1999, of 149 pounds.

Prior to 1995, sugar contained in imports was pretty much offset by sugar contained in U.S. food exports, indicating only a minor positive adjustment to total deliveries. Beginning in the 1995-96 period, sugar-containing product imports started increasing at a faster rate than U.S. sugar-containing product exports. Added sugar from imported products has grown from 83,000 tons in 1996 to 535,000 tons in 2003. On a per capita basis, the sugar in net imported product added 3.7 pounds to total per capita sweetener availability in 2003.

Estimates of human consumption of refined sugar and HFCS have continued to decline after reaching record-high levels in 1999. Per capita consumption of domestically delivered sugar is estimated at 206 calories per day. Adding in sugar from estimated net imported product brings the total to 218 calories per day, about the same level as in 1993. Daily average intake of HFCS in 2003 is estimated at 205 calories, down 10 calories from 1999.

29 Women Wrestlers, 14,000 Pounds of Honey

AMBER LADY FROM LITHUANIA

21-year-old university student, Ernesta Gotautaite, won first prize in the honey wrestling competition Amber Lady, which was held for the first time in Lithuania and the world. Gotautaite, four-time Lithuanian wrestling champion and junior student at the Lithuanian Academy of Physical Education, won Citroen C3 for the best performance of wrestling in honey.

A total of 29 young women – 24 main participants and five reserve players – fought in the honey ring during the wrestling show. About seven tons of honey were used for the 20 contests.

NEW ZEALAND SLOWS AFB

A 40-year campaign to eradicate American Foulbrood (AFB) from New Zealand is beginning to pay off – and is attracting interest overseas.

The AFB Pest Management Strategy Committee said the number of incidents of AFB is dropping because of the strategy of eradicating as opposed to treating the honey bee larvae disease.

Last year beekeepers burned 750 hives contaminated with AFB, the lowest number of hives destroyed since records began in the early 1960s. The number of hives destroyed peaked in 1989 at 3,500.

Under New Zealand legislation any colony that has one or more larvae or pupae showing AFB disease symptoms, must be destroyed along with any equipment or bee products from the hive.

This must be done within seven days of the disease being found.

The recommended way of destroying a hive is to block the entrance and pour gasoline on to its top bars and then set ablaze in the morning or evening when the bees are not flying to reduce the chance of the returning bees drifting into other hives.

The committee said its strategy has attracted interest from overseas because the usual practice is to treat AFB with antibiotics.

But this is becoming less effective as AFB becomes more resistant. Ironically, the arrival of *Varroa* has helped the AFB eradication by destroying feral bee populations. – *Alan Harman*

From New Zealand

MEDICAL HONEY TO UK

The newly established medical division of natural health products company Comvita Ltd. has secured its first export order for medical grade manuka honey.

The order from UK wound care product manufacturer Brightwake will be supplied by Comvita's Cambridge-based medical division formed after Comvita's recent acquisition of Bee & Herbal NZ Ltd. and Apimed Medical Honey Ltd.

Comvita received the export order soon after Brightwake was granted a drug tariff allowing its manuka honey wound dressings to be fully funded by the National Health Service and marketed directly to hospitals and clinics in the UK.

Comvita chief executive Graeme Boyd sees the formation of the Comvita medical division and its first export order as major milestones for the company and for the use of honey in international medical markets.

"The economic potential is huge and creates new opportunities for everyone involved in the production of manuka honey," he said. "This includes landowners and beekeepers."

Comvita chairman Bill Bracks said the launch of the medical division took the company toward the illness end of the health spectrum.

"Comvita has been traditionally positioned at the wellness end," he said. "Its focus has been directed at creating a condition of wellness. We are now moving down the continuum toward the medical end, the illness end."

"The medical end is driven mainly because we have a high degree of expertise and experience in dealing with manuka honey, having pioneered the growth of the manuka honey market.

"Manuka honey is a unique New Zealand product which offers a new method of treating otherwise untreatable wounds. Even the flesh-eating bacteria succumb to the high activity manuka honey."

Bracks said manuka honey fits specifically into the wound dressing market that is a key part of the huge medical devices market estimated to be worth NZ$40 billion internationally.

Newly appointed divisional manager Ray Lewis said Comvita has an innovation program backed by clinical trials.

He said research at Waikato University had identified an exceptional antibacterial property called UMF, or Unique Manuka Factor, which is present in some but not all manuka honey.

"UMF manuka honey provides a moist environment to promote healing and reduce scarring, and has been proven by medical science to be a natural solution for wound care," Lewis said.

"In supplying medical grade honey, a unique supplier accreditation program ensures product traceability and safety. The supplier network from resource to manufacturer can be audited for compliance. Safety's ensured not only for microbiological contamination but also for any chemical and physical contamination."

SARE ... Cont. From Pg. 57

Northeast SARE has funded 88 training projects since the professional development program began in 1994. The overall goal of the SARE Professional Development Program is to give Cooperative Extension, USDA-NRCS, and other agricultural professionals the training they need to help farmers adopt sustainable practices in the northeast region.

SARE is a USDA competitive grants program offering support to educators, researchers, and farmers. The Northeast SARE region includes Connecticut, Delaware, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, West Virginia, Vermont, and Washington DC. For more information about SARE grant opportunities, call 802.656.0471, or go to www.uvm.edu/~nesare/.

NZ *VARROA* SPREADS

While beekeepers in the South Island of New Zealand debated about how to stop *Varroa* destructor from reaching them, the mite didn't wait.

The Ministry of Agriculture announced it has detected *Varroa* in the north Canterbury region and immediately imposed strict movement controls.

"A *Varroa* mite was discovered in early June, in laboratory samples from the ministry's routine exotic disease surveillance activities," ministry *Varroa* program coordinator Paul Bolger said. "The samples are believed to come from a hive in the North Canterbury region."

The single mite was detected during a ministry *Varroa* surveillance program in high-risk areas of the South Island.

The discovery sent shockwaves through the South Island beekeeping industry. Previous government estimates had said the South Island's economy faced losing up to NZ$10 million a year for 30 years as well as a major impact on crops that bees pollinate if *Varroa* became established on the island.

Bolger said ministry exotic disease investigators are tracing the movement of any hives on and off the property and will contact other beekeepers in the region to determine whether any other hives are also infected.

"Beekeepers need to be aware that bees and hives must not be moved into, out of or within the North Canterbury region without permission," he said.

The controlled region includes Christchurch, the South Island's biggest city.

No further signs of *Varroa* were found in hives tested after the discovery of the single mite.

Bolger said testing of all hives owned by the beekeeper was continuing and would be followed by testing of hives within about six miles of the initial detection.

"Weather conditions were quite challenging and investigators had to clear snow from some hives before testing," Bolger said.

New Zealand Bee Industry Group chairman Milton Jackson said if *Varroa* was confirmed the bulk of the economic impact would hit the pastoral sector.

"The *Varroa* bee mite not only threatened the livelihood of beekeepers but primary industry sectors dependent on honey-bee pollination services," he said.

Canterbury regional council chairman Richard Johnson said if *Varroa* became established on the South Island the prognosis he had was that within 10 years, all feral bees and untreated bees would be dead.

Alan Harman

VA PAYS FOR BEAR DAMAGE

With beekeepers and legislators present, VA Governor Mark Warner signed into law changes to the Damage Stamp Act. The legislation authorizes compensation for damage to agricultural crops and equipment. The compensation is now payable for loss of beehives, equipment, and appliances caused by deer, elk, bear, or big game hunters. Senator Roscoe Reynolds and Delegate Ward Armstrong of Martinsville sponsored the legislation. Representing the state beekeepers at the signing were VA State Beekeepers' Assn. President Jack Hill, Robert Gibson of the Richmond Beekeepers, and Ervin Eanes of the Southwest Piedmont Beekeepers Assn., State Apiarist Keith Tignor and his daughter Dorian. Two additional bills supporting beekeeping were passed during the 2004 session of the General Assembly. The VSBA is grateful to Governor Warner, Sen. Reynolds, Sen. Watkins, Del. Armstrong and all senators and delegates of the General Assembly for their support of the state beekeepers. Each bill passed the VA Senate and House of Delegates without a dissenting vote.

OnLine Access Available

MANN LIBRARY DIGITIZES BEE BOOKS

The Hive and the Honeybee, a new digital library devoted to beekeeping literature, was launched this spring by Cornell's Albert R. Mann Library. Currently at ten volumes, the site (http://bees.library.cornell.edu) offers free internet access to the most significant titles from the E.F. Phillips Beekeeping Collection at Cornell.

In 1925, Everett Franklin Phillips, an apiculture professor at Cornell, started what is today one of the largest repositories of beekeeping literature in the world. "I wish to create an accessible storehouse of our knowledge of bees and beekeeping," he said at the time, reflecting his interest in directing people to the collective wisdom of beekeeping's elders.

But of course, accessing such a print collection has always required being in Ithaca. And as the classics in the field have gone out of print and become hot collector items on Ebay, they are even harder to get one's hands on. "Some beekeepers I've talked to haven't even heard of these books," says Mike Griggs, the former president of the Eastern Apiculture Society (EAS) and one of the site's principal organizers and promoters. Using the Internet to help people discover and read these classics is one of central goals of *The Hive and Honeybee*.

The project got off the ground in the fall of 2002 when the Eastern Apiculture Society donated $200 to digitize *Langstroth on the Hive and the Honeybee*, an 1853 work by the father of modern beekeeping, L.L. Langstroth. The society also offered to match the first $1000 donated by the beekeeping community, and in less than a year a variety of individuals and beekeepers associations fully met their challenge.

What's online now, and what will be down the road, is the result of a careful review of the literature by scholars, who produced a ranked list of the ninety most important works in the history of modern beekeeping.[1] The top ten went up first, and represent the founding fathers of the field. In addition to Langstroth, they include people like G.M. Doolittle, the father of commercial queen bee rearing; the Rev. Jan Dzierson, father of modern European beekeeping; and Moses Quinby, inventor of the first practical smoker and the father of modern commercial beekeeping.

Dewey Caron, a professor of apiculture at the University of Deleware, was one of the reviewers for the site. For him, this collection is a history whose real value will come from being read and used by beekeepers. "Digitizing helps make the record much more useful," Caron says. "It expands from just scholars to others who might have interests and helps to enable them to gain meaningful access."

A work in progress, *The Hive & the Honeybee* will expand as funding permits, and it is hoped that eventually all ninety titles can find their way online. Recently, the Tampa Bay Beekeepers Association donated $1000 and offered another thousand as a challenge grant through December 2004. If fully met, their donation and challenge will allow for twelve more volumes to be digitized, including old favorites such as John S. Harbison's *The Beekeepers Directory, or the Theory and Practice of Bee Culture* (1861) and T.W. Cowan's *Waxcraft, All About Beeswax* (1908).

To find out more about this growing collection and how to support it, please email Janet McCue, the director of Mann Library, at **jam7@cornell.edu** or Eveline Ferretti at **ef15@cornell.edu**.

[1] A complete list of the books may be found on the EAS website at www.easternapiculture.org/programs/DigitizingList.shtml

Display Advertisers

Bee Venom

Ed **Colby**

I recently saw a photo by a Chinese researcher that shows a human hand with a honey bee stinger sticking out of each knuckle.

Both Eastern and Western folk medicine credit beestings for curing or ameliorating a variety of human ailments, including joint pain and swelling. Curiously, Western scientists have been reluctant to support or dispel these beliefs through experimentation.

I can't say I believe or don't believe that bee venom therapy works. I once met a woman on the ski lift who had MS. When I asked if she'd ever tried beestings, she said, "Yeah, but the cure was worse than the disease."

Honey bees normally die when they sting you. The barbed stinger remains in your skin, and the bee literally tears herself apart when she flies away. We all know this. In the photograph, someone holds a bee with tweezers as she gives up her insect life to further human health and well-being.

I don't enjoy beestings. Never have. No matter how many times I get stung – which is a lot – beestings always hurt. A well-administered sting gets your attention, too. Admit it.

When I first started keeping bees, and I was still trying to adjust to the idea of getting stung, the Denver Post ran a story about a Colorado beekeeper. Lyle said he got stung "a hundred times a day." (Or was it a thousand?) "It pumps you up," he said. Like coffee, I suppose. But a hundred stings? In a day? Like any sucker, I believed what I read in the paper When I mentioned the article to my mentor (and Lyle's friend) Paul, he just chuckled and said, "Lyle's having some fun with the press."

I had the weirdest injury ski patrolling last Winter One day as I was skiing, right out of the blue, the back of my left knee started aching. I can't pin it to any particular fall, although I did have a few doozies over the Winter It felt like stretched muscle tendons. After a few days it quit bothering me when I skied, but it started to hurt to walk. This happened very near the end of the season. I always get aches and pains after skiing five days a week all Winter, but I heal in the Summer, so I didn't worry too much about it.

I avoid doctors when I can. On top of that, where I work they don't like to hear about knee injuries, so I kept my mouth shut and never filed a workers' compensation claim. The trouble was, once I stopped skiing in April, the ache got worse, not better Then the pain mysteriously moved from the back to the inner side of my knee, and eventually to the kneecap. The thigh muscles around my knee began to cramp. Two weeks after the season I walked with a pronounced limp. Ibuprofen and aspirin wouldn't touch it.

That's when I saw that photo. "Well," I thought, "I've got a sore knee. I've got bees. What's to lose?"

Our yard has some lovely dandelion patches. I put on shorts and wandered around. Whenever I spied a honeybee burrowed deep in a flower, I snatched the little darling between my thumb and forefinger and coaxed her into stinging my knee.

With the first sting I hissed a bad word. It hurt way more than your casual working-the-bees sting. But in the beeyard I scratch out the stinger right away. This time I left it in to continue to pump venom, so I could get the full medicinal benefit.

The first of anything unpleasant is always the worst. I stuck with my regimen for six stings. I allowed myself to get stung every place my knee felt painful or achy.

When Howard came by to drop Stuart off for his piano lesson with Linda, I showed him the stingers sticking out of my knee. "You're nuts," he said. Howard's an engineer, not a beekeeper, so for him getting stung by a bee would be a big deal. We beekeepers forget this. We get stung all the time, but if our neighbor gets stung just once out in the garden, he'll maybe remember it for the rest of his life.

Within a few hours, my knee began to swell. By evening, walking had become difficult. Modern medical treatment for joint injuries calls for cold and never heat. But ice didn't help. I thought what the hell. I headed for the local hot springs pool. In the hot pool, my pain vanished. I swam a few laps in the warm pool. Maybe I overdid it. I could barely make it back to the car.

Driving home I mused that it would make a wonderful story if in the morning I were miraculously healed. I'm always looking for the magic cure. But I'm also committed to the truth, and the new day proved merely to be my best in weeks. For an hour or two I could walk without much discomfort. It felt like I'd turned the corner

Now, two weeks later, I walk without a limp. But my knee's still a little achy, especially when I'm lying in bed at night. I ought to follow up with more beestings, because I'm pretty sure they helped. But now that I feel better, I just can't make myself do it.