OCT2003

Bee Culture

ROOT™
PUBLICATIONS
Catch The Buzz
www.beeculture.com

A CYCLOPS HONEY BEE DISCOVERED! During hive inspections in New Brunswick, Dick Rogers saw a very unusual site in one of the colonies it was a one-eyed worker honey bee! One compound eye that is. The specimen was collected alive and placed in an ethyl acetate killing jar (provided by Pam Craig, NBAFA, Fredericton) and brought back to Nova Scotia. Cory Sheffield, AAFC, Kentville generously offered his time to prep the bee for display. When time permits, a literature review will be conducted to find out if this type of deformity has been reported before, and if so, at what frequency. If any one else has seen this phenotype before, Dick would appreciate hearing from you (drogers@wildwoodlabs.com).

Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

OCTOBER 2003 VOLUME 131 NUMBER 10

FEATURES

800.289.7668 • www.BeeCulture.com

Publisher – John Root

Editor – Kim Flottum, Ext. 3214, kim@BeeCulture.com

Production Coordinator – Kathy Summers, Ext. 3215, kathy@BeeCulture.com

Circulation & Advertising – Dawn Feagan, Ext. 3220, dawn@BeeCulture.com

Publications Sales – Jim Thompson, Ext. 3255, jim@BeeCulture.com

Contributors

Steve Sheppard • Mark Winston • Clarence Collison

Ann Harman • James E. Tew

Malcolm T. Sanford • Wyatt Mangum

Subscription Information

U.S., one year, $21.50; two years, $41. Newsstand price: $3.50. All other countries, (U.S. Currency only), $15.00 per year additional for postage. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), October 2003, Volume 131, Issue 10, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Advertising

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

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

DEPARTMENTS & COLUMNS

KEEP IN TOUCH

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

MAILBOX

Timing Swarms

The last week of July, I had a bait hive or decoy hive in our backyard. I put one there each year and have picked up over 25 swarms in the last 30 years. Scouts were starting to look it over, so I got a bottle of latex paint and I put a drop of honey at the entrance. When a scout stopped to imbibe I marked her on the thorax, so I could time her. I'm not sure timing a scout is the same as timing bees when bee hunting, as they spend quite a bit of time at the decoy and probably do the same at the cluster. But it does give you an idea. The formula from A. Wenner is 'min x 150 – 500' The answer is in yards or meters. If a bee takes 10 minutes for a round trip, the cluster would be 1,000 yards away.

The ones I mark usually take the same time, every time, to come back.

This particular scout took 13 minutes which equates to 1,450 yards or ¾ of a mile. I can tell most of the time when the swarm will come or at least make a move to come. All or almost all of the scouts disappear from your decoy and stay at the cluster.

I was almost certain that this swarm wouldn't make it to the decoy in one shot and they didn't. About 10:30 scouts started to dwindle and by 11:00 not *one* scout was at the decoy. The bees were coming from the southeast and the wind was from the west.

At 11:15 scouts started returning and in 15 minutes it was the same as before – lots of scouts. This kept up until 2:00. In the meantime, my marked bee kept returning. I timed her again and they were only 400 yards away (six minutes) and instead of coming in from the southwest, they were flying due east.

At 2:00 scouts started to dwindle again, and I knew this time the swarm would make it. At 2:15 *ALL* scouts were gone. I waited a few minutes, then yelled to my neighbor who was putting a roof on, that a swarm would fly directly over his head. He gave me a quizzical look, but didn't say anything.

It wasn't over three minutes and I heard him holler, "Hey, those damn bees are here." It wasn't a large swarm, but still quite impressive, probably more to him than me.

He didn't ask how I knew they were coming. But the next day he asked if the bees went into the box. "What do those bees do, just move around the neighborhood?" I said "Yeah, here today, someplace else tomorrow." My answer was true, because I did move them to a beeyard the next morning.

About 3:30 I looked to see how they were doing and they were hauling in nectar and pollen. I saw my marked bee, now a forager. For two days I watched her make numerous trips from the decoy and back taking nothing with her except information I guess. I suspect she was in the hive or bee tree when she first came, and then they swarmed pretty close to the original hive. She had to *forget* about the old cite and remember where they clustered, plus remember where the decoy was.

All this inspired me to write a simple jingle.

The Bee, The Bee, an amazing thing.
From the tip of her tongue to the end of her sting.
The Bees, The Bees, been studied for ages.
Volumes of books and millions of pages.
The Bee, The Bee, more questions than answers –
Who picks the new home? Who teaches the dancers?
The Bee, The Bee with her hayseed brain.
Just an insect, I guess but so hard to explain.

James Cowan
Aberdeen, WA

Loosestrife - A Curse

I was surprised when I picked up my August issue of *Bee Culture* to find the cover picture of Purple Loosestrife.

Purple Loosestrife, contrary to your characterization of an "endangered" species, is an exotic and invasive species causing considerable problems and having a significant impact here in the wetlands and around the lakes of Wisconsin. Granted, the purple flower spikes appearing in late July and August are rather pleasing to the eye. But each flower stalk can produce over one million seeds and Purple Loosestrife propagates at a prodigious rate choking out the native plants. Purple Loosestrife has no natural enemies; none of the native bugs and critters seem to have an appetite for it, so it grows and reproduces unchecked. Look at the August cover picture closely; all you see is Purple Loosestrife growing in that upstate New York wetland—the natives are essentially gone! The "beetles" introduced by the USDA feed exclusively on Purple Loosestrife, and presently constitute the only reasonable control measure for this invasive species.

The Purple Loosestrife invasion is the "Africianized killer bee invasion" of the aquatic plant world!

Earl L. Cook
Springbrook, WI

•

I had to take note regarding your comment on purple loosestrife shown on the August cover of *Bee Culture*. Your remark regarding loosestrife becoming "endangered" needs some clarification. If this plant was endangered, the USDA's program of control would be a huge success.

Loosestrife is an aggressive invasive species, first introduced into northeastern North America in the early 1800s as an ornamental garden plant. Although it's noted as a honey producer by beekeepers, it has actually caused

Continued on Next Page

MAILBOX

major problems in wetland ecosystems. The establishment of loosestrife leads to a loss of plant and animal diversity in our wetlands. Loosestrife's high seed production and viability allows it to create dense stands that shade and push out native wetland species thereby depriving native animals of food and habitat.

The USDA's introduction of leaf and root feeding beetles is a biological attempt to control the plant but will not result in its elimination. Such control measures are less expensive and healthier for the environment than chemical controls.

As beekeepers, we should be concerned about the natural balance of the ecosystems on which we depend. Harm caused by the introduction of alien species is often not recognized until long after they have become established. Often we don't show much concern until we ourselves are directly impacted. The introduction of parasitic bee mites and the African honey bee are good examples.

Perhaps, in the future, *Bee Culture* could publish occasional articles on introduced plant species and educate readers concerning the problems these organisms create.

Ted Wolfe
Augusta, ME

Our Fungus & Beetles

Since 1997, we've been using "our fungus" – an entomphthoranean to control Formosan termites here via more than a thousand successful tree treatments. It also works very well on citrus whitefly. One foliar application is sufficient to keep our oranges free of this pest all year. It doesn't seem to harm bees at all – I can spray right over the top of hives. That's great – because I have to move bees out of citrus orchards in Plaquemines parish by May to keep them from getting killed out by pesticide spraying. My hives here in Orleans Parish have the distinction of being the first ones in the area to become infested with Small Hive Beetle. When I mixed beetle grubs with active fungus cultures, they merely turned black – but did not die. That was too bad. Worse yet, I found this insect was happily infesting a number of seven-gallon buckets of blueberry wine mash I had fermenting in my yard. The beetles and the grubs stayed at the top of the mash, where – presumably – they could find a little oxygen. This insect must have come from the Stelenbosch region of South Africa, where both beekeeping and winemaking activities are going on. Maybe they could be trapped with fermenting mash or old beer.

Adrian S. Juttner
New Orleans, LA

SMR's And Russians

My partner and I received two SMR breeder queens from Glenn Apiaries the first of July 2001.

The instrumentally inseminated (II) queens were of the red & yellow SMR lines.

The queens I raised (red line) were open mated to my best survivor queen, (Carniolan).

My partners (yellow line) were open mated to a Marla Spivak hygienic queens (Italian II queen) drones.

I tested my SMR bees for *Varroa* quite a bit. My partner did only Fall and Spring testing.

Of all bees tested for *Varroa* the SMR headed hives had the lowest *Varroa* counts. All had a *Varroa* count in Fall.

My open mated SMR queens tend to lay a spotty brood pattern and are average to below average honey producers. None of the SMR were aggressive.

The yellow line II queen started laying a spotty brood pattern after a few months. Her daughters also laid the spotty brood pattern so she was dropped from the program and my (red line) queen was used in her place.

We got a letter by Dr. Harbo saying spotty brood patterns were being observed in II SMR queens and he was looking for possible reasons. The yellow line queen fit the description.

My (red line) queen only laid what I would call a not perfect brood pattern and continued in use until the spring of 2003 when she became a drone layer. Her daughters did not lay the less than desirable brood pattern.

I've got the greatest respect for the efforts of the Baton Rouge lab and Glenn Apiaries. I would say the SMR queens produced as expected and may again try SMR breeder queens but will now try Russians.

My Russian queens (April 2003) are in production hives and have got the honey supers on. I spent quite a bit of time getting the queens introduced with problems but got 96 out of the 100 to take.

One of the problems was that the bees in the hive would not feed the Russian queens in the cages (I do not introduce with attendants as I get my queens in a battery pack).

When released the Russian queens would go immediately to a cell and drink honey.

Some introductions took over a week due to the bees trying to ball the queen. These were the hardest queens I have ever tried to introduce and can see why hobby beekeepers might have trouble.

Many beekeepers in the Midwestern Beekeepers gave up after the third Russian queen was balled or killed in the cage by the bees. These Russian queens were from different queen breeders so the problem is universal. My partner thought I was making a big deal out of nothing taking so much time introducing the Russian queens but I am glad I did.

I gave my partner a couple Russian queens to try. He is an excellent beekeeper and did use push in cages. He reported the same type of problems as the bees tried to ball one of the queens when released but the hatching brood did feed the Russian queens which was an improvement over my observations of non feeding while in the queen cage.

I also observed non feeding in the battery pack which involved quite a bit of extra work to keep those unused queens alive.

Bob Harrison
Odessa, MO

NEW

Insect Bites and Stings – A Guide to Prevention and Treatment. Harry Riches, 32 pages containing eight color photos. £3.50, International Bee Research Association, 18 North Road, Cardiff, CF10 3DT. www.ibra.org.uk or mail@ibra.org.uk

Are your barbeques, woodland walks and lazy days on the beach being threatened by nasty stinging and biting insects?

The International Bee Research Association has just published a booklet giving clear advice and guidance on how to avoid such misery and how to deal with the bites and stings if the bugs do get you.

This book is written by Harry Riches, a senior medical practitioner who has studied sting allergies, and focuses essentially on insects which may be troublesome in the outdoor environment. It covers ways of reducing the risk of bites and stings, gives advice on simple first aid treatment and allergy (hypersensitivity) to insect venom. In particular it looks at Mosquitoes, Horseflies, Harvest mites, Ticks, Bumble bees, Honey bees and Wasps.

This is a very useful and much needed handbook. It is clearly written and illustrated with 32 pages containing eight color pictures. No medicine chest or car glove box should be without one.

According to beekeeper and co-designer, Andrew Sperlich, the **Bee-O-Pac** is unique in that it consists of two virgin food-grade plastic frame halves which can be snapped together and inserted as a group of eight directly into a standard half frame without any modification. A comb foundation is embossed directly into the plastic containers so wax foundations are not needed for the bees to create the comb. At harvest time the frames break apart into 16 marketable units along preformed perforations, a lid is snapped on, and the combs can be sold without modification or repackaging. This means less chance of contamination because there is minimal handling of the product required. Also the size of the individual units is smaller than former comb packaging, about four ounces of comb as opposed to traditional packs of eight to 12 ounces, making the product more consumer-friendly for small households.

For information contact Bee-O-Sphere, 519.586.8289, nfapiaries@kwic.com, or visit www.aginnovation.ca/profile.

The Canadian government has given the beekeeping community in that country a temporary use Scheduling, known as C94-05, of reagent grade formic acid. This allowed the Ontario Beekeepers Association (OBA) tech transfer scientist Dr. Medhat Nasr to develop the Mite-Away™ Single Application Formic Acid Pad, and led to its manufacture in 1997 by NOD Apiary Products.

The Mite-Away™ pad was developed to be viable for the commercial beekeeper. The single application method was adopted within three years by 85% of the beekeepers in Ontario using formic acid.

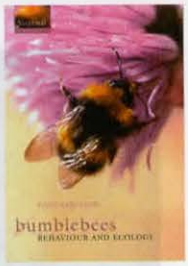
Recent improvements to the Mite-Away™ pad mean that formic acid can be applied effectively to colonies under a far wider range of conditions, spring and fall, and with just one trip to the bee yard. This second generation of the Mite-Away™ pad was renamed Mite-Away II™.

Dr. Elzen, from USDA, TX has set up some initial Mite-Away II™ efficacy trials in Florida with David Westervelt, and other trials are being set up in the Weslaco area, to monitor hive health as well as efficacy. Even the organic farming community approves of formic acid! In the U.S., beekeepers can ask their respective State Apiary Inspectors to apply for a Section 18 Emergency Registration.

For information check out www.miteaway.com.

Beehive Construction. Peter Sieling. Garreson Publishing, Bath, New York 14810. $10.00 postage paid, 23 pages.

If you own a table saw with a couple of blades, Peter Sieling will show you how to make your beekeeping equipment. This modest book has the perfect detail needed to easily construct equipment, with exquisitely detailed drawings. If you saw his articles in *Bee Culture*, you know what I mean. Lots of wood working hints and tips, and even some beekeeping advice. Peter has published articles in *Fine Woodworking, Better Homes & Gardens, Wood* magazines and other places, including *Bee Culture.*



Bumblebees, Behaviour & Ecology. David Goulson, Univ. of Southampton. 240 pages, 8 color plates, 30 illustrations. Soft cover. ISBN #0198526075. $45, Oxford Univ. Press, www.oup-usa.org.

Bumblebees have always been favored subjects for scientific study, but research has accelerated in recent years. Many new discoveries have been made with regard to their ecology and social behavior. Despite this, there is a great deal that we do not know about bumblebees. Their nests are hard to locate, so those of some species have never been found. Fundamental aspects of the behavior of many species, such as mating, have never been seen. Bumblebees are undergoing a widespread decline, but this has not caught the attention of the general public to the same extent as, for example, the plight of rare butterflies or birds. But bumblebees are probably of far greater ecological and economic importance than these groups because the pollination crops and the survival of many wildflowers depend upon them. This book draws attention to the importance of conserving dwindling bumble populations. It synthesizes the current state of knowledge of the behavior and ecology of these fascinating and charismatic organisms, and identifies some of the gaps that remain in hope of stimulating research.

If interested in bumblebees, consider also *Bumblebees*, published by University Press of CO, an excellent overview of biology, and especially identification. Available from A.I. Root Company, $25 postpaid in the U.S. 130 pages, color, soft cover.

Making A Bee-line, My Journeys in Sixty Countries, 1949-2000. Eva Crane, 327 pages, soft cover. Color. Available from International Bee Research Association, 18 North Road, Cardiff, CF10 3DT. £18.50 (including UK p&p).

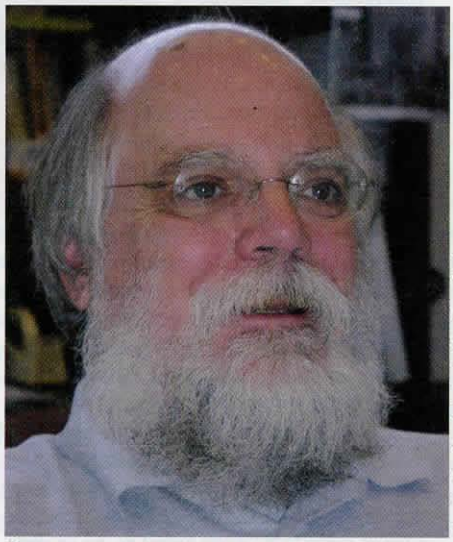
After a lifetime pursuit of bee knowledge Dr. Crane insists that she really is not at all interesting, but rather it is the places she has been to and the people she has met on those travels that are interesting.

It is an apt title for the golden treasure of facts and information that this lady has foraged for and brought back to her study in her hive.

This is a remarkable lady and her tales of journeys by dog sled at 20 below in Alaska, by dug-out canoe for hour after hour in the humidity of the Mekong delta or trailing migrating herds of wildebeest across the Ngorongoro Crater in a light aircraft, flow in amazing succession.

Everywhere she went she sampled the life of the local people. She went to share her beekeeping knowledge. Yet,she claims to have learnt much more than she taught. One thing is certain, Dr. Crane's visits were well off the tourist beat and way ahead of any rough guide that may now entice the more adventurous traveler.

If you are familiar with Dr. Crane's style and sense of humor, you will enjoy this book even more, and her humor has only increased. If not, you are in for a comprehensive report on the whole world of beekeeping and beekeepers. This is not a how-to book, nor an in-depth personality discovery. The pace will leave you breathless – from boat to train to horse to Asia to Alaska to Africa to Poland to Ohio. A remarkable story, by a remarkable lady.



INNER COVER

Last Christmas I spent a few days at a friend's home visiting, working on a couple of small projects, and just goofing off. Two guys, drinking a few beers, eating junk food, watching late movies you know. One activity that routinely gets sidelined during these mini-vacations is my relationship with Gillette. I don't shave. But then, after a few days, I normally return to the daily task, and return to looking, well, shaved, if not normal.

But this time, when I returned to the daily grind, after Christmas, I didn't resume that daily task. What you see above is the result.

Now I don't expect anybody to have an opinion about this. Well, hardly anybody. A few I ask. My boss has added his dollar's worth, mostly positive. A very few have offered opinions, and among this small group, the vote has been almost exactly split along gender lines, interestingly. You can guess which way if you want, or not. I'm not telling.

But this has been a real eye-opener for me. Besides not having to deal with that onerous task each morning, I'm treated differently in stores, banks, at meetings, even at work. There's just a tad more deference toward me I don't know if I appear older, wiser, meaner, richer, crazier, more or less liberal, or what, but there's been a difference, and it's been pleasant.

And, I'll add, it's just a whole lot easier, a whole lot. No morning task, no evening task if you're headed out again. No missed spots, dull blades, no blades (I didn't use an electric, but always a blade), buying expensive blades (I always admired that marketing philosophy, free razor – buy the blades), or oops, I forgot it at home when on the road.

If I had known how easy this made life, I'd have done it 30 years ago. Yup. No surprises, no downside, the livin' is easy.

Ever notice how many old-time beekeepers have the same thing? A.I. had a beard, though not terribly long. C.C. Miller, lots of them, though it was more stylish then. Another bearded beekeeper recently told me that they also prevent bees, once inside your (leaky) veil, from immediately stinging you somewhere on the face, since they get caught up in the tangle gives you time to dispatch them first. And that's true I've found out. But, like when one gets stuck in your hair (a long ago fond memory for me) once they get caught, and scared, they go for the scalp. If they can't go up, then it's down and hammer it home. It's the same with the stuff on your chin. Once tangled, they seem to have only one goal causing serious discomfort.

In late August I was helping my friend Buzz handle the honey from our club's bees, and from my bees. I was uncapping. Digging frames out of boxes, waxed and welded together, cleaning top and bottom bars, and sides if needed, scraping all the burr comb with honey and throwing it in the bucket, loading, then unloading frames into the chain uncapper he uses, and doing it again and again and again. Even with frequent rinses, my hands were mostly all-the-time covered with warm, slippery honey. Dripping, fingers-sticking-together covered. Hive tool slippery, lugs slippery, top of the chain uncapper slippery the way it usually is when doing this job.

Enter the errant bee. Usually those that make it into the honey house in a still-left-in-a-bee-blown-super, exit the frames and head for one of the lights. One didn't. It made the proverbial beeline for my chin. Instantly tangled, she started that burrowing behavior you recognize (and I remember) from bees in your hair. What to do? What to do?

Well, grabbing a handful of beard, trying to locate a squiggly bee in there somewhere, finding and dispatching her, then leaving a half pound of honey dripping from your chin is what you do. Fast. And then, to keep the rest of them from investigating a face full of honey, and the alarm pheromone from a squished bee, you go wash your face.

This, then, is the down side I've found. But it's a small, albeit sticky price to pay for the freedom the rest of the year.

No, you don't need an opinion, and I don't wear hairnets when uncapping. And a ding on the chin once or twice is worth all the rest. Now, I've got to get some of that stuff Mark Winston uses.

•

Eighteen years ago, my then 10 year old daughter picked, after much deliberation, a female kitten out of a litter of six equally attractive choices. This was the largest female of two from a litter of generally petite purebred Siamese.

Over the years I've made mention of this delicate, dainty killer. A fast and ferocious hunter and excellent mouser, she also had a somewhat cranky side toward people. Or me anyway. But not too bad, and not often bloody.

She had a definite territory to defend, which, when younger, included my yard, my neighbor's yard, the closest half of an 11 acre field out back, and the whole of the six acres across the road. She actually used to watch for cars before crossing that road. She always had a healthy respect for something that large and loud.

Continued on Page 62

Changes

OCTOBER – REGIONAL HONEY PRICE REPORT

What's Bugging Your Bees?

	2000	2001	2002	2003
Tracheal Mites	3	3	3	3
Varroa	1	1	1	1
R AFB	9	5	7	6
Chalkbrood	6	5	3	4
Skunks	5	6	4	5
Bears	8	7	6	7
Prices	2	2	2	4
SHB				8
Queens				2

What's bugging your bees this year? The chart shows what the problems are, and how bad our reporters think the problems are. We added a couple this year, SHB and queens, and took out a couple, EFB and AFB since they weren't on the radar much.

Trends: Tracheal mites haven't gone away, *Varroa* is *still* the No.1 problem. Interestingly, queens rank right up there this year. But of note – chalkbrood hasn't gone off screen, and prices, finally, are lessening as a problem. Researchers take note – *Varroa*, queens, Tmites and chalk all, still, need attention.

Ranking by Region
(1-worst; 9-least)

Region 1: *Varroa* and queens #1 & 2; skunks and SHB #8&9.

Region 2: *Varroa* and tracheal mites #1 &2; RAFB and SHB #8 & 9.

Region 3: Tracheal mites and honey prices #1 & 2; AFB, Bears and SHB tied for #9.

Region 4: *Varroa* #1, Tracheal mites and honey prices tied for #2; Chalk and Bears #8 & 9.

Region 5: *Varroa* and SHB tied for #3; Bears and queens tied for #9.

Region 6: *Varroa* and queens #1 & 2; Bears and SHB #8 & 9.

Region 7: *Varroa* and queens #1 & 2; SHB and Bear #8 & 9.

Region 8: Queens and *Varroa* #1 & 2; SHB and Bears #8 & 9.

Region 9: *Varroa* and honey prices #1 & 2; SHB and Bears #8 & 9.

Region 10: *Varroa* and queens tied for #1; SHB and Bear #8 & 9.

Region 11: *Varroa* #1; Skunks and queens tied for #2; SHB and Chalk #8 & 9.

Region 12: Queens and tracheal #1 & 2; SHB and Bears #8 & 9.

	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	1.36	1.35	1.30	1.25	1.50	1.21	1.45	1.62	1.50	1.50	1.27	1.36	1.21-1.62	1.39	1.40	0.98
55 gal. Amber	1.10	1.10	1.20	1.20	1.40	1.23	1.37	1.38	1.09	1.40	1.38	1.36	1.09-1.40	1.27	1.24	0.93
60# Light (retail)	104.50	96.94	84.00	91.31	97.82	95.00	99.88	104.40	100.00	76.50	100.00	97.82	76.50-104.50	95.68	101.97	76.56
60# Amber (retail)	91.67	92.19	94.12	87.40	94.12	76.50	97.50	97.50	90.00	76.00	100.00	84.00	76.00-100.00	90.08	94.74	70.51
Wholesale Case Lots																
1/2# 24's	37.33	30.92	35.66	36.38	35.66	32.00	36.64	35.66	35.66	35.76	24.00	35.66	24.00-37.33	34.28	37.26	32.94
1# 24's	56.27	44.05	56.40	50.12	61.22	58.00	55.44	56.95	49.92	69.44	77.40	55.70	44.05-77.40	57.58	57.13	46.47
2# 12's	52.04	41.75	54.00	46.67	46.26	47.00	50.91	60.00	45.20	57.84	60.00	52.20	41.75-60.00	51.16	50.57	43.40
12 oz. Plas. 24's	49.53	38.28	37.00	47.24	50.53	50.00	45.16	45.06	40.44	47.76	49.40	40.80	37.00-50.53	45.10	43.65	38.17
5# 6's	52.43	39.98	42.98	50.84	42.98	42.98	51.32	50.00	54.60	61.26	50.00	42.98	39.98-61.26	48.53	52.52	45.70
Quarts 12's (**NEW**)	64.50	72.12	78.00	68.29	78.39	87.33	75.35	73.26	84.00	91.50	76.70	78.39	64.50-91.50	77.32	72.37	
Pints 12's (**NEW**)	46.80	37.35	46.51	40.94	46.51	44.33	46.77	42.78	48.00	60.06	45.00	46.51	37.35-60.06	45.96	43.36	
Retail Honey Prices																
1/2#	2.22	1.87	2.53	2.33	1.89	3.25	2.21	2.32	2.53	2.26	3.12	2.53	1.87-3.25	2.42	2.51	1.88
12 oz. Plastic	3.25	2.54	2.95	2.85	3.00	3.79	2.73	3.05	3.35	3.40	3.60	2.60	2.54-3.79	3.09	2.92	2.57
1 lb. Glass	3.39	2.96	3.50	3.55	3.00	3.99	3.26	4.08	3.82	3.99	4.56	3.50	2.96-4.56	3.63	3.68	3.02
2 lb. Glass	5.94	4.84	5.50	5.26	6.25	5.99	5.74	6.32	6.21	6.90	6.53	6.00	4.84-6.90	5.96	5.95	4.91
Pint (**NEW**)	4.75	4.50	4.99	4.90	5.59	4.75	5.40	5.39	5.34	7.36	5.45	5.71	4.50-7.36	5.34	5.08	
Quart (**NEW**)	6.75	6.45	9.50	7.07	7.69	9.00	9.15	8.34	9.17	10.95	7.10	10.65	6.45-10.95	8.48	8.64	
5 lb. Glass	12.38	10.60	12.54	12.36	10.00	12.00	12.57	15.74	12.59	12.62	13.69	12.54	10.00-15.74	12.47	13.03	10.45
1# Cream	4.31	3.97	4.51	4.30	4.51	3.59	3.72	4.39	5.00	4.99	5.10	3.75	3.59-5.10	4.34	4.46	3.88
1# Comb	5.43	4.04	4.95	4.98	4.53	5.25	4.37	4.40	4.79	5.41	6.15	5.00	4.50-6.15	4.94	6.63	4.77
Ross Round	4.50	3.41	3.60	4.77	4.74	4.50	4.50	4.00	4.74	6.00	5.58	4.74	3.41-6.00	4.59	4.28	4.10
Wax (Light)	2.44	2.33	2.25	1.53	2.43	1.88	2.48	2.38	2.50	2.25	2.43	2.43	1.53-2.50	1.94	2.32	1.29
Wax (Dark)	1.81	1.60	2.08	1.28	1.26	1.68	2.53	2.00	2.00	2.26	1.55	2.46	1.26-2.53	1.86	1.96	0.96
Poll. Fee/Col.	47.50	38.50	37.50	38.00	35.00	40.00	43.50	39.00	34.00	47.06	55.00	33.00	33.00-55.00	40.67	37.77	37.36

THE "WHO YOU KNOW" DEPARTMENT

Alan Guebert

When it comes to labeling, do you think honey has a chance?

Somewhere along the line someone pulled you aside to share one of life's great truths. Look, they said, it's about time you learned that it's not *what* you know, but *who* you know.

The news came as a shock and you replied, "But that's not fair." Then your world-wise mentor dropped the Really Big Atomic Truth on you: Who said life is fair?

If life was fair Indeed, life isn't fair. If it were, ideas like country of origin labeling on red meat would not be fighting for their legislative lives in Congress.

Poll after poll has shown slam-dunk majorities of *American* consumers and producers want COOL on meat. Even export customers like Japan, South Korea and the European Union, more worried about food safety and quality for their citizens than the U.S., want COOL on American red meat.

But the House of Representatives and ag biz-driven USDA spent June and July contemptuously undermining it.

Mission accomplished. The effort succeeded because both were able to point to two COOL-hating, packer-loving U.S. livestock groups, the National Cattlemen's Beef Association and the National Pork Producers Council, as veneer-thin proof farmers and ranchers do not want it.

While the manure spreaders at NCBA and NPPC provided a brown patina of credibility for USDA to keep COOL corralled, this phony war was a who-you-know fight: USDA is thick with former NPPC, NCBA and ag biz officials who openly guard agbiz's back pockets from the inside.

Insiders galore. For example, you can't swing a dead cat inside USDA without hitting a former NCBA official. Secretary of Agriculture Ann Veneman's chief of staff, Dale Moore, served as NCBA's executive director of legislative affairs in Washington from 1997 to February 2001.

If NCBA wants to make its views known, do you think it has any trouble getting anti-COOL Ann's main man on the phone?

Additionally, when Veneman was up to her earrings early last Winter in producer calls to enact COOL, she tapped NCBA to gut-shoot it from the inside.

On November 7, 2002, Chuck Lambert, a 15-year NCBA veteran, was named deputy under secretary for marketing and regulatory programs, a sub-agency of the Ag Marketing Service. AMS, of course, is COOL's administrative agency.

Coincidence? And just to make certain USDA effectively sells its meatpackers-know-best message to farmers and ranchers, Veneman chose former NCBA staffer Alisa Harrison to be the department's deputy director of communication and press secretary.

Harrison joined NCBA in 1986, rising to executive director of public relations at the cattlemen's club before joining USDA in October, 2001.

The other red meat club, NPPC, has one of its own at USDA. Before being selected as administrator of the Grain Inspection, Packers and Stockyards Administration, USDA's meatpacker watchdog, Donna Reifschneider, an Illinois pork producer, served as NPPC president and as an executive committee member of the U.S. Meat Export Federation.

USDA, too. Ag biz giants can be found in many of USDA's wood paneled offices, too. The biggest is J.B. Penn, under secretary for farm and foreign ag services.

Before joining the department, Penn served more than a dozen years in Washington as senior vice president of Sparks Companies, the market-moving ag consulting firm whose client list is the social registry of ag's masters of the universe.

Scott Charbo, the former president of mPower3, "a wholly-owned subsidiary of ConAgra Foods Co.," according to his official USDA biography, is USDA's chief information officer.

USDA's assistant secretary for congressional relations is Mary Kirtley Waters who, "since 1986," notes her bio, "has served as a senior director and legislative counsel for ConAgra Foods" in Washington.

Not surprising. Given the trusting friends and alumni that farm groups, meatpackers and agribusiness have inside USDA, it's no mystery why producer-driven policy ideas like COOL are chewed to pieces before farmers and ranchers even taste their benefits.

It's business, don't you know. And besides, life isn't fair.

That's not what President Abraham Lincoln had in mind when he founded USDA in 1862. At its birth, Lincoln christened USDA the "people's department."

A better name. Today, a far more appropriate name would be the "who you know department." BC

The author is a freelance ag journalist who lives in Delavan, IL. He can be reached via email: AGuebert@worldnet.att.net.

RESEARCH REVIEWED

Explaining • Defining • Using

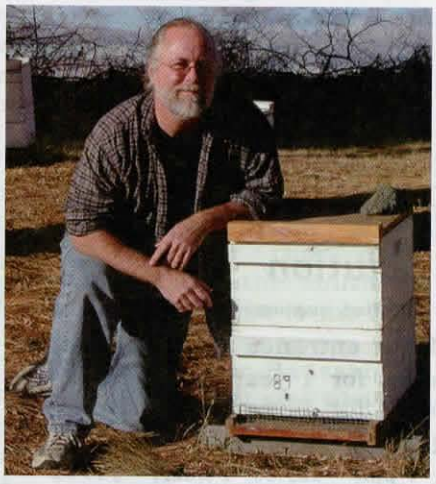
Steve Sheppard

"As mite levels increase to detrimental levels . . . mite population growth is negatively affected . . ."

The reproductive capacity of honey bee colonies via swarming or colony fission is a trait that varies widely among honey bee subspecies lineages. Tropically-adapted subspecies typically swarm more often than temperate honey bees. One plausible explanation for the reduced tendency to swarm in temperate zone subspecies is that it results from natural selection for colony sizes and food reserves that are adequate to endure the rigors of Winter. In tropical honey bees, including Africanized honey bees established in South America, the high rate of colony fission has been suggested to be a contributing factor in their tolerance of *Varroa destructor* infestation. However, the relationship between reproductive swarming and mite population growth is not well-studied.

Recently, Ingemar Fries and colleagues addressed the question of swarming and its possible effects on *Varroa destructor* populations (Fries et al, 2003). The authors set up an experimental honey bee population of 150 colonies on the island of Gotland, located some 90 km from the Swedish mainland in the Baltic Sea. Climatically, the island exists under "Nordic conditions." The researchers established a population of bees of mixed ancestry including Buckfast, Italian, Carniolan and Swedish (derived from *A. m. mellifera*) strains. In 1999, they infested all the colonies with mites by introducing groups of infested bees to each colony. They estimated that 36-89 mites were added to each colony. The queens were marked and colonies were maintained in eight different apiaries without any treatment for mites. Management was limited to feeding sucrose as needed during Winter preparations. Samples were taken to determine daily mite mortality (mite counts in debris using screened bottom boards), swarming rate (visual inspection of brood frame at periodic intervals) and mite infestation levels (taken directly from samples of infested worker bees).

The authors reported that in the Fall of 2000, one year after the start of the experiment, there were significantly fewer mites/bee in colonies that swarmed compared to those that had not swarmed. However, in 2002 there were no differences in the mite infestation rate related to swarming. When a statistical analysis was made that included the variable "late brood rearing", the authors reported that swarming actually did not have a significant effect on the mite infestation for either year. However, the presence of brood late in the year did have a significant effect on mite infestation levels. Although the authors found a significant relationship between late brood and high mite levels, they cautioned that they were unable to determine whether "late brood rearing produces increased (mite) infestation levels" or if high mite levels induce "late brood rearing as a compensatory mechanism for mite damages." They suspected the latter explanation was more likely based on the differences in late brood rearing between young and old queens.



Overall, the authors conclude that swarming of honey bees in a Nordic climate does not keep populations of *V. destructor* from reaching damaging levels. They found that mite populations were generally higher the second year and that swarming levels were lower the second year. The authors hypothesized that damage from the higher mite population in the second year likely resulted in the reduced level of swarming. The loss of colonies from 1999 to 2002 was impressive, with only 21 colonies surviving by Spring of 2002. Six of these colonies swarmed in Summer 2002, resulting in 27 live colonies at the end of the experiment (from 150 original colonies.

There was some encouragement to be gleaned from the findings of Fries et al. – when colonies die from high mite levels over the Winter, the associated virulent mites are also lost. The authors contend that horizontal transmission of mites (such as occurs during robbing of highly infested colonies) is much reduced under Nordic conditions, compared to honey bees in warmer climates. They further conclude that "as mite levels increase to detrimental levels...mite population growth is negatively affected..." This finding sets up a situation whereby natural selection can result in mites that are less virulent, as highly damaged colonies (and mites) are lost each

Continued on Next Page

RESEARCH ... Cont. From Pg. 13

Winter. In the absence of "propping up" highly mite-susceptible colonies through beekeeper applied miticides, natural selection may serve as a tool for breeding, by selecting mite-tolerant honey bee genotypes and bee-tolerant (=less virulent) mite genotypes.

The long terms results of the Gotland Island study will be a demonstration of the genetic capacity of the initial bee population of 150 colonies to adapt and survive their mite parasites and of the mites to adapt to allow the survival of their host bees and, consequently, themselves. The authors plan to continue to observe the study population of honey bees to determine the outcome – eradication or survival.

It is unlikely that most honey bee breeding programs in the U.S. will be undertaken without making use of some *V. destructor* suppression techniques, as loss of the initial genetic diversity in the bee population must be balanced with the benefits of increasing mite-tolerance in the bees. However, clearly there will be an advantage to maintain mite levels that are adequate to measure the differential responses (*i.e.* susceptibility) of the bees and to then use these data in the breeding effort. The long term outlook seems brightest when we envision reaching a host-parasite "balance," where both the host and parasite survive without intervention from beekeepers. At that point, further selection efforts for strong healthy colonies should continue to diminish the negative effects of mites. BC

Reference

Fries, I., H. Hansen, A. Imdorf and P. Rosenkranz. 2003. *Swarming in honey bees (*Apis mellifera*) and* Varroa destructor *population development in Sweden.* Apidologie 34: 389-397

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

Mark Winston

L'Occitane

"This amazing array of high-end soaps, balms, creams, and candles provides lessons to all of us beekeepers in how to get more value out of our apiaries."

I've had a beard one way or another for 37 years. I began sprouting facial hair during the conservative part of the 1960s, and all during high school was repeatedly hauled down to the principal's office for the sin of sideburns creeping down below the middle of my ears. Summers meant real beards, a profusion of goatees, mutton chops, and moustaches, with the end of Summer marked by shaving it all off for the first morning of school.

I graduated in 1968, grew a full beard during a subsequent camping trip, and it's remained ever since. My beard has been really long and really shaggy twice, first during my hippie days and more recently as part of a "who can grow their beard longer" contest, which I lost to a tobacco-chewing wildlife biologist. Now that I've sold out to the establishment, my beard is trimmed and neat most of the time, and I shave every few days along the edges.

And that is how I came to find L'Occitane, a remarkable store selling face, bath, body, and home products that has set a new benchmark for quality in merchandise that contains honey, royal jelly, and propolis.

I first encountered L'Occitane when my daughter returned from a school trip to France bearing a present for me, their special blend of shaving cream and a brush to apply it. I had previously used generic foam out of a can, but one application of L'Occitane's moisturizing cream transformed shaving from a chore to an ethereal experience, and I've never looked back.

Fortunately L'Occitane has a store in Vancouver where I can replenish my supply, and it was there that I found their newest line of products, Honey Harvest. This amazing array of high-end soaps, balms, creams, and candles provides lessons to all of us beekeepers in how to get more value out of our apiaries.

The name "L'Occitane" means "the woman from Occitanie," and is derived from the pre-medieval language Oc that was spoken in the ancient province that once stretched across the south of France from Catalonia to the Italian Piedmont. The company was founded by Olivier Baussan, a Frenchman from that area who became intrigued by capturing the subtle natural fragrances of the region into body, skincare, and fragrance products for men, women, and the home.

His first products were based on essential oils extracted from local plants, and today have diversified into natural extracts from olive oil, verbena, lavender flowers, and shea nuts. The company remains based in Provence, France, but today has close to 300 boutiques in over 47 countries and territories, with outlets placed in the highest-end shopping districts of major cities and tourist locations.

Each Fall L'Occitane produces a harvest collection based on new ingredients, and last year began its Honey Harvest line, including bee soaps, body balm, a foaming jelly for hair and body, honey candles, and honey cream for the face. All the products contain honey, and most also have a bit of royal jelly and propolis, the former for its "nourishing and energizing " qualities and the latter for its "soothing and anti-inflammatory properties."

But these are more than just products containing bee-identified components. Honey Harvest is an experience, a distinctive marketing package that pampers the customer, providing an entrée into a simpler, more natural world and a more elegant life style.

Every detail of a L'Occitane adventure is crafted from an astute understanding of their customers. Their stores are decorated in coordinated yellows, browns, and greens evoking the unusual light that bathes Provence in distinctive colors and inspired the French impressionist painters from more then a century ago.

The employees have real or vaguely French-sounding accents, and subtle fragrances permeate the air. The store smells like well, girls, Spring, a special bath, and now also honey.

And not just any honey, but the precious produce from the hives of Monsieur André Nevière, who like his father before him keeps his bees in the lavender fields in Provence. In the descriptive words of L'Occitane-speak, André's hives "face east to encourage the bees to gather nectar and pollen with the morning sun."

As for the honey, "The beekeepers of Provence still believe in its

Continued on Next Page

"Any beekeeper interested in expanding into the cream, lotion, and soap business would be well-served to spend a few hours having the L'Occitane experience."

mystic powers. Honey possesses naturally soothing, protective, nourishing and fortifying properties, moisturizing, softening, and stimulating, making it the ideal ingredient for sensitive skin for use by the whole family, universally recognized as healthy, rich, and gentle. By virtue of its range of colors and textures, honey is a marvelous ingredient that provides immense pleasure in all its variations."

Mystic powers, the morning sun, immense pleasure I don't know about you, but just reading their literature I was ready to buy, buy, buy. The goods are arranged on shelves in attractive displays replete with honeycomb-patterned motifs, antique-looking carvings of bees, and decorative jars filled with amber liquids. Beautiful, intricate labels designed with floral and bee motifs adorn each carefully packaged product, further inspiring commerce.

Their products extend beyond honey, royal jelly, beeswax, and propolis into value-added items. Hand and bath towels with vague hexagonal-like patterns woven into the fabric, and incense sticks whose fragrance evokes the mildness of honey, cater to customers whose willingness to remove funds from their wallets for anything bee-like seems to be insatiable.

The sales staff contribute to the imagery and ambience, highlighting the total immersion experience these products can bring. One young saleswoman described their honey-based lotions to me as being similar to putting honey all over my body, and another was, well, hungrier: "You put it on, you feel like toast covered in honey." I'll leave it to your own imagination to decide which image you would like to contemplate further.

What I find most remarkable about the L'Occitane feeling is that their products actually are as good as the hype, a standard not often reached by other bee-related stuff I've seen.

My personal favorite is the Honey Cream for the Face, which calms and appeases even the most sensitive skin. An initial whiff of this product first smells like a nicely-scented face cream, but there is an after-smell that is most definitely honey, and a high-quality aromatic honey at that. I was transported to lavender fields, sunny mornings, and languorous, mellow days, just like the hype said I would be. Amazing what a well-presented, high-quality, honey product can do for your day.

And for a beekeeper's income. These products are not for the faint-of-wallet. Small containers of face cream, foaming jelly, or body balm sell for $15-35 U.S., a box of small gift soaps for about $25, and a single bath towel will set you back about $35. The opportunity for these products to generate a lot of income from just a little honey should be obvious.

In my line of work, beekeepers, artists, and friends are constantly giving me bee things. I've sampled innumerable creams, lotions, polishes, and potions over the years. The L'Occitane products are the best I've seen, with the possible exception of a stellar hand cream given to me by a retired navy officer and his wife from England, and L'Occitane has no rivals when you consider the total marketing package the company brings to its Honey Harvest product line.

There are some lessons to be learned here, both in terms of product quality and marketing savvy. These types of products, produced and sold by beekeepers, tend to be either good-quality items with poor marketing, or not-so-good products with inflated marketing hype.

L'Occitane has put quality and savvy marketing together into a powerful package, and any beekeeper interested in expanding into the cream, lotion, and soap business would be well-served to spend a few hours having the L'Occitane experience.

For me, I'm off to the bath. First up is the Foaming Jelly for Hair and Body. I can't wait for this shower gel to transform from the rich, sweet, and melting texture of honey into a creamy lather with soothing and fortifying benefits.

Then a post-bath application of Body Balm that will leave my skin soft, velvety, and delicately perfumed, followed by lighting a Honey Candle with all the gentleness and luxury of honey and beeswax producing a feeling of relaxation and well-being in my home.

And then Sorry, dear reader, but it's time to draw the blinds. BC

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

The Two R's: A Paradigm Shift in Beekeeping

Malcolm T Sanford

"There's a new way of thinking for mite control."

By the time you read this, my good friend Laurence Cutts will have retired as Florida's Chief bee inspector. August 28, 2003 will bring to an end one of the longest-running tenures of a chief apiarist in the Sunshine state. The Florida beekeeping industry will be losing an official who by all accounts was responsible for getting the industry through some of its most challenging times. This statement was confirmed in a recent Florida Honey Bee Technical Council meeting by one of the state's largest beekeepers. Just as Laurence came on the bee inspection scene, the tracheal mite invasion of 1984 was in full tilt. Hard on its heels, *Varroa* mites were discovered in 1987 Laurence, first and foremost a beekeeper, saw the industry that had been on the no-pesticide-application-for-farmers side of the fence, tore it down to get to the other side. Like all of us, he was shocked at how quickly the industry adroitly stepped on to a pesticide treadmill of its own that continues to this day.

Africanized honey bees came to Texas and went west after 1990. There has been no colonization of this bee in Florida, only sporadic finds of swarms off ships. Laurence often jokingly takes credit for the fact that the bee has not spread east from the Lone Star state, but it is to his credit that incipient invasions from Pensacola to Tampa have been nipped in the bud by an aggressive trapping system run by his dedicated inspection crew.

Laurence has been a champion for Florida beekeepers obtaining chemical treatments for their bees as the mite then beetle scourges appeared. He helped push through registration of Apistan® (fluvalinate) and Miticure® (amitraz), only to see the latter material summarily removed from the market due to lawsuits by the beekeeping industry. When mite resistance to fluvalinate began to appear, he was again at the forefront to obtain the emergency section 18s necessary to begin to use the alternative material coumaphos (CheckMite+®). He has been successful in getting these renewed as well, something EPA is loath to do for this kind of label. Again he saw much of his efforts evaporate as the resilient mite population acquired and continues to develop resistance to this class of potent nerve toxins (organophosphates). He now is involved in helping the registration of the soft chemical mixture called ApiLifeVar®.

If all that above wasn't enough, the appearance of antibiotic-resistant American foulbrood is now occurring on his watch. Finally, he was faced with introduction of the small hive beetle, *Aethina tumida* in 1998. Laurence came through all these crises with a mixture of confidence and humor that provided a clearing for other beekeepers to do the same. One of his most important skills is the ability to boil circumstances down to a few pithy words that call to his colleague beekeepers. His latest pronouncement is the subject of this column, that the two R's of beekeeping: Resistance and Residues now constitute a paradigm shift in the craft.

The history of mite resistance began in Europe where populations first became resistant to fluvalinate in Italy. Later the phenomenon was discovered in the United States. Because of this, the organophosphate coumaphos (Check Mite+®) has received several Section 18 registrations for use in cases where the mites are resistant to pyrethroids like fluvalinate. The status of worldwide resistance to miticides was recently reported in the minutes of the 5th meeting of the European Group for Integrated *Varroa* Control.[1]

The appearance of resistance to both miticides and antibiotics looks to be yet another example of Garrett Hardin's "Tragedy of the Commons."[2] Dr. Marjorie Hoy, eminent scholar - Davies, Fischer and Eckes professor of biological control, of the Department of Entomology and Nematology here at the University of Florida, has given a number of seminars on the development of the phenomenon, the source of much of the information provided here. She says it is strictly a matter of the number of applications, the residue length, and the genetics of the pest, and is the collective fault of both the companies producing pesticides and consumers using them. Her conclusion is that the only truly effective way to prevent resistance is to stop using pesticides.

1. 5th meeting of the integrated group for *Varroa* control, June 2000, World Wide Web site accessed August 25, 2003 <http://www.apis.admin.ch/english/host/pdf/alternativ/bern.pdf>.
2. World Wide Web site accessed August 25, 2003 <http://members.aol.com/trajcom/private/trajcom.htm>.

Continued on Next Page

TWO R'S ... Cont. From Pg. 17

If one looks at other examples of resistance to pesticides in production agriculture, it becomes more obvious why this occurred for *Varroa*. Perhaps the most important factor is prolonged exposure to one pesticide. Certainly this was the case with Apistan®, the only legal, effective material applied for over a decade to many generations of mites. Selection pressure was also very high. Apistan® may have been too good in restrospect. It killed off over 98 percent of the mites, but didn't get them all. Those left over became a potent source for a resistant population to emerge. The idea that bee populations must be cleared totally of *Varroa* also contributed greatly. In the beginning and continuing to this day, the concept of *Varroa* eradication (i.e. "*Varroa*-free") persists. As a result, many beekeepers treat when they see only one mite; some leave treatments in over prolonged periods and others may apply the material prophylactically, just like treating for American foulbrood using Terramycin®, which most

"Many beekeepers treat when they see only one mite; some leave treatments in over prolonged periods and others may apply the material prophylactically."

believe resulted in a resistant causative organism. Other factors that contributed were strong links between *Varroa* and its host (they feed and reproduce only on honey bees). The ability to be carried on the backs of flying bees from one colony to another adds a significant re-infestation dimension.

Factors responsible for development of resistance to pesticides, according to Dr. Hoy, are generally grouped into two major categories: controlled and uncontrolled. Unfortunately, most fall into the latter category. In general, these are genetic, biological and ecological. The mite's genetics and biology remain much of an enigma. Its ecology does too. This kind of basic study, unfortunately, is often subrogated to pesticide development and application.

It is not surprising that most research and funding in *Varroa* control has concentrated on toxicological work. This is the one area where the beekeeper and researcher have the best and easiest control. In this kind of work, formulations and applications can be actively tweaked and their effectiveness quickly measured. It is also where the money is. There is little incentive on the part of entrepreneurs to invest in other areas. This is the case with natural products or processes, which although they may be effective, do not represent the best possible return on an economic investment. Again much of this is also true in other forms of production agriculture. Indeed, the loss of legally registered chemicals in small crops not warranting huge economic investments continues to be a crisis all across the agricultural spectrum.

According to Dr. Hoy, researchers have developed models of pesticide resistance where the phenomenon has been detected. However, debate continues about how effective each is. Apiculture appears to have gone through several types on its way to its present situation. Saturation uses high doses of chemicals in an attempt to overcome any resistance that might be present. This is often employed for high-value crops like apples. Synergists have even been used to make already-toxic materials more poisonous. These are very hard on non-target organisms and the environment. However, in many systems of this nature resistance appears.

Much of this is applicable for *Varroa*. In the beginning, low treatment thresholds, the idea of "mite-free colonies," meant that a lot of treatment was probably carried out that was not absolutely necessary. The now-illegal use of Maverik®-soaked wooden strips, originally carrying a Section 18 label, is an example of saturation, as is reported use of other non registered materials (e.g. amitraz formulated in Ovicin®).[3]

Another strategy is moderation. Its philosophy is to reduce the selective pressure and conserve organisms (genes) that are susceptible. This means less frequent applications with relatively low dosages of less toxic chemicals. Some beekeepers are moving in this direction, applying materials only when absolutely necessary and using less than the recommended dosages. Unfortunately, there is controversy in this arena, with some investigators suggesting that underdosing actually contributes to resistance development. This points to the fact that the genetic cause of resistance is often unknown. In addition, the lack of suitable action threshold levels for *Varroa* works against this concept.

Multiple attack appears to be the model beekeeping is now leaning toward. This is characterized as a rotational philosophy involving several pesticides. Again this has been employed in other high-value crops and some medical emergencies. Whether to rotate or mix chemicals is vexing, according to Dr. Hoy. Mixing might enable them to be used at lower dosages. Beekeepers now find themselves with two legal materials. Whether to choose mixing or rotating, however, is a question that cannot easily be answered in this case because there is not enough information about the mechanism of resistance by *Varroa*. Because two classes of pesticides (pyrethroids and organophosphates) are being employed, however, rotation is considered the best strategy and beekeepers are asked not to use both materials simultaneously.

Another problem found in production agriculture is that after pesticide use, pest populations may rebound to higher levels than before. This resurgence is often the result of killing off natural enemies of the pest species during the application process. To date, no such organisms have been found for *Varroa* and this does not appear to be an issue. Finally, replacement can occur in many systems. Organisms that are not a

3. Elzen, P. J., Baxter, J.R., Spivak, M., Wilson, W.T. *Amitraz resistance in* Varroa*: new discovery in North America.* American Bee Journal. 139(5); 362. 1999.

problem or pest may become one as a consequence of trying to control another pest species. The specter of the small hive beetle for beekeeping is raised here. Is it possible that the beetle has been around a longer time than thought and only showed itself as problematic after colonies were exposed to chronic dosages of pesticides for *Varroa* control. I have heard a number of talks where both researchers and regulators say that controlling hive beetles when *Varroa* is not first controlled is a recipe for disaster.

Other strategies to reduce pesticides include the use of smoke. Other so-called soft chemicals such as natural acids, essential oils or botanicals are also a possibility. Although a few of these "natural products" have been shown to be somewhat effective, they do not kill the number of mites as do registered hard pesticides. However, resistance to these materials may not prove to be as problematic. Methods in applying some of these chemicals, however, have not been worked out, are full of risk for bees and the action thresholds are unknown. It is useful to remember that most natural products or biopesticides are poisonous compounds that plants have made to ensure their consumption more risky and less likely. Their use may also be construed as illegal or non registered materials by regulatory authorities, and they are capable of contaminating a honey crop.

In the end, as Dr. Hoy recommends, only by reducing use of pesticides can beekeepers come to grips with either effects of sub lethal pesticide doses or resistance. This is the stated goal of integrated pest management (IPM), a technology that relies on a careful estimation of the pest population. The number of insects (or mites) causing measurable economic loss to a crop (or bee colony) is referred to as the economic injury level (EIL). IPM practitioners attempt to find a level of pest population that will provide the best indication that economic injury is likely to occur. At that point, and only at that point, are active measures (e.g. pesticide application) taken to reduce the pest population. This is called the economic threshold (ET). For example, in a bean crop it might be determined that only when there is a certain amount of leaf damage, which translates into a specific number of caterpillars on a plant, is pesticide application necessary. A key element here is the realization that some pest population will always be present in beans and that economic production can be supported at some level without treatment. A corollary is that eradication is impossible and should be dismissed as a possibility.

There are other ways besides pesticides to keep the mite populations below damaging levels. These include trapping them in drone brood, on sticky boards and by specially designed bottom boards. Another strategy is to identify *Varroa*-tolerant honey bees and then propagate them. This is currently being done through the Baton Rouge Bee Laboratory's release of Russian bees and development of SMR stock.

Most of the control methods suggested above are active. They are applied or exerted by the beekeeper. However, another group should not be forgotten. These are referred to as passive, or collectively called "good bee management." With all the folderol about mites, and now the small hive beetle, the fact that honey bees can often take adequate care of themselves is easily overlooked.

Resistance runs in the company of residues according to Laurence Cutts. One of the first responses to resistance, common in past agricultural practice, is applying more and more chemical control as the problems increase. This no doubt has occurred in beekeeping operations. Although it is not well known why, the appearance of chloramphenicol in Chinese honey may be a response to resistance by American foulbrood to oxytetracycline (Terramycin®). Studies in Europe reveal levels of acaracide residues in honey, beeswax and propolis that can only be described as extensive.[4]

Certainly, the continued application of both fluvalinate and now coumaphos hastens an end to the era that Laurence Cutts characterizes as that of the "silver bullets" of mite control. Thus, he gracefully exits the stage as an advocate for Integrated Pest Management (IPM), carrying the message that the use of this technology, developed by dedicated researchers like Dr. Hoy has the best chance at present to keep the two R's of beekeeping at bay. BC

Dr. Sanford is a former Extension Specialist in apiculture at the University of FL. He publishes the APIS newsletter, apis.shorturl.com.

4. S. Bogdanov and colleagues, *Acaricide Residues in Honey Beeswax and Propolis*, 1999, World Wide Web site accessed August 25, 2003 <http://www.apis.admin.ch/english/pdf/BeeProducts/Acaricides_e.pdf>

The Bournacq Hive

A Little Known Way of Keeping Bees. Now Only A Memory.

Jamie Strange

Introduction

When most Americans think of Bordeaux, France they are very likely thinking of wine. But when beekeepers think of Bordeaux they ought to be thinking of honey (and wine). Just like Bordeaux is a land to many wines, the region around Bordeaux is a land of many honeys: black alder, chestnut, black locust (acacia), buckwheat, sunflower, and the most remarkable of all, heather. Beginning on the southern banks of the Gironde and Garonne Rivers and stretching south almost to the Adour River is a flat coastal plain known as *Les Landes de Gascogne*, or the heaths of Gascony. It is the historic land of the rugged *Gascon* people: shepherds, farmers, foresters, and beekeepers.

Historically, Les Landes was a mixture of heaths, marshes, streams, small patches of pine and oak forests, and even smaller villages. The soil is deep sand which drains quickly, and, in spite of the rainy climate (over 36 inches per year) it was a land of stark contrasts. Dry top soil overlies a shallow water table. Marshes formed next to sand dunes. Forested stream courses cut through the barren heaths. Lush green spring months were followed by dry brown summers and crops often withered. But Les Landes of old times disappeared in the late 1800's and early 1900's. Following the law of 1857, issued by Napoleon III, canals were dug to drain the marshes and a forest of pine trees was planted in neat rows across the heaths. Modern agricultural practices of fertilization and irrigation have allowed farmers to begin growing corn instead of rye and the region now leads the country in corn production. Additionally, the major *Autoroute* has brought tourists and commerce to this historically impassible region.

Just as many things have changed in Les Landes, much has remained the same. Sheep still have the right of way on the side roads. Favorite pastimes still include hunting, mushroom gathering, gardening, and playing *petanque* (a game similar to bocce) in the town square. And there are still a lot of beekeepers. A census in 1870 reported 500 colonies in the town of Beliet. Another source (Ratonnat, 1994) noted that there were more than 3000 colonies in the area of the village of Pissos in 1850. Today three professional beekeepers and numerous amateurs operate year-round near Beliet and Pissos (10 miles apart). The reason that this area is so popular with beekeepers is due to the high value heather honey produced in the region.

Although sheep have become fewer and the trees have become more plentiful, the dominant under story plants in Les Landes are still heather. Five species belonging to two genera, *Calluna* and *Erica*, comprise the group of plants known collectively as heather. For beekeepers the two species of primary importance are *Erica cinerea* L. which blooms in July and August, and *Calluna vulgaris*, (ling or common heather), which blooms in September and October. Preceding the heather bloom is the bloom of black alder (*Rhamnus fragula* L.) and various tree species including chestnut and black locust. While heather honey now sells for about $3.50 a pound in bulk, and up to $8.00 a pound in jars, honey from Les Landes was not always considered high value. Just how this transformation from a single low value honey to multiple high value honey crops came about, is largely a factor of the change from traditional beekeeping techniques to modern beekeeping techniques.

The bournacq

Until the Second World War, most beekeeping in Les Landes was done the traditional way and it was not until after WWII that most beekeepers adopted the moveable frame hive (Albisetti 1977). In fact, one

can still find bees kept in the traditional bournacq hive if one knows where to look. And as the type of equipment has changed, the style of beekeeping has changed too. Whereas modern beekeeping requires certain knowledge and skill, so too does beekeeping in the bournacq require certain management to be successful.

To understand the evolution of beekeeping in this region is to understand the bournacq, its strengths and weaknesses. In the time before movable frame equipment, the bournacq was an elegant hive, both in shape and in construction. Like most primitive hives, the materials used in constructing the hive were products of the land where the bournacq was used. Yet, the bournacq is unlike many other primitive French hives in that it is primarily a wooden basket hive. Beekeepers in other regions relied heavily on mud or straw in their constructions; however this was not possible with the sandy soils found in Les Landes.

The bournacq was constructed by making a bell-shaped basket of wood which was then sealed with a mixture of dung and soil. The wooden basket was composed of ribs of chestnut, soaked in water to make them flexible, then bent and interwoven with smaller sticks. The type of smaller sticks was dependant on local availability, although they were typically black alder, osier, or blackberry. Once the basket was formed, the entirety was coated with a mixture of dung, clay, and sand, and then allowed to dry. The bottom is the open end of the basket and this is from where the beekeeper and the bees enter. The top of the bournacq bulges slightly, below which there is a slight constriction or "neck" where two sticks are placed crosswise inside the hive to so that the bees can begin comb construction around these supports. Below the neck of the bournacq, the hive widens toward the ground and is called "the skirt." Overall, the bournacq is about a meter in height and half a meter wide at the base. This construction made it particularly strong, light, and stable which, it turn, made it possible to work the hives and made them easy to handle when it was time to harvest honey or collect swarms.

One major challenge of the bournacq is temperature regulation. In the Summer it was very difficult for the bees to moderate the heat of the sun, thus lowering productivity. In the Winter the hive was particularly vulnerable to freezing weather. These problems were overcome by the use of another locally abundant product: rye straw. Lengths of rye straw were bundled at one end and the bundle was placed over the bournacq as a protective measure. This straw covering was called a *hounse*. A clay roofing tile was often placed on top of the straw bundle. The tile kept the straw from blowing away, and allowed the entire hive to shed rain more efficiently. With these readily available materials the bournacq became a weatherproof hive.

Bournacq hive (right) and "hounse" (left) or straw covering for insulating the hive displayed by a local beekeeper at a market. normally, the "hounse" was placed over the hive, and a clay roofing tile was placed on top to weigh it down and to divert rain.

The Annual Cycle

The bournacq was populated by collecting swarms which issued from over-wintered colonies. The peak of the swarming season in Les Landes corresponds to the beginning of the black alder bloom which occurs at the end of May or the beginning of June. Albesitti (1976) describes one family where the son (who was at the time seven or eight years old) was sent to the apiary each day during the swarming period to wait for swarms. When the swarm alit on a low shrub, the boy would hold an inverted bournacq under the branch and shake the bees into the basket. The basket was then placed back in the apiary. Due to the high swarming tendency of the local bees it was easy to double the size of the apiary in a week or two. The high swarming tendency of the local bees was very important to the method of honey harvesting employed by the beekeepers (discussed below).

The bees then commenced to build comb and develop the colony. In the bulge at the top of the bournacq, the bees normally stored the bulk of the early honey flows and the brood was maintained in the skirt. The black alder honey flow is sufficient to establish colonies and within a month of the end of the black alder, the heather commences. Two heather plants provide nectar for the bees, *Erica cinerea* (bruyère) and *Calluna vulgaris* (common heather). The bruyère honey flow, although not intense, can last for six to eight weeks starting in late June, and sometimes overlaps slightly with the common heather honey flow. The bees then use the common heather honey flow, which begins in September and lasts for a four to six weeks, to fill the brood nest with honey and block the queen from further egg laying until the following Spring.

The honey harvest could be done in one of two ways (Albisetti 1976). The less popular method was to wait until the end of the bruyère honey flow at the end of August or the beginning of September. At that point the beekeeper would cut out the comb filled with honey

Continued on Next Page

Inside of a working bournacq hive at the Marquez Eco-museum in Sabres, France.

Clay pot smoker used when working the bournacq hives. Dry dung was burned in the smoker, and the beekeeper could blow through the handle to stoke the fire. The entire smoker was then placed under the skirt of the hive and the smoke was then allowed to waft into the combs.

and leave the brood as intact as possible. The bees were then allowed to collect the common heather honey for their Winter stores. However, this management regime involved more work and care not to damage the brood nest while removing honey. Secondly, the typical harvest under such a regime was much smaller because the bulk of the honey was stored above the brood nest and could not be removed.

The more commonly practiced method of honey harvest began much earlier in the season and was tied tightly to the annual cycle of the bees. First it was necessary to capture as many swarms as possible in the Spring. The more swarms that were captured, the bigger the harvest in the fall, because that is when the beekeeper would kill off the colonies he didn't want to over-winter. Then, at the end of the common heather honey-flow (early October), the beekeeper selected the colonies he wished to keep (often based on colony strength). These colonies were left untouched in order to maintain their strength and successfully over-winter; thus, they formed the basis of the apiary the following year. The rest of the colonies were then asphyxiated by burning sulfur under the hive and the all the comb was removed. By this method, the beekeeper finished the season with the same number of colonies with which he had started.

Various tools were invented to facilitate the collection of honey and wax from bournacq hives. A flat clay-pot smoker was designed to slide easily under the hive. The smoke then wafted up into the combs while the beekeeper worked. Beekeepers employed numerous smokers at once; this was undoubtedly necessary due to the defensive nature of the local bees. A specialized hive tool was also employed in the collection of the honey. This metal tool was almost as long as the bournacq was tall. This allowed the beekeeper to cut the wax connected to the side of the basket without reaching his arm the whole way to the top of the basket. Finally, a small terra-cotta pan feeder was also used to feed the bees if necessary. This feeder was small and flat and could be slid easily under the skirt of the bournacq. It is interesting to note that a feeder existed, since Albisetti (1974) noted that it was not necessary to feed the bees. It is possible that some beekeepers attempted to increase production by artificially stimulating brood production when needed or fed the bees in cases of severe honey dearth.

After the beekeeper removed the wax and honey, he had to process it. The black alder honey was easily extracted and readily dripped from the comb, but the

Clay pot feeder which was filled with sugar and placed under the edge of the feeder.

Clay honey pot and cierges pour les décés. *The* cierges pour les décés *are mourning candles made from beeswax. The "rope of wax" was burned through the mourning period to commemorate the dead.*

heather honeys posed a problem. The bruyère honey crystallizes quickly and the common heather honey is even more difficult to extract because it is thixotropic. Thixotropy refers to a substance (e.g. common heather honey) which is a gel when undisturbed, but after agitation, becomes a viscous liquid. After a few minutes, the honey returns to its jelly-like state until agitated again. Another essential characteristic of common heather honey is that it has a high moisture content (about 20.3%), but kept alone it will not ferment. The thixotropic quality of the honey continues to make this honey highly prized on the European market; it also makes the honey very hard to extract. In fact, there are many modern beekeepers that cannot make a honey crop from common heather because it requires special equipment for extraction and so they leave it in the colony for the bees over the Winter.

Because there were no frames in the bournacq and because the honey could not be left to simply drip out, the combs were placed between two large planks and pressed. The honey then dripped into a large pan below the planks. Thus, the honey was truly a multifloral honey which was sold as "heather honey" The wax was, of course, also saved for use later in making candles and *cierges pour les décès* (mourning candles).

The End of the Bournacq

Managing hives in this manner had both advantages and drawbacks. As Albisetti (1977) noted, the removal of all the wax and honey from a hive on a regular basis helped to keep the occurrence of brood diseases low. When swarms were collected, the bees had to construct new comb, free of foulbrood spores and parasites. It was not until after beekeepers began working in moveable frame equipment that foulbrood became a problem in Les Landes. Also, because generally only strong colonies were wintered, the beekeeper insured that he was keeping the best stock for the following year. These strong colonies did not have to be fed or treated for diseases and so inputs to the colonies were low and likely the beekeepers were selecting for disease tolerant stock.

In spite of the ease of maintaining bournacq hives, there were inherent drawbacks in the system. Although the honey was important to the region, under this system of extraction, the honey from Les Landes was considered low quality. Louveaux (1966) noted that bournacq honey, while sold as "heather honey", was in reality a mixture of primarily heather (*Erica cinerea* and *Calluna vulgaris*), black alder, and chestnut honeys. The high proportion of the heather honey increased the water content of the mixture to a point that the mélange was prone to fermentation and as Louveaux (1966) noted, the flavor was not agreeable.

In spite of the low quality of the honey of the region, it was still an important export product for Les Landes. Historical records give us both a perspective on the importance of beekeeping to the region, and the state of beekeeping. For example, the exportation of honey to other regions and countries was important to Les Landes in the 19th century. In 1820, over 350 tons of honey was shipped to England from Bordeaux. Foreign markets remained important into the 20th century and in 1920 the port of Bordeaux exported 400 tons of "heather honey" (Mallet 1977).

Although the total honey production seems to be the same, the number of bournacq colonies maintained for production had fallen and the average harvest had increased. In 1857 there were reportedly 56,000 bournacq hives in the administrative department of Les Landes which produced an average three pounds of honey per colony (Mallet 1977). The number of colonies had fallen to about 15,000 colonies in 1900 but the average production was up to about seven pounds per colony (Mallet 1977). Although the amount of honey produced by each colony seems low to modern beekeepers, it is important to remember that honey was harvested from the weaker colonies and not taken from the strong colonies.

By the 1950s the days of the bournacq hive were over and modern moveable frame equipment quickly became the standard as beekeepers realized the potential earnings of separate honey harvests. By 1976 there were 35,000 declared modern hives in the three administrative departments that encompass the majority of Les Landes de Gascogne. In these departments there were about 450 beekeepers and the average colony produced about 14kg (31 lbs) of honey per year (Albisetti 1977). Today only a few bournacq hives are still in active use. These can be found at museums or beekeepers' homes and are not used for honey production, but for demonstration. The few remaining bournacqs serve as reminders of a long beekeeping tradition that is still held in esteem as a symbol of the rustic nature of the Gascon people. BC

References

Albisetti, J. 1976. *Document number 1 : Les abeilles dans la grande-lande.* Institut National de la Recherche Agronomique, (Internal document)

Albisetti, J. 1977 *Equilibres biologiques et ressources renouvelable en forêt Landaise.* Institut National de la Recherche Agronomique, Contrat # 65 0227 (Internal document)

Anonymous 1988. *Les landes et l'homme.* Centre d'Animation du Graoux. Belin-Beliet, France.

Louveaux, J. 1966. *Essai de caractérisation des miels de callune (Calluna vulgaris Salisb.)* Ann. Abeille. 9:351-358.

Mallet, N. 1977 *Contribution a l'etude de l'evolution de sous-bois mellifere en sylviculture moderne dans les Landes de Gascogne.* Institut National de la Recherche Agronomique. (Internal document)

Ratonnat, J-F. 1994. *La vie d'autrefois dans les Landes.* Editions Sud Ouest. Bordeaux.

Acknowledgements

I thank Jean-Claude Ducam, Gilles Fert, and Ludovic Lamaire for discussing the various aspects of this paper with me and for their permission to photograph their equipment. I thank the Parc Natural Regional des Landes de Gascogne, especially François Billy, for the loan of research materials and permission to photograph equipment. Additionally, I thank Jennifer Strange and Steve Sheppard for valuable comments on the improvement of this manuscript. And special thanks to Steve Sheppard for supporting my research and my various and scattered projects.

Pumpkin Patch Honey Sales

Ann Harman

Hurry up! It's time to go out to the pumpkin patch and wait for the Great Pumpkin to arrive. We don't want to take a chance on missing it. Linus has been waiting for years and Lucy promises that it is coming. But which pumpkin patch? Who knows?

Each year the Autumn pumpkin festivals become more popular. They range from small pick-your-own pumpkin patches of a few acres to large pumpkin patches with many sizes of pumpkins from the tiny ones that fit in the palm of your hand to the ones so big and heavy you need a truck to haul them home.

Some of the pumpkin patches just do pumpkins. Others combine them with a corn maze, a bales-of-straw maze, and a farmers' market with Winter squash, apples, cider, Indian corn and other end-of-harvest items. What a perfect place to sell your honey, beeswax candles and ornaments.

Not every beekeeper has a pumpkin patch but now is the time to find one in your area and establish some sort of cooperation. Perhaps your beehives were called for pollination; pumpkin flowers have to be pollinated and rental colonies are needed, even for small patches. Remember to take some taste samples of your honey (and leave a jar when you're done!) as well as samples of candles and beeswax ornaments (and leave them also). In this way you are establishing a good relationship – the pumpkin grower has pumpkins; you have a decorative addition to the pumpkin patch. Your honey, candles and ornaments enhance the pumpkin patch, not compete with it.

Some pumpkin patches may want you to bring your own table. That's fine. In fact, that's even better. Go to the fabric store and buy a few yards of seasonal fabric or find a seasonal tablecloth so that your display is colorful and attracts attention.

The pumpkins, the Winter squash, the apples all needed honey bee pollination. Here is a terrific opportunity to promote the value of honey bees. You can approach this bit of bee publicity in several ways. If you can create a nice poster announcing that the honey bee is responsible for the produce at this market, then this can be placed where the customers are paying for their selections. If the pumpkin patch is small you can make labels. Think about those sticky labels you find on bananas. Well, with a computer and some small removable-label stock from Avery.com you can make a label for each pumpkin or squash. The label can be very simple, saying "Honey Bee Pollinated" or can be embellished with a cartoon bee. Please use removable labels. Although your message is important, customers may not want labels on something for decoration. The labels can be put on winter squash and apples, as well as the pumpkins.

True, sticking labels on fruits and vegetables can be a bit tedious. You can make a simple handout, 1/3 of a sheet of paper, explaining the role of honey bees in the produce offered. Each customer can then receive the handout. Bags of apples can have a hang tag with the same information. Some amusing clip art from computer programs can decorate the handout or hang tag.

It is a good idea to get the role of honey bees to the public. Many articles in farm-oriented newspapers and magazines deplore the gulf between the grower and the consumer. Pumpkin patches and farmers' markets have helped show the consumer a little bit about where our food comes from, but much is still to be done. Do those children running through the pumpkin patch really know just how those pumpkins got there?

Now for a look at your honey sales. Bears should be a popular container. How about some caps in black and in orange? The bears can be displayed on the edges and corners of your sales table. Here much less danger of glass jar breakage exists. Besides the black caps and orange caps make a nice border for the rest of your offerings.

For your jars of honey you could make special labels for the pumpkin patch sales. Here again you will want removable-label stock. Orange and black with Halloween designs are going to look silly if your next sales opportunity is a Christmas craft fair. You could use some wording like "honey from the bees that pollinated the pumpkins." You can keep the label simple by using a white-stock label, print a large orange pumpkin with the word "honey" in black across it. Then you can add the other required information below the pumpkin – your name, address and net weight.

Hang tags do help sell honey. This year the National Honey Board is offering two new hang tag designs. Just contact them at 800.553.7162 or at nhb.org to order the hang tags. Certainly, the hang tags can be used with your special pumpkin patch labels. Bears can wear hang tags, too, so please decorate all your containers. If you do not have the time or inclination to make special labels then at least buy some of that narrow crinkled ribbon and tie some orange and black bows on your containers, especially the bears.

Continued on Next Page

PUMPKIN PATCH ... Cont. From Pg. 25

By the way, when you contact the National Honey Board be certain to get some of the recipe brochures they are offering. Giving each customer recipes with each purchase increases their use of honey. Don't be afraid to increase your selling price to cover the costs of giveaways. You may not think about it but when you receive a giveaway somewhere it's really not "free." By the way, do not encourage customers to use jack o'lantern pumpkins as cooking pumpkins. The majority of them have no flavor at all. The cooking pumpkin is rather small with a dark orange, sometimes brownish, skin and deep orange flesh and has a wonderful flavor when cooked.

Remember when your containers of honey sit on a table or even a counter top, the most visible part of the container to the buyer is the lid. Although some fancy lids are available, the usual one is the white plastic. If you are using your state agriculture department select produce label, the lid is a good place for it. If your lid is plain, visit a local stationery, greeting card or scrap-booking store and see if you can find some appropriate Halloween stickers to dress up those plain lids. A good display conveys the message of good produce. It then follows that good produce can be sold at a good price.

Possibilities do exist in pumpkin patch sales for combining goods. For example, buy a jar of honey and get a mini-pumpkin free. Buy a giant-size pumpkin and get a honey bear at half-price. These sorts of deals have to be worked out in advance with the owner of the pumpkin patch. They can be ideal and profitable to both, but cooperation is necessary.

Now, a look at candles and ornaments. I hope you have kept your cappings wax separate from other wax that may not be yellow, but may be tan or even darker. No matter what color, the wax used for candles must be clean wax, free from honey, propolis and other debris. If some of your wax is suspect, it can be used for ornaments.

Tapers are always popular but since pumpkin patches are a special venue you need some special, appropriate candles. If you look in the Mann Lake catalog you will find the flexible autumn molds. As you look through the different molds you will see that you can use much of your wax of different colors.

The beautiful yellow wax should be saved for the corn cob. Fresh corn season might be over but corn seems to fit the autumn mood. You can sell the corn cob candles in singles or as pairs. One cob takes a little over six ounces of wax, so you should charge accordingly and remind your customers that pure beeswax candles burn for a long time. If you have some wax that is almost white, or you have sun-bleached the wax, you can offer white corn candles or even a mixed pair, one white corn and one yellow corn.

With some orange candle dye you can easily make the pumpkin candles; molds are available in two different sizes. Yes, a little cap of green, as in the catalog picture, makes a really nice candle. Now look at the two acorn molds. Here is where your off-color wax can be useful. You don't want anything but brown acorns so look around in that pile of old wax and find some good acorn-colored wax. Be sure to use the right size wick for each mold.

Apples are an autumn favorite. Your yellow wax can be the "Golden Delicious" apple, but you will need some red dye for the "Red Delicious." Pears, also an Autumn fruit, come in yellow, but also in greenish and some really good ones are brown. Save the pine cone molds for Christmas but save some of that brown wax for those. You can make pine cones later in the year, closer to a Christmas craft fair.

What to do if you are not certain about using your wax for candles. Well, forget the wick and make the corn, pumpkins, acorns, pears and apples as decorations. Take a wooden bowl and put a couple of wax ears of corn, a few pumpkins, a handful of acorns, add a couple of apples and pears and use it as a centerpiece on your sales table. Sell the wax items as decorations. Your wooden bowl of wax fruits and veggies will show customers how beautiful beeswax items can be used. Be prepared to sell the whole thing, bwol included, if somebody asks. And, take orders for more if it proves popular. But know how much you'll charge.

Now for some fun. Halloween decorations call for bats, bats that fly around. Everyone likes bats on Halloween as long as they are not real bats. Here is where that old dark wax is going to be useful. You will need black candle dye for nice black bats. Contact Pourette company at 800.888.9425 and get their bat mold. At the same time you can order the black color chips. For really dramatic, spooky bats get some of the bronze candle paint also. You will also need something to make a hanging loop on your bat so your customers can hang them with some monofilament fish line. You can use monofilament line for the loop. After you have poured your bats and unmolded them, take a small, cheap watercolor paintbrush to brush the highlights of the bat with the bronze candle paint and give it some "glowing" eyes. Just experiment a bit and soon you will be turning out some wonderful scary bats.

Display your bats nicely and remind your customers not to store the bats in a hot attic. If you can hang even one bat "flying," the effect will surely sell more bats. It may be difficult with just a table at the edge of a pumpkin patch but you will figure out a way to do that. Think hanging plant hook that sticks in the ground. That will work. And to think you had no idea what to do with that awful dark wax.

Now you have some interesting and unusual items to accompany your honey. Pumpkin patch and Autumn craft fairs can indeed be fun as well as giving you the opportunity to educate your customers on both the value of honey and honey bees.

Now that I have given you some ideas, it is time for me to go sit in the pumpkin patch, resting my back against a nice big pumpkin and await the arrival of the Great Pumpkin. I wonder what she'll bring me. BC

Ann waits for the Great Pumpkin in the patch near her home in Flint Hill, VA.

COLONY DECISION MAKING

And A Look At Observation Hive Behavior

Walt Wright

I have been challenged on more than one occasion for talking or writing like bees have the capacity for "thinking." The PhD Entomologist will often pointedly remind me that insects don't think, they only respond to stimuli. In this segment of the series, I'll offer a few examples of colony judgments, and let you make up your own mind on the question.

Nectar management (Feb '01, *Bee Culture*) is based on personal observations over several years. The technique is an effective swarm prevention measure that also increases honey production. The underlying principles of honey bee survival strategy led to experimentation with the technique. Those concepts of colony judgments and resultant internal colony operational changes fall on deaf ears. Virtually no one is willing to seriously consider that those concepts are valid. The literature is no help. Although the build up operations are different than Fall closeout of brood rearing, there is no reference to colony objectives or internal operational changes. I contend that between the two major operational changes at the beginning and end of the growing season there are several other more subtle changes. Some of those mid-season changes are prompted by colony consensus decisions.

To get started, here are a couple examples of drastic operational changes that are described in the literature. The first is suspending brood rearing when honey stores fall below a minimum reserve. This trait is evidence of colony decision-making and its stark effect on colony internal operations. In a nectar dearth, when honey stores fall below a level of adequate reserve (colony judgment) the colony stops rearing brood. Larvae of all ages turn yellow, and then brownish as they starve. When nectar is again available in the field, the colony will pick up where they left off in brood rearing. In the meantime, they will wait it out with their minimum reserve.

We lead off with the above description because it is remarkable in several respects. First it implies that the colony continually assesses the honey on hand from the standpoint of a comfortable reserve. Second, there is definitely a consensus opinion that the colony needs to go on short rations to conserve stores. Third, the change in internal operations is sudden and total. The whole colony, perhaps 40,000 bees, endorses the operational change. At least all the nurse bees are relieved of their duties. It stands to reason that nectar scouts still go to the field to check for a break in the dearth.

In addition to the circumstances described above, consider the absconding swarm. The European races do not abscond as readily as tropical races, but they still have absconding in their inventory of survival tactics. When available forage does not meet their needs, the consensus decides to abscond. There is some prep time before leaving the area. Queen laying must be stopped while she trims down for fight. When she is able to travel cross-country, they leave capped brood and stores behind. The stores left behind may look like enough to the beekeeper, but the colony makes the judgment on criteria that only they know.

The experts know about these decisions and their effects. Still they resist any discussion or serious consideration of the possibility that other operational changes during the season could be the result of colony decision-making. They don't want to talk about operational changes at all. Colony decision-making may not be deductive logic as we know it. It may be genetically programmed response or instinct. Whatever the process, honey bee colonies do make judgments on circumstance, and collectively take action to react to the circumstance.

Let's take a quick look at the other half of the entomologist's position – that "bees only react to stimuli." When a colony is expanding the brood nest during the build up, they expand into liquid feed. It can be diluted honey, nectar, or a combination of the two. The colony decides how much expansion will be included in this step and draws an imaginary arc on the comb filled with liquid feed. The cells below the imaginary arc are used to feed the colony. When all the feed is consumed, the cells are prepared for eggs, and the brood nest takes a jump to the cells above the arc, which are sill filled with feed. What started as an imaginary line is now the dome at the top of the brood. All this description of the process is included just to ask a simple question of the entomologist. What is the difference in stimulus of cells on either side of the imaginary line? Most have a common cell sidewall.

Continued on Next Page

DECISION ... Cont. From Pg. 29

The size and position of this brood nest increase could possibly be controlled by pheromones, but it is difficult to imagine how that would work.

The introduction to this series (March, '03) included a general description of the colony's ability to regulate stores and population in balance, in consonance with overall cavity volume. An accomplished mathematician would have some trouble with the calculations involved in making that come out right. Do we add a few more cells of Winter pollen at the expense of brood, or is more foraging bee power more important?

The scientists have convinced me that immediate needs can be conveyed by pheromones. For example: The nurse bees need more pollen to feed the young. Pheromones can do that. But long-range planning, like preparing the Winter brood nest, takes more than pheromones. Instinct or colony decisions based on instincts are required.

The solitary honey bee in the field may be an insect, but the colony is something more. When speaking of colony actions, I use the word consensus. That word implies opinion or majority judgment. In most of the above, assessment of the situation, a decision, and then corrective action is involved. Does that sound a lot like thinking? The honey bee colony makes judgments on a regular basis – all day, every day. If it's not thinking, it is something very close to it.

Earlier in this series we described what we see happening in the beehive through the swarm season. To protect survival of the parent colony, internal operations change with progress toward the objective. Assessments and decisions by the colony affect timing of operational changes.

In this segment, we will attempt to make a case for the observation hive not being representative of the over-Wintered colony. Observation hives provide visual access to the activities in a functional bee colony. They are at once educational and interesting. Even the casual passerby is often intrigued by the prospect of seeing a colony at work from a safe vantage point.

A substantial part of literature data is derived from close range observation. Information such as development times of mature bees from egg to emergence as adults is valid data that can be acquired without colony intrusion. However, the intent of this article is not to extol the virtues of the observation hive, but to provide an introduction to its limitations.

The observation hive is reported to be difficult to Winter. Without speculating on why this is true, it is assumed that the typical observation hive is populated in the Spring. Whether it is populated with bees on foundation and an unrelated queen, or a frame of brood and adhering bees and an unrelated queen, the situation is the same. The mini starter is faced with becoming established as a functional colony. This is the same prospect facing a natural swarm or a purchased packaged starter. What is not recognized in the literature is that establishment of a colony in a new location induces a separate mode of internal operations.

The differences in status between the over-Wintered, established colony and the starter are obvious to the most casual observer. The established colony has a cavity completely furnished with functional comb, that in large measure is filled with stores to support population build up to reproduction strength. The starter has an empty cavity and fewer bees. Additionally, they have less remaining seasonal forage time since the early season forage sources have already passed. Because of the starter's handicaps, the beginning colony is highly motivated. They are faced with a literal "do or die" situation. Most natural swarms perish, but its not from lack of dedication to establishment requirements. One indication of the starter's higher motivation is their reckless foraging in marginal flying weather. The starter will forage vigorously when the established colony is content to wait for conditions to improve.

The starter package or natural swarm has multiple top priorities. Comb building is most important because they can make no progress without comb. Rearing brood for replacement bees is no less important because the starting population is dying off and will be essentially depleted in a few weeks. In parallel with those two activities, they must forage for feed and build a reserve of stores for the time when forage availability terminates in the field. In addition to accumulation of stores, the foraging bees must provide the wax makers with an ever increasing supply of nectar used as the raw material for wax. The list of top priorities is the basic reason that the target reproductive swarm issue season is just before woodland peak forage availability.

The natural swarm is prepared for establishment when they leave the colony. Swarm preparation activities are tailored to produce a reproductive swarm that has a chance at survival. Large numbers of wax makers are generated prior to swarm issue to provide the swarm with comb builders. We might mention that the swarm can be building comb nearly a month before the parent colony has wax making capability. If the swarm issues on schedule, it will depart about three weeks prior to the white wax of the main flow. Think about that for a minute. Does your favorite reference source tell you why that is true? It has to do with changes in colony internal operations in the Spring season.

The natural swarm also has a higher percentage of young bees in its make up. The brood nest reduction of the swarm prep period has the fringe benefit of freeing up bees of nurse bee age. They are the youngest of the adult bees, and more of them are available to populate the swarm. Loss of bees to die off is not as severe for the natural swarm as for the purchased package. The package shipped from the deep south has wax makers, but in diluted numbers. The bees' development schedule is more advanced the further south we go, and the wax makers of the package were developed for the main flow. We strayed from the subject of this article to describe the swarm's preparedness to survive establishment in a new location. My intent was to show that establishment is a separate mode of internal colony operations that is unique to establishment.

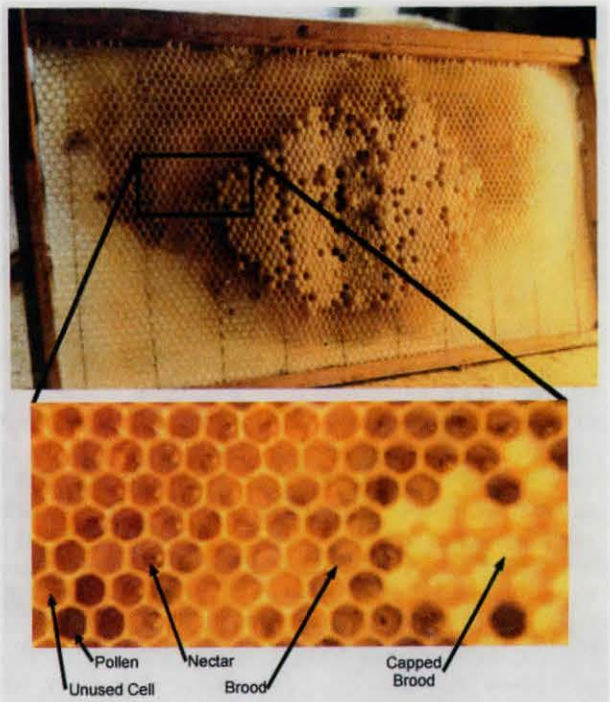
The multiple top priorities and the limited time to get them done impart a sense of urgency to the

starter. The higher motivation level has already been mentioned. They also have techniques for accomplishing the requirements in parallel. For example, they will place an egg for brood rearing in a cell that has barely started being built. They have three days before hatching to get the cell walls built a little deeper, and five more days before capping the larva. They will build the cell around the developing larva, and when the larva is mature enough to cap, the cell will be finished and ready. The same approach is used for storage cells. Within an hour of moving in that new location, foragers can be bringing pollen to feed brood. Cells for storage have just gotten started. The colony will build sidewalls for the storage cells as they are being filled. In this way, the three major requirements of establishment are in progress at the same time. Comb building, brood rearing, and stores accumulation are in high gear in parallel. We see this mode of operation as peculiar to establishment of the starter colony.

The photo shows the fifth frame being developed by a package colony. Lower edge and corners are still unimproved foundation. What is not seen in the picture is the arc of capped honey at the top of all frames as the colony expanded across. The accumulation of honey reserve has not started at the top of this frame as of photo time. There is some feed nectar in shallow cells to the left of the larvae cells.

The angle shot shows the progression of cell depth of cells in use. The three cells of dark pollen at the lower left of the box are likely the charcoal-colored pollen of wild blackberry. It may not be obvious in the photo, but those cells are perhaps an eighth inch deep and the nectar cells above about the same. The cells get deeper as you cross the cells of larval brood toward the capped brood. The older larvae adjacent to the capped brood have been fed some of that dark pollen and the cells look a little murky in the photo. If you look closely at those cells in the angle photo, you can see that they are not up to the depth of the cappings.

The newly-stocked observation hive will be operating in the establishment mode as described above. The activities of the bees in that mode will not reflect the activities in the over Wintered colony. The established colony, with residence cavity filled with functional comb, can concentrate on activities that produce the reproductive swarm. You could watch the activities in an observation hive around the clock for the whole Spring season, and not be any smarter about the activities related to reproductive swarming. It's not necessary for the established colony to operate in the hurry-up offense (football jargon) of establishment. They can take a more leisurely tempo and still accomplish reproduction in a timely manner.



In addition to the hurry-up offense, the starter has other operational differences. A couple should be mentioned that can be applied by the beekeeper. The following items may be expanded when that subject is discussed in detail:

The natural swarm builds downward. Starting at the top of the cavity, comb is constructed in the down and outward directions. Downward growth affects pollen storage. Pollen is difficult to move. To avoid blocking growth with pollen, it is often maintained during establishment at the top of the brood. During expansion of comb in the down and out direction, new comb at the sides and bottom can be filled with nectar pending brood next expansion. The nectar can be consumed or moved readily to expand the brood volume. This variation in establishment stores location can carry over into the second season, where stores are essentially upside-down from the established overwintered colony normal location.

A second operational difference of establishment is the tendency to supersede. The natural swarm leaves the parent colony with the old queen. As long as she performs according to expectations, she is used for the early establishment brood rearing. But when establishment is assured, supersedure is automatic. Other starters beside natural swarms may also invoke the supersedure insurance measure.

I offer these comparisons to provide a possible reason for the literature omission of any reference to internal operations of the overwintered colony. If your only exposure to internal operations is an observation hive, and the activities do not change significantly in the observation hive with season advancement, your lack of understanding is excusable. And if you only see one mode of operation, there is little reason to suspect that other modes exist.

For those PhDs who find it easier to ridicule what I see happening in the hive than to contest it from a position of strength, the following advice applies: Get in the beeyard and see for yourself. On a late Winter day, when the overnight temperatures are in the 20s, and the overwintered colony has a three-hour workday, they are busily working toward generating the reproductive swarm. To issue the swarm approaching the peak of forage availability, they must accomplish the up-front work during the frosty morning period of late Winter.

The observation hive has a different set of priorities. BC

Walt Wright is a sideline beekeeper who lives in Elkton, Tennessee.

UP CLOSE
And Personal

James E Tew

Just stop – for a minute...

I was recently watching a televised Shania Twain concert in Chicago. As I have wondered when watching other performers, why all the fast camera movement and quick shot angles? Slow down! I know that it makes the performance appear vibrant and exciting, but I just wanted to look at Shania for a few seconds without a microphone in her face or some quick side shot. It never happened. She remained a blur. In their own way, my bees are blurs. They are small and they move fast. I like to just watch them, but they are so quick.

Digital cameras have made photographs so commonplace that even good photos are cheap. So, what is my problem? I have a great deal of trouble finding the shots that I am remembering from the thousands that I have taken. In many cases, it is easier just to remake the shot rather than find the one that I need.

Secondly, I use digital photography to make macro photos of bees. It gives me the chance to look at my bees – up close – and still.

This is not a typical article for me. I wanted to produce this piece as much for me as for you. It is just an overview of a few of my macro photographs that I particularly like, along with some brief discussion of the thoughts that these photos invoked.

Trying to catch a glimpse of the bee's life in the dark hive.

Inside the dark hive

As beekeepers, we only see the inside of our hives in the bright light of day. In articles past, I have tried to envision what the inside of the hive must feel like. Hot, close, totally dark, and yet surrounded by vibrations, odors, pheromones and who knows what else. Would that hive feel like a packed elevator in pitch black darkness? I don't know, but I am sure that the way we see the inside of a hive is not the way a bee commonly perceives its home.

Look at the worker bee in the photo. There is not even a solid footing on most of the hive surfaces. Bees are always walking or climbing on a webbed floor made of cells. I suspect that if I were a bee, I would be the one constantly falling into open cells.

Foraging Bees

I never get tired of watching bees – all kinds of bees – forage. Pollination is what our industry is built upon. I tout it all the time. Yet, when standing in front of the apple display at the grocery, even I have trouble envisioning the bees pollinating spring blossoms that resulted in the wholesome fruit before me. Without bees of some kind there would be essentially no fruit.

A honey bee, a leafcutter bee and a bumble bee all at work.

To an individual bee the world is amazingly large (I would think).

We are too big

The problem with observing bees is probably not that bees are small, but rather we are large. I am about the height of 290 single bees stacked one upon another. At my height of nearly 6 feet, if I were a bee, a human would be 1728 feet tall. That is equivalent to a building with about 93 floors (the Empire State Building has 102 floors). Another estimate...my body weight is that of about 285,000 bees or more than ¼ million bees.

Years ago, I watched in amazement as a honey bee ran right in one of my student's ear canals. Should I say that the student went crazy? While the bee appears tiny to us, how gargantuan we must appear to them. Our nostrils and ear canals are just the right size for a bee to casually enter. By being so large, we miss much of the perspective of the bees' small world.

Each cell the bees build is larger than the individual bee herself. As much as I respect the bees for being such able builders, they deserve even more credit from me. Compared to their size, they truly build large communities. In the photo, I show a worker surrounded by completed drone cells. This is a lot of work in the hot, dark hive. The bee looks lonely.

We aren't the bees' only challenge

As humans, we are not the only challenge with which bees must contend. There's a long list of other animals eager to cash in on the bees' stores. Ants are a common hive inhabitant. I don't have a clear reading on ants in the hive. In the US, many ant species are seemingly agreeable to cohabitating with bees. When discussing fire ants, I have heard both extremes. Some beekeepers feel that fire ants are terrible and frequently destroy hives while other beekeepers feel that fire ants may actually be beneficial. While I am not prepared to argue, in my bee experience in Alabama, I have never had a hive destroyed by fire ants.

In Ohio, carpenter ants are common. They will frequently destroy equipment by building galleries, but at least one Ohio beekeeper (not me) feels that carpenter ants actually help his hives by eating any *Varroa* mites that drop to the ground through the screened bottom board. I don't know. I suppose they could be helpful. What are your thoughts?

Carpenter ants living with my bees.

A carpenter anug dragging home some fresh lunch. The bee's antennae makes a good towing hitch.

Termites – eating my bees out of hive and home.

More intruders – termites

While they look like ants, termites have a significantly different life style. They don't specifically harm the bees, but rather eat the house that surrounds the bees. Bottom boards are especially delectable. There is not a lot that can be done other than to raise the hive off the ground on something other than a wooden surface.

Termites are (unfortunately) common in and around the hive as they eat the wooden components. Much like the restriction of being a vampire and having to be home before sunrise, termites must maintain contact with the ground through their mud tunnels so they do have a weak link. But overall, bees and termites seem to live amicably together – two highly social insect groups.

Varroa, lunching on my bees.

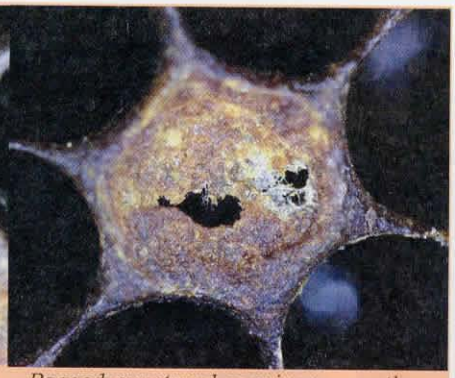
There's always Varroa

While bees seem to have some type of agreement with ants and termites, the bees are still negotiating with the *Varroa* mite.

When talking to groups, I have said that even though the *Varroa* mite is large by mite standards, it is still small – about the size of the diameter of a common pencil lead. But to a bee, that mite must appear to be the size of a man-hole cover. At nearly 6 feet, if I were a bee, a *Varroa* mite would have a diameter of approximately 18 inches. That must be an expensive parasite. A rough comparison would be my having one or maybe more – parasites the size of a garbage can lid stuck on me. With that kind of infestation, wouldn't I be a real hit at a party?

Continued on Next Page

The false tongue, a characteristic of American foulbrood.



Ragged punctured cappings – another characteristic of AFB.

Time-honored American foulbrood

In the hot, dark hive, I suppose bacteria would thrive were it not for the hygienic measures that the bees take. They run a clean shop and live in healthy quarters, but they work for it.

Occasionally, a bacterial disease like American foulbrood (AFB) does get a toehold. It happens. In my opinion, AFB is more serious than *Varroa*. At least with *Varroa* the equipment is reusable, but with American foulbrood, the equipment is essentially contaminated for life. Beekeepers would be well advised to be able to recognize the common attributes of this disease.

The "false tongue" is one characteristic while punctured cappings are another. Don't confuse punctured cappings with brood cells that are in the process of being capped. AFB infected cells have ragged openings – not smooth and uniform.

Bees "scenting" at the hive entrance.

Bees at the hive entrance

The hive's entrance is the opening to the bees' dark hive world. Guarding, cleaning, cooling and orienting are common tasks that are done at the hive entrance. If you've kept bees very long, you no doubt have seen bees, rear ends in the air, fanning furiously. The worker bee in the following photograph is exposing her scent gland to help other returning bees find the correct entrance.

The camera stopped the bee's wing movement. An example of traffic directing in at the hive's busy entrance.

Something is not right with the center bee. Note the lack of hair on the abdomen of the suspect bee.

Aberrant bees

Good bees can go bad – or at least pick up bad habits. Robber bees are bees that forage on the resources of another colony. Generally, they can be determined by their fidgety, even nervous, behavior And since they don't really belong in the hive they are trying to invade, they are constantly accosted or even attacked by guard bees. All this jostling causes robber bees to be more bald than other bees. Virus-infected bees also show these outward characteristics.

The queen – of course

A photo of the queen cannot be left out of a pictorial discussion. Seeing her in the hive is always a cause for comment. She is, at once, held in mysterious esteem that can quickly change to disdain. She gets the credit when things go right, but she is just as readily lambasted as being the reason a colony is sickly or aggressive. As shown in the photo, her retinue dotes on her every need. It appears that the individual bee is just as excited to "see" her as is the beekeeper.

My primary purpose

My primary purpose has been to, for just a minute, stop the action to look and wonder There are still so many unanswered questions. Everything the bees do generates more questions. Stop. Just stop for a minute, let me look and think. BC

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

Indoor vs. Outdoor WINTERING

There's advantages to each.

Terry Fehr

Where best to Winter honey bee colonies? For those beekeepers of mild climates where to Winter their colonies is more a question of what outdoor site will provide optimum conditions. For those in colder climates of the northern tier States or Canada, prime outdoor Wintering locations are an option but colonies can also be moved inside a climate-controlled shelter. Consideration can be given to both indoor and outdoor Wintering locations based on resulting bee populations, economics, and labour requirements.

Our choice of where to "store" our colonies through Winter will reflect a multitude of variables unique to our personal situation. Time available, local geography, number of hives operated, climate, commitment to honey bees, are just a few of the considerations we will ponder when deciding what to do with our bees in their downtime. Let me say from the beginning both indoor and outdoor wintered colonies will do equally well producing honey profitably for beekeepers if done properly. Different types of hives, managed somewhat differently may be needed but full barrels of honey will follow next summer; the ultimate bottom line. I speak with experience only from a cool, dry climate of southern Manitoba. Colder and damper climates may differ, although it would seem doubtful any meaningful difference would exist from our severe climate on the western Prairies.

To keep a colony of honey bees successfully through a Prairie Winter, bees must be prepared properly regardless of where they will sit for the Winter. Pests must be controlled, medications given and most important and above all else, feeding completed early. If feeding is delayed Winter survival will be compromised. Many successful producers feed as they remove their last honey supers so bees can make an almost immediate transition from honey gathering to sugar storage. Honey producers of Manitoba have about three weeks of September to complete feeding. Warm temperatures of Summer change dramatically to cooler days of Autumn and if feeding is left until later our bees will not have the opportunity properly store their Winter feed.

Once bees have been prepared for the inevitable harsh Winter, the decision of where to keep them for the next six months needs to be made. If left outdoors a suitable site with plenty of shelter, air drainage, good year round access for a truck, and Spring pollen sources should be used to keep the bees. If the Summer site does not have these characteristics then move the hives to a spot that does. Some sort of Winter wrapping, depending on climate severity will also be necessary. Check them every few weeks to make sure porcupines, skunks, bears, etc... have not disturbed the wrap but otherwise leave the bees alone. Simple and straightforward to Winter bees outside.

Although leaving hives outside is relatively simple there are some drawbacks. Most hives left outdoors will be double brood chamber units. Working with two brood chambers is more difficult than working with one super. Cost needs to be considered as well. More sugar will be necessary Wintering outdoors and having a second super doubles depreciation cost of equipment.

Four outdoor wintered hives.

Hobbyists generally leave their bees outside. A few minutes with a relatively inexpensive wrap will finish the Winter preparation routine and the bees can be left more or less alone for the Winter. There is no need to monitor outdoor hives or mess with ventilation equipment, all the while giving bees the opportunity to fly whenever good weather arrives. On the other hand, those businesses with hundreds of hives may wish to look at keeping some or all hives indoors as a viable alternative to wrapping outdoors. The work of wrapping hives is replaced with moving hives into a room with

Continued on Next Page

Indoor wintered singles, feed container on front, heating system on rear wall.

Indoor wintered hives with one feeder on a light hive.

precise ventilation equipment that controls temperature and ventilation rates. Sounds complicated but it need not be.

Environmental conditions of Wintering rooms are precisely controlled. Digital thermostats control fans and heaters to provide optimum conditions for honey bees. The majority of indoor wintered hives are single brood chamber hives although doubles can be brought inside as well. Smaller hives require a slightly higher temperature of about 40°F whereas larger hives will tolerate cooler temperatures.

Buildings can be specifically designed for Wintering honey bees. Specifications will include ventilation considerations, insulation, and access among other details. Alternately a large hot room can see double use. Many modest sized operations use their hotroom to store honey prior to extraction then add ventilation and store hives through the Winter in the same facility. It can work very well if built properly from the start.

A good hotroom will have a source of heat, insulated walls and ceiling, a window to attract bees and a cement floor. Insulate and cover the window with wood to exclude light, add ventilation and light traps over the exterior fans. An excellent indoor Wintering room is created. Interior air circulation is best done with industrial ceiling fans. These fans will keep air within a room well mixed both Summer and Winter provided enough fans are installed. Although specifications are precise for Wintering rooms the facility need not be anything elaborate.

When deciding where to Winter bees, many factors should be taken into consideration. Both indoor and outdoor locations have their advantages and disadvantages. Since indoor facilities allow smaller colonies to Winter successfully more flexibility exists within a commercial operation. Later and smaller splits now become an option instead of insisting on only a stronger unit be created when splitting. Climatic variability is removed with a climate-controlled room. No longer will a severely cold Winter take its toll on colony survival rates. If a Wintering room becomes too cold merely add some heat, although if a room is near capacity, heat will rarely ever be needed, even when 30°F since a smaller colony can successfully be brought through Winter, fewer supers will be subjected to the rigors of Winter. Only one brood chamber will endure the depreciation of Winter. The second brood chamber can be added in Spring and will have been cleaned and reconditioned. It is so much easier to work with cleaner equipment.

	ADVANTAGES	DISADVANTAGES
INDOOR	-less feed -less equipment -no winter damage -monitor losses easier -able to feed earlier	-monitoring -move early spring -not wrapped early spring -risk to catastrophic loss -less tracheal mite effect
OUTDOOR	-little supervision -able to fly on warm days -wrapped all spring -larger spring populations	-open to vandals/wildlife -two supers to work -more depreciation of -equipment

Anyone who has kept their hives outside for many years probably has memories of wildlife damage to their hives, or vandalism during winter. Any damage during Winter is usually the end of a colony. Moving hives inside a room where they can be monitored eliminates wildlife (both human and otherwise) access to hives. Colonies can be monitored on a weekly basis as to feed level and fed if necessary although poor autumn preparation cannot be overcome with indoor feeding. Proper preparation for Winter is still critical despite some added flexibility when moved inside.

It has been shown tracheal mites cause mortality among hives wintered in colder climates and specifically among those hives kept outside. It seems these mites interfere with a colony's ability to generate heat within their cluster. Generally, hives kept inside can withstand higher tracheal mite loads than those kept outside. Hive dwindle and mortality certainly does occur inside but not quite to the same extent as outside given the same tracheal mite level.

Although it is best to leave honey bees alone during Winter, the curious among us will want to check hives regularly all Winter. While doing so, we will have an accurate gauge of how well our bees are surviving Winter. If mortality is low, (we hope) great; but if morality begins to rise, maybe some alternate source of bees will have to be arranged. Having bees indoors gives

Back-up power for ventilation fans in wintering room.

April 10, 2003 – a 2002 nuc overwintered well.

Hazards of moving indoor wintered bees in April.

Just moved out April, 2003.

us an opportunity earlier in the season to know if a problem exists. It is difficult when hives are buried in snow to know how they are surviving. Only when the snow melts can we take a look and by then other sources of bees may not be available if we have a problem.

Although there are several advantages of wintering colonies indoors all is not roses. Keeping bees in a confined space makes then vulnerable to quick and complete destruction from perhaps fire or ventilation failure. Insurance will not cover the entire loss so the risk is higher than to leave colonies outside. Installing a temperature sensor, and having it monitored 24/7 by an outside firm can mitigate some of the risk. A monitoring company could have a cell phone number where the owner can be notified of trouble. Having a simple ventilation system with ceiling circulation fans helps to reduce potential trouble.

Of course, when hives are stored inside no wrap is necessary but once outside in Spring the unwrapped hives become vulnerable to late Spring blizzards and cold weather. Those kept outside all Winter will mostly have their Winter wraps in place until after the possibility of cold weather has passed. It is possible to install light wraps on indoor Winter colonies once taken outside. During an especially cold Spring this may be a good idea, but normal Springs allow hives to be kept inside until warm weather arrives with only short cold periods to follow.

Once an extended period of warm weather arrives during early Spring, Wintering room temperatures will climb. Ventilation and circulation of air maintains suitable conditions for honey bees only so long. At some point some hives must go outside. Spring snowmelt and thawing of frozen ground are poor conditions to expect a loaded truck to traverse but this is what must be done annually if hives are kept indoors. Spring yards need good shelter but in this situation must have excellent access for early spring moving of hives. A beekeeper never wants to be caught in mud with a load of bees that have not flown for six months with the sun rising on a beautiful Spring morning.

The choice of where to "store" beehives during the cooler months of the year is partly a personal lifestyle decision and partly an economic decision. On the one hand we have hives mostly at the mercy of our climate with little monitoring necessary. Those hives can be left unsupervised for weeks at a time, although monthly visits are a good idea. A beekeeper if he/she so desires can hold a second job, travel or stay glued to the weather channel, all Winter. The choice is yours alone as those hives left outdoors do not need much attention. At the same time, if they are in trouble, there is little that could be done for them anyway.

On the other hand, beehives stored indoors must have constant supervision to maintain precise environmental conditions for their comfort and survival. Four weeks in Florida are out of the question without someone taking responsibility for building supervision. Little ever needs to be done but supervision is impor-

Continued on Next Page

WINTERING ... Cont. From Pg. 39

tant in case of emergency. We hear of the occasional horror story. Economically, bees are cheaper to keep indoors as capital costs can be spread over several hundred hives. Indoor temperature in the dead of Winter is warmer than outside making sugar consumption lower and consequently cheaper. Some work during later Winter is necessary to monitor and possibly feed some hives kept inside but the hours spent with each type of wintered hive are minimal.

To reduce variation among years, and minimize risk generally I have found splitting my hives more or less evenly between both systems. The work schedule does not coincide perfectly between the two types of hives so that some efficiencies do develop by having bees wintered under both systems. Those efficiencies are unique to each individual operation but should be something considered when planning. As always, if we make a production system work then it is successful, for us, and deserves the consideration of others trying to improve their business. BC

Terry Fehr operates about 1,000 colonies in Gladstone, Manitoba. He started with 14 colonies 20 years ago.

TAINTED CHINESE HONEY

With A Name Like That, It Might Not Be Good

Dwayne Lumpkin

JM Smuckers Company of Ohio became the latest flash on a global radar that's been blipping with news of Chinese honey for three years (see sidebar). A July 23, 2003 FDA recall report listed 12,040 cases of Smucker's honey tainted with chloramphenicol, a broad spectrum antibiotic, found in honey from China.

Sara Lee Bakery has admitted using more than 100,000 pounds of honey from a source testing positive for the presence of this banned antibiotic. This same source, Hoyts Honey Farms in Texas, was the subject of a February seizure of 92 tons of tainted honey, initiated by the FDA.

Chinese "ultrafiltered" honey, a mysterious new import, has washed ashore amidst waves of concern over polluted honey in products aimed at American consumers. The radar screen has literally gone wild, blipping with news of questionable Chinese agricultural and export practices.

The recalled Smuckers honey was labeled for the Ritz Carlton Hotels and Dickenson's Family Products (a subsidiary of Smuckers). At 72 bottles per case, over 850,000 individual units were contaminated by antibiotics. Smuckers discovered the adulterated honey through internal testing and voluntarily initiated the FDA reported recalls.

Brenda Dempsey responded to questions about the source of tainted honey as follows: "The supplier of honey in question was not a main supplier and the JM Smucker Company no longer does business with them. We prefer not to disclose the name of the supplier as we are currently evaluating potential causes of action against them as a result of the honey issue."

Stephanie Platt, of Ritz Carlton replied, "We immediately complied with the FDA recall and therefore there is no more of the recalled honey in our hotels." Dempsey indicated the polluted honey had been warehoused for over a year. "Smuckers now has a strict policy against Chinese honey and products containing chloramphenicol."

The Smucker's honey designated for Ritz Carlton Hotels was labeled "U.S. Fancy." An FDA spokesperson confirmed "U.S. Fancy" refers to the grade of honey, not its geographic origin. The Dickenson's labeled honey was marked "Product of U.S.A;" intended for Canadian export it contained a blend of honey from several countries of origin.

As per FDA regulations, food service products do not require listing "countries of origin" on individual packages. This information is contained on the outside of each case. The blended honey under recall was from the USA, Canada, Argentina, Mexico, Turkey, India, and Brazil. Companies from Mexico, Turkey and India have been implicated in international investigations of Chinese honey smuggling.

When asked if Smucker's labels could be confusing to consumers, Dempsey said, "I can't know what consumers think...We abide by all FDA labeling requirements." Smuckers trades on its "down home Americana" image, portrayed in sophisticated advertising campaigns. Remember... "With a name like Smuckers, it has to be good."

U.S. honey producers worry that consumers will shy away from all honey if similar recalls continue. The labeling of the Smuckers/Ritz Carlton/Dickenson adulterated honey as "U.S. Fancy" and "Product of U.S.A." is of particular concern to American beekeepers.

Several members of the American Honey Producers Association (AHPA) pointed to the apple/alar scare that led to such confusion for consumers, many quit eating apples. Some U.S. apple growers never recovered and acres of orchards disappeared. Lyle Johnston, President of the AHPA indicates that U.S. honey is the safest in the world. It's harvested and processed under stringent health regulations and has never contained chloramphenicol.

T W. Burleson & Sons, Inc. of Waxahachie, TX refused to comment on the January FDA seizure of adulterated honey in a Houston Chronicle article. Numerous e-mails and phone calls to Vice President, T.E. Burleson, Jr. for this article went unanswered.

Nobody Doesn't Like Sara Lee?

The largest and most recent seizure of antibiotic tainted honey was at Hoyts Honey Farm in Baytown, Texas in early February. U.S. marshals confiscated 92 tons of honey, labeled "Product of Malaysia." Sara Lee Bakery's media contact, Matt Hall, acknowledges receiving 155,000 pounds of honey in multiple lots from Hoyts Honey Farm between July 31st and August 5th of 2002. The honey was a blend which included 22% of the "Malaysian" product.

Continued on Next Page

TAINTED ... Cont. From Pg. 41

Tommy Burns, owner of Hoyts Honey Farm, says the FDA's initial contact with Hoyts occurred last August 15th, when honey samples were taken for testing. They were investigating shipments from a U.S. honey broker. The honey in question had cleared U.S. Customs, but shipments from the same supplier later tested positive for chloramphenicol.

Burns was not available that day, but his employees supplied the FDA with folders containing sources where additional honey under investigation had been sold. One of these companies was Sara Lee. All honey purchased from the questionable source was quarantined at Hoyts, pending test results. The FDA returned to Hoyts on August 19th when Burns was present. His company, again, identified sources where the "Malaysian" honey had been sold.

The FDA did not have the jurisdiction to keep Hoyts from selling the quarantined honey, but indicated product recalls could result if Burns continued to distribute the product. Sara Lee confirmed they were never contacted by the FDA. Burns says, "I have no knowledge, of contacts between FDA and customers."

Sara Lee was informed of the FDA testing by Hoyts on August 19th. They also received an explanation from Burns: "Other shipments from the same source had tested positive for chloramphenicol." He admits, in hindsight, his company "could've handled the situation differently." Dealing with FDA investigators, Texas Department of Health inspectors, and U.S. Marshals was a "frightening experience." With no previous history in such matters, Burns says he "may have made some mistakes."

There was a 10 day gap between Sara Lee's awareness of a potential problem and their quarantine of the honey in question on August 29th. Matt Hall explains the 10 day period was spent determining which lots were under suspicion. In the meantime, 118,680 pounds of blended honey, now known to have been polluted by a banned antibiotic, were used in products purchased and presumably eaten by consumers. The 36,320 pounds of honey quarantined by Sara Lee were subsequently returned to Hoyts Honey Farm for credit. Sara Lee continues to use Hoyts as a supplier.

Because the tainted honey was used in fresh-baked goods with a short shelf life, Hall says there were no affected products left on the market by the time the FDA reported confirmation of chloramphenicol on September 18th. Again, Hall reports no contact between Sara Lee and the FDA regarding this matter.

Tommy Burns indicates an official quarantine was placed on the "Malaysian" honey at Hoyts on October 23, by the Texas Department of Health. He explains issues of jurisdiction may have caused the lag between confirmation of chloramphenicol and physical seizure of the honey the following February.

FDA reports and media articles were correct in stating U.S. Marshals took custody of the honey the week of February 5, 2003. Yet, the adulterated honey had been under quarantine for nearly six months. These conflicting dates caused some confusion within the American honey industry where news of the seizure at Hoyts and Sara Lee's use of tainted honey were openly discussed.

Members of the American Honey Producers Association sent a letter to U.S. Senators and Congressmen: Mark Udall, Tom Tancredo, Wayne Allard, Ben Campbell, and Tom Daschle. "We (AHPA members) feel, and want your office to assert, that both for food safety reasons as well as other reasons the recall of illegally purchased Chinese honey should extend not only to the first importer, but also to all the people that importer sold the product to."

The letter continues, "For example, the FDA confiscated honey this spring from the Hoyt Honey Co. in Houston...The amount confiscated did not add up to the amount imported. Where was the rest? It was probably at Sara Lee's bakery. An inspection of the drums of honey purchased by Sara Lee would have been easily accomplished...The honey not yet used should have been confiscated."

An FDA spokesman was asked about Sara Lee and the missing honey from Hoyts. "We (FDA) cannot confirm an investigation or comment about ongoing investigations." The AHPA letter to Colorado's elected state officials asserts, "The feeling amongst those of us who want the FDA to do what the public thinks it does is that in this instance they just wanted to give the appearance of enforcement, not actual enforcement."

The chain of events involving Hoyts Honey Farms, the FDA and Sara Lee Bakery appear to substantiate the concerns expressed by AHPA members. The FDA's narrow focus on the original source of the banned honey, apparently led to a lack of investigative follow-through. This it is suspected, resulted in the sale and probable consumption of hundreds of thousands of pounds of bakery goods containing an antibiotic banned (by the FDA) for use in food products.

There's enough culpability to go around. The FDA failed to notify Sara Lee and other Hoyts clients of the possibility of a tainted product. This does not excuse any delays in immediate communications between Tommy Burns and his customers. Finally, Sara Lee's continuing use of polluted honey for ten days after being alerted of a potential problem is disconcerting.

The FDA has not reported any recalls of products with tainted honey as an ingredient. Canada's Food Safety Agency shows a slew of recalls for bakery goods last April due to Chinese honey with chloramphenicol.

The irony is, most bakery items substituting honey for sugar are aimed at health-conscious consumers. These are the very consumers who would be most concerned about banned antibiotics in their food. There should be better safeguards in place to prevent situations like this. Finger pointing, at this stage in the game, is like introducing Pot, Kettle, and Black to each other.

China Fakes Right and Runs Straight Up the Middle

Just as American honey importers, large scale packers and wholesale suppliers insist the tainted Chinese honey is behind us, a new

Continued on Page 44

The Problem with Chinese Honey: A Synopsis

In the late 1990s Chinese honey exports were adversely affected by foulbrood and other maladies, resulting in disease and dysentery among their bees. Reportedly, chloramphenicol was one of the drugs used to treat the problem. It is a broad spectrum antibiotic that has been banned for general use in the U.S. and most European countries. It's considered carcinogenic and is associated with idiosyncratic aplastic anemia, a rare but deadly blood disease. The risks are very low in the general population, but a safe dosage level has not been determined for those susceptible.

Broad spectrum antibiotics like chloramphenicol are reserved for serious diseases, such as typhoid fever, when all other treatments fail. Prudent use of powerful prescription drugs is necessary to avoid the emergence of bacterial strains resistant to synthetic antibiotics. The Center for Disease Control and the World Health Organization have reported new strains of tuberculosis and salmonella that do not respond to antibiotics.

Some Chinese honey exporters began "dumping" their product on the U.S. market below the cost of production early in 2000. At a time when American honey was selling for $.60+ per pound, Chinese honey was offered as low as forty cents a pound.

In September of 2000, several U.S. honey producers filed an unfair trade case with the U.S. Department of Commerce. The action was successful. In May, duties ranging from 34 to 184 percent were attached to specific Chinese companies. Similar tariffs were applied to some Argentine honey because of "dumping."

Some Chinese companies hatched an elaborate smuggling operation to bypass tariffs. In August of 2002, joint international Custom's investigations implicated businesses in China, Vietnam, Malaysia, Thailand, Mexico, and Australia in the scheme. Unscrupulous exporters relabeled Chinese honey as a product of their respective country and transshipped it to the United States. Sometimes the Chinese import was blended with native honey and exported; usually it was simply relabeled and sent to the U.S.

Countries with little previous history of exporting honey suddenly began shipping full containers to the U.S. Some of the developing nations were incapable of producing the quality of honey they were exporting. Australia was in the middle of a widely reported drought that was reducing their agricultural crops, yet there was a dramatic increase in their honey exports.

U.S. Customs and the FDA sought a "marker" in Chinese honey, identifying its country of origin. Due to E.U. testing and reports that chloramphenicol was found in Chinese honey, this became the FDA's marker. The European Union reacted to the presence of chloramphenicol quickly. Chinese honey has been banned for import to all members of the E.U. Instead, the U.S. initiated testing all Chinese honey and shipments from other suspicious sources.

Throughout 2003, problems with Chinese honey continue to surface. The web-site for U.S. Customs lists specific foreign companies whose honey can be "detained without physical inspection." The eleven companies included have headquarters in Hong Kong, Vietnam, Thailand, Mexico, Hungary, Malaysia, and China. The most recent update to this list was in March of this year. Honey of Chinese origin has also been discovered coming from Turkey and India.

At one point U.S. Customs reported total seizures of suspicious honey at fifty containers. There are questions about the disposition of this honey and whether its return to exporters will lead to "ultrafiltering" and re-shipment to the U.S. Honey labeled "ultrafiltered" is the latest wrinkle in ongoing problems with Chinese agricultural goods and products derived from aquaculture.

China claims chloramphenicol is no longer applied to bee hives or used in the honey industry. In fact, China has "officially" banned the antibiotic in food producing animals, but reports from European agricultural inspectors indicate otherwise. Explanations for its presence in exported bee products vary. One possibility is connected to Rural Chinese farmers' practice of fertilizing their agricultural crops with untreated human waste. This "human manure" has caused widespread water pollution and bacteria laden agricultural products.

China is the world's largest exporter of bee products. Honey, royal jelly and beeswax are the mainstays. They also export more seafood than any other country. Chinese seafood exports have tested positive for the presence of banned antibiotics; particularly crawfish and shrimp. Farming of shrimp and crawfish in China has nearly doubled in the last decade. This growth has taken place in rural areas where most beekeeping occurs. The most obvious connection between chloramphenicol, shrimp, crawfish, and honey is water; possibly water treated with antibiotics due to bacterial contamination.

Historical records indicate the tradition of tea drinking stemmed from the necessity to boil water, eliminating contaminants. Traditional Chinese cooking techniques incorporate extremely high temperatures for the same reason. The use of chopsticks was also a health related development.

Due to international exports, current problems require more complicated solutions to ongoing Chinese agricultural and business practices. Global health issues related to China and some developing countries places a tremendous amount of responsibility on the U.S. and other developed nations. Continuing support of agricultural systems using powerful antibiotics in a preventive role, rather than as a valid option for treatment of diseases has lasting ramifications.

The inexpensive price tags attached to many available exports may end up costing more than anyone thought possible. The sum total may include human lives as well as dollars and cents. BC

TAINTED ... Cont. From Pg. 42

product from China has appeared on the international export market. The radar screen is mysteriously blipping with news of "ultrafiltered" Chinese honey.

Nick Sergeanson of Sunland International in Connecticut reports receiving several samples of a honey product from China labeled "ultrafiltered." His company has rejected offers to import this product based on physical characteristics alone; namely, lack of color, improper texture, and little or no taste.

Others who have seen this product include: Bruce Boynton, CEO of the National Honey Board in Colorado, Mike Ingalls of Pure Foods, Inc. in Washington State and Lee Goin of Columbia Food Laboratories, near Portland, Oregon. These parties are united in efforts to develop tests identifying this product as something other than honey.

This "ultrafiltered" honey may not look like a duck, pour like a duck, or taste like a duck; but chemically, it tests like a duck. Available tests reveal the presence of corn syrup or sugar water, elements traditionally blended with honey for economic purposes by unscrupulous packers. By mixing equal parts of this Chinese product with natural honey, its presence is disguised and physical characteristics are improved; detection by current testing methods is nearly impossible.

FDA regulations state that a food product cannot be obtained from an adulterated source. Since China's latest offering on the export market contains no traces of chloramphenicol, its origin as a tainted product is difficult to prove. Logic and common sense indicate no other reason for turning honey into a nearly unrecognizable product than an attempt to filter out a banned substance.

Mike Ingalls, a honey importer, distills the controversy down to a very pragmatic level. "If you had sausage with pig poop in it and someone found a way to remove the pig poop, would you want to eat that sausage?" Ingalls testified before Congress against U.S. Department of Commerce tariffs placed on Chinese honey. He is, however, united with American honey producers on this issue.

Bruce Boynton of the NHB states his position clearly. "If the source of this honey is an adulterated product, it is still adulterated after filtration and should not be allowed on the U.S. market." The NHB forwarded a report about the actual "ultrafiltration" process and its legitimate use for rendering honey compatible to needs within the beverage and food industries. Such applications have increased demand for honey.

Many honey industry insiders doubt the Chinese import is actually "ultrafiltered" due to the expensive nature of the process and the low price it's being offered at. Sources indicate ceramic disc filtering or carbon filtration is more likely. The National Honey Board receives reports from independent committees struggling with these issues. One such committee is attempting to draft a "formal identity for honey" in hopes the FDA will adopt the proposal for regulatory purposes.

The FDA is aware of the "ultrafiltered" Chinese product and requires it to be labeled "sweetener derived from honey." U.S. importers report attempts by some Chinese companies to sell the sweetener as pure honey. The more natural honey mixed back into the processed honey; the more difficult its presence is to detect.

Separate committees are working with different labs to develop a test to identify the presence of an "utrafiltered" product, even when mixed with natural honey. Columbia Food Laboratories and scientists at Penn State are attempting to develop such tests individually. According to Bob Coyle, a honey importer and secretary-treasurer at the NHB, the goal is for each lab to "work independently on their own hypothesis."

Columbia Food Laboratories will have a completed validation of test methods by mid-September. Hopefully, the FDA will use logic in identifying the likely source of "ultrafiltered" honey from China as an unmarketable tainted product.

Some Chinese honey producer's ongoing efforts to clean-up their contaminated product are a logical answer to the dilemma of sitting on a product that is unfit for export to most countries. Paul Hendricks, a Colorado honey producer says, "They're not going to dump it in the ocean." Processing costs are a small price to pay when you've got nothing to lose.

Chinese honey smuggling could resume once the chloramphenicol "marker" is removed. It would be financially advantageous for unethical honey exporters world-wide to scoop up China's damaged goods, mix it with their own and transship it to the U.S. as a product of their respective countries. Current FDA tests would not compromise such practices.

The Proverbial Forest Through the Trees

Critics of reporting these events point to the minimal risk associated with low levels of chloramphenicol found in Chinese honey. Yes, it's true...a very small amount of the world's population is susceptible to aplastic anemia (the official reason for its ban). And yes, it's true...an individual would probably have to consume astronomical amounts of Chinese honey to produce carcinogenic results. And yes, it's also true...American honey producers use antibiotics to fight infections in their hives. Yet...

There is a difference between prudent use of antibiotics in human and veterinary applications and reports of indiscriminate use of chloramphenicol and other broad spectrum antibiotics in China. Some Chinese exporters have gone so far as to characterize FDA testing of their honey as a "technical barrier to trade."

Officially, China claims discontinuation of chloramphenicol use in food producing animals. Eyewitness accounts by European Union agriculture inspectors refute such assertions; the continuing presence of antibiotics in some Chinese honey supports this refutation. Member nations of the EU have retained their ban on Chinese honey and other products derived from bees for this reason.

Tainted equipment has been cited as the reason for the ongoing presence of chloramphenicol. Steril-

ization of equipment is a simple procedure and would eliminate this explanation. Replacing contaminated wax comb is another technique to reduce or eliminate this problem.

Perhaps similar issues involving Chinese shellfish point to a more endemic problem. The obvious connection between shellfish and honey is water. Shrimp and crawfish are harvested from farms in rural China. In fact, Chinese shellfish farming has nearly doubled in the past decade. Much of China's beekeeping also takes place in rural areas.

The use of untreated human waste as fertilizer by rural Chinese farmers raises questions about potential water pollution and subsequent treatment of the water with broad spectrum antibiotics. Witnesses report shrimp farmers throwing gallons of whatever antibiotic they can get their hands on into ponds filled with shellfish. Medical and Pharmaceutical experts report widespread use of strong antibiotics is resulting in bacteria resistant to available drug treatments.

Antibiotic misuse and resistant bacteria are reported all over the world, but health officials point to China as a particular problem. According to an AP report, "Antibiotics account for 70% of all Chinese prescriptions, compared to 30% in Western countries." Because of China's dense population, a breeding ground for drug resistant bacteria has developed. In addition, 6,000 tons of antibiotics are consumed by Chinese cows annually. This bovine consumption leads to antibiotic tainted milk and other products derived from cows.

Many Chinese exporters have demonstrated a pattern of disregard for U.S. import rules and regulations. Some Chinese honey producers seem unwilling or unable to provide honey free from antibiotics. When efforts to "dump" their product were thwarted by tariffs, they initiated an international smuggling operation. Now that U.S. Customs and the FDA have initiated testing as a deterrent, a mysterious "ultrafiltered" honey is being offered. At what point will U.S. honey importers decide Chinese honey is not worth the inherent risks?

Are agricultural whistle-blowers only looking out for their own interests? Do we have the right to police the use of broad spectrum antibiotics around the globe? The U.S. could wield great power if we curbed our imports of Chinese agricultural goods. Some would say we have that responsibility. This requires looking past our own tree trunk and glimpsing the international forest ahead.

Hundreds of millions of dollars have been spent, internationally, on investigations, testing, detainment, quarantine, recalls, seizures, and disposal of tainted Chinese honey. Perhaps the European Union ban on Chinese bee products is looking more responsible and less reactionary; on both economical and ecological levels.

Possible solutions include a ban or serious curtailment of Chinese agricultural goods imported into the U.S. Similar actions, regarding manufactured goods, once took place due to Chinese human rights violations. Full disclosure of companies involved in importing and distributing tainted Chinese honey is essential. To borrow a homespun phrase from Dr. Phil: "Those with nothing to hide, hide nothing."

American honey producers, importers, packers, and the National Honey Board should continue addressing FDA labeling requirements for consumers who prefer to buy U.S. Products, not just products packaged in the U.S. Hopefully, new tests will nip the "ultrafiltered" Chinese honey in the bud and the FDA will logically conclude its source as polluted honey; regulations are already in place to keep such products from reaching consumers.

Companies like Sara Lee, Smuckers, and Ritz Carlton must stay better informed about developments in the international honey industry. Decisions based only on dollars are risky when the costs of recalls, boycotts, and class-action lawsuits are factored in. At this point, supporting U.S. honey producers isn't about patriotism; it may prove to be financially prudent and instrumental in producing a healthier global environment. BC

Dwayne Lumpkin is a freelance writer living in Southern Oregon.

Past Pieces

The Clark Cold-Blast Smoker: Its Beginning

Wyatt Mangum

In the last article, we delved into the year 1879, a time of great change for A. I. Root's Simplicity smoker. From a hot-blast smoker with possible patent infringement problems, it evolved into something quite different – a cold-blast smoker, now completely free of prior claims. While the year marked a bright beginning for the newly renamed Simplicity Cold-Blast smoker, another event in that very same year would spell its demise. Eventually the Simplicity would fall from favor, becoming obscure, rare, and virtually forgotten. Not surprisingly as that year unfolded, Root was right in the thick of these developments, always searching for improvements.

Some beekeepers thought his Simplicity was a little awkward to handle, especially to pick up, with the bellows underneath, instead of on the side as with the original Quinby design. When examining a colony, the smoker could be placed on a corner of the hive with the bellows hanging over the edge a little. With the smoker in this position, it was easier to pick up, but still some beekeepers were not satisfied.

Root responded to this inconvenience, explaining in the March 1879 *Gleanings in Bee Culture*, "Well, as there are many of our friends who prefer an upright smoker like Mr. Quinby's original one, I very soon thought of adapting the cold blast principle to these." In that same issue, Root published a letter voicing this concern from T F C. Van Allan of Adam's Station, New York. His letter also gives us some indication of the trouble one would go through just to use cold smoke.

"Mr. Corey's smoker looks like the long sought for concern. I have always made it a point to hold the nozzle of the smoker as far away from the bees as practicable, to avoid the hot smoke; but this could not be done in windy weather.... Can't you make the new smoker with an upright bellows? A flat one, I think, is very unhandy."

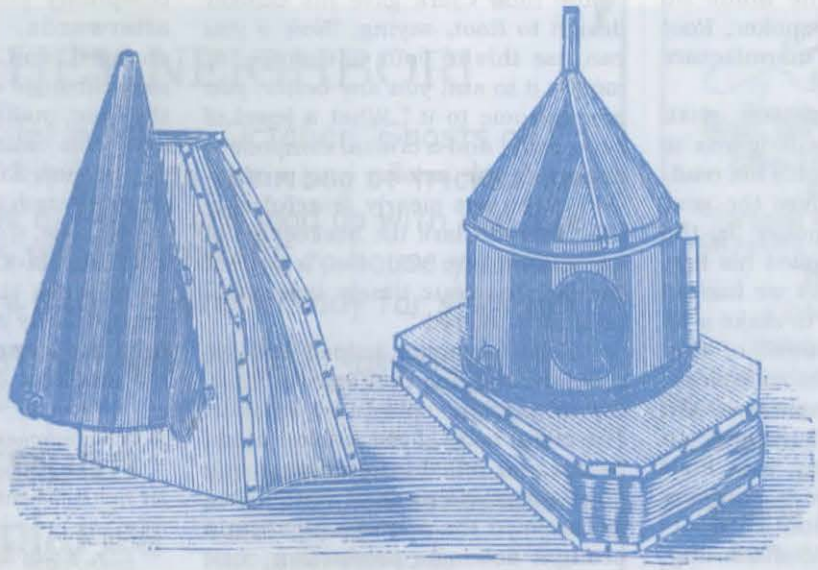


Figure 1. *An engraving from the March 1879* Gleanings in Bee Culture. *The then-called Clark cold smoker is on the left, and for comparison a Simplicity cold smoker is on the right. These two smokers would eventually compete for beekeepers preferring cold-blast smokers.*

Root, and others at his factory, set to work in constructing an upright cold-blast smoker. They found it could be done, although they had problems with its manufacturing and cost. And to make matters worse, these obstacles seemed unavoidable. From the previous article, remember how the tube of the Simplicity Cold-Blast smoker went straight up, pointing to the hole in the funnel. In the redesign, moving the bellows to the side of the smoker required the blast tube to enter the fire box from the side, then make a sharp right angle turn to again point towards the funnel's opening. Without using solder, fabricating the tin tube with a right angle seemed impossible. As Root explained, "To do this, without solder, was no small problem. The tinners, myself, and Mr. Gray studied on it, in vain." I imagine the solder would be expensive to apply and may eventually fail with the repeated heating while using the smoker. The other problem was the smoker's production cost. Root wanted to keep its selling price at

Continued on Next Page

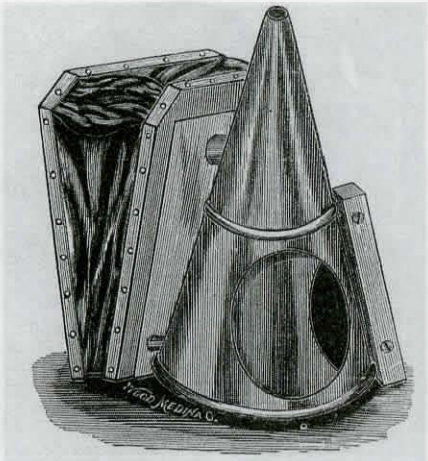


Figure 2. *A side-loading Clark smoker, a design borrowed from Root's version of the Corey smoker. I don't think this smoker was produced for very long. I have never seen one, and other pictures of the Clark smokers show them with the rear door.*

75 cents, same as before, but their upright cold-blast smoker ended up costing more.

Now at this point, a piece of smoker history repeats itself. From a previous article, remember in the January 1879 number of *Gleanings in Bee Culture*, Root wrote about his meeting with Bingham, where he learned his first Simplicity smoker was probably infringing on Bingham's direct draft claim. While not agreeing with him, Root voluntarily decided to halt production of his smoker. In response, Corey, a faithful subscriber, sent Root his solution, then known as a Corey cold smoker. Since he made no patent claims on the smoker, Root was free to modify and manufacture it, which he did.

That fateful meeting with Bingham, and Root's willingness to share that discussion with his readers, would again catalyze the genesis of yet another smoker. In the March issue, Root recalled his first encounter with it, "After we had all given up on being able to make a 75 cent smoker, on account of this little difficulty [the blast tube problem], a box came by express...." On the left side of Figure 1, you see an engraving of the smoker that Root removed from the wooden shipping box. The box also contained a letter from Norman Clark of Sterling, Illinois. It began with,

"I received my January *Gleanings* promptly on time, and at once set myself down to read. ... When I read your talk with Bingham, and your decision about the smoker, I thought there might be some other plan ... that would answer as well; very soon a plan came to me, and I worked out the details."

Then in the next paragraph, Clark conveys his shock upon receiving Root's next issue,

"Now I have your Feb. number of *Gleanings*, and lo! and behold! you have the same principle embodied in the one from a friend in California; but I have decided to send you the one I have made, and perhaps there may be some features about it that you may like even better than Corey's."

As we shall see, given all the forthcoming developments of Clark's smoker, and its future impact on beekeeping, how intriguing it is to now know his decision teetered precipitously on whether he should *even* send it in. Though separated from that fateful decision by about a century, nevertheless, it had a profound effect on me as well. For it was a Clark smoker that I first found and identified, a smoker that for me opened the door to our beekeeping history, and in turn, led me to save and preserve those precious pieces of our past, and subsequently to write these articles. Indeed, know it or not, like it or not, we are deeply rooted in the past.

Near the end of Clark's letter, another bit of bee smoker history repeated itself. As with Corey just before him, Clark gave his smoker design to Root, saying, "Now if you can use this to your advantage, or modify it to suit you any better, you are welcome to it." What a jewel of generosity, and a critical component in getting the smoker into production. Root was clearly grateful saying, "Friend Clark the beekeepers of our nation owe you, too, a vote of thanks, for your timely invention, so kindly offered."

Clark's smoker helped Root to solve the nagging problems in making an upright cold-blast smoker. The metal body of the smoker could be cut and rolled into a cone using mostly a single piece of metal. This streamlined the manufacturing and brought down its production cost, to Root's delight,

"Just see how simple! A single piece of tin for the body, and another for the bottom.... Nothing can be cheaper or simpler. We can give you a nice, large smoker, on this plan, for 75 cents, or 50 each by the half dozen."

Figure 3. *The breech-loading Clark smoker seen from the rear. The door easily swings open by pivoting on a rivet.*

After some additional experimenting, the blast tube problem was solved by making it come into the small end of the cone at a slanting angle instead of making that difficult right-angle turn. Interestingly, the first Clark smokers made by Root were refueled from the side like the Simplicity (see Figure 2). Shortly afterwards, this feature was changed, and the smoker was refueled through a door at the base of the cone, making it a "breech loader" as it was called (see Figure 3).

So now Root's bee supply business offered two cold-blast smokers for sale, the Simplicity cold blast and the Clark cold blast. Next time we will see the Clark smoker rise in popularity as the Simplicity fades from the scene as the story of these old smokers continues. BC

Acknowledgments

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

Dr. Wyatt A. Mangum is a honey bee scientist, life-long beekeeper and part-time mathematics instructor at Mary Washington College, Fredericksburg, Virginia 22401-5358, wmangum@mwc.edu

James E. Tew

Bee Culture's Beeyard

The Protective Beesuit

Honestly...

A review of bee suits doesn't sound very exciting. It's like a discussion of sandpaper when you really want to be reading about a table saw, or eating a salad when you really wanted a burger. A bee suit just needs to happen in order for the real bee work to progress. Looking back, I don't think I have ever written about them.

In fact, in our bee museum, we have very few old bee veils and bee suits. The old veils were made primarily from wire screen which the prodigious sweat from old beekeepers' brows made rusty. And who wants to try on an old sweaty, rusty bee veil? (Come to think of it....Knowing beekeepers – probably all of you.)

No bee life without them...

Without some kind of protective gear, our bee life would change radically – or even cease to exist. Very few among us could keep bees without EVER using a veil or some kind of protective clothing.

Below, I have improvised arbitrary classes of protective gear and within those classes I will attempt to discuss the ups and downs of each type of equipment. I don't have examples of all the protective gear on today's bee market, but I do have a good smattering of the common equipment styles. And some of the examples I present for you in this article may show signs of heavy use. We really do use them.

When to wear what...

As you continue to keep and manage beehives, your protective clothing collection will grow. I was out with a new beekeeper last week. He had a new pair of canvas gloves and a new Alexander veil. That was it. I, being the old experienced guy, selected – from my extensive protective-gear-bee-wardrobe – the appropriate suit for the bee tasks that were at hand.

A quick look at some beehive feature may not require any protection at all (with the concurrent risk) while looking for queens or removing honey crops may require the maximum suit protection. Generally, we have light, medium, heavy and super heavy (duct tape-reinforced) bee suits to meet our various beehive manipulation needs.

A mosquito net with a waterproof hat.

Protective Equipment Classes

1. No protective gear at all.
2. A veil
a. A light veil
b. A heavy veil
3. A half suit with veil
a. A ventilated half suit
b. A cloth half suit
4. A full suit
a. A Disposable paper suit
b. A traditional full suit
c. A special full suit

No protective gear...

Using no gear is for the special days when very quick things need to be done. It is probably a universally bad idea not to wear some kind of face gear, but if you work bees long enough, you will have a day when you will run the risk. Maybe working nucs or checking a new swarm are events that could be accomplished with no gear, but otherwise, have the equipment nearby.

A light veil...

This is my favorite equipment – but only when it's appropriate. My eyes and face are protected, but the equipment is not so hot that I suffer. Ironically, my very favorite and the one I have pictured below is not standard beekeeping equipment. I bought the veil (for mosquitoes and black flies) at a sporting goods store. The hat is a Canadian-made Tilly™ that I enjoy wearing even without the bee garb. Requiring no space, I can stuff the veil in my hip pocket and wear the hat. In a pinch I can use the file on my

Continued on Next Page

A light-weight veil and hat. Note the open throat for added excitement.

Leatherman™ as a hive tool, so I am (pretty) good to go. With this gear, I can't get too involved in the hive without smoke, but for a quick look under the right conditions, I love this little get-up.

Sometimes a light veil can be improvised from whatever is at hand. A citrus bag makes a decent albeit desperate veil. How many different veil styles can you spot in the following photo?

A low cost veil. Check out the other veil styles.

A heavy veil...

The industry is replete with traditional heavy veils. Most of the beekeepers in the photo above are wearing heavy veils. They are rugged, hot, clumsy, common, and fall from your head when you lean over the hive. Yet, no bee operation is complete without several of these styles hanging around. We use them all the time – even though they have shortages.

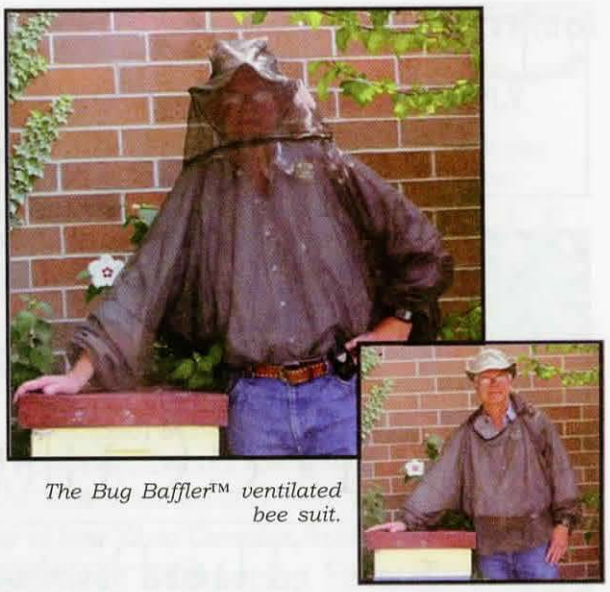
Half suits...

As I move up the ladder of degrees of protection, the next level would be the half suit. This would be my second favorite. As the name implies, the half suit covers you to the waist. There are definitely no legs. Whenever possible, I tuck the bottom of the half suit into my jeans for a good snug fit. This also has practical merit as the elastic band at the bottom of the half suit seems to fail quickly.

This suit is lightweight, and quick to open up for a drink or just to take a break from being trapped in a bee veil. The half suit gives you that relaxed look for the those casual evening beekeeping events.

There are also several brands of suits that are essentially just large veils that cover your entire upper body. These, too, are lightweight, cool and convenient. You may choose to wear a cap or hat underneath this style of veil. But for heavy work, they snag on nearly everything and when you get sweaty the bees have a place to sting where the wet veil material clings to your body. Even so, overall I like this style.

I frequently wear the Sherriff brand suits because they come in colors. Otherwise, practically all commercial bee suits are in vivid white. The Sherriff suit, being made in England, zips on the wrong side (by my standards) so I am a bit clumsy getting the suit going. Many companies make such half suits so it will not be hard to find one.



The Bug Baffler™ ventilated bee suit.

A traditional heavy veil.

Closed and Open

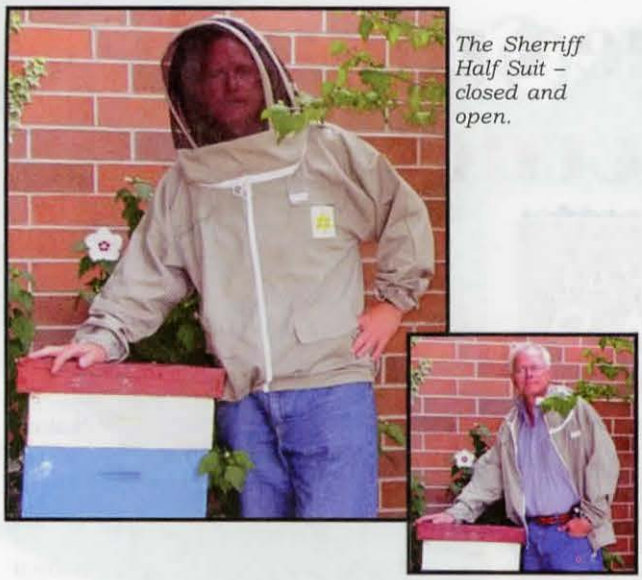
The Sherriff suit, as do others of this style, have a thin flexible wire that gives rigidity to the veil. I don't normally wear a cap underneath this type of veil. If I have found routine problems, it is that the elastic within the wrists and waist fails quickly. Also, with any type of veil having the fiberglass mesh, a brush with a hot smoker will quickly melt the mesh.

The Walter T. Kelley half suit

The Kelley Company has a half suit made locally from 100% nylon. The suit is well made having nice features such as drawstrings and hook & loop fasteners on pockets. I like the feature of being able to completely remove the veil in order to wear the suit as a jacket – especially in riding in the truck. This, and others on the market have a built-in hat, which adds stability to the veil, but is not well ventilated, so it tends to be warm. It's still easy to use though.

Full suits – going heavy duty

Okay, for those of you who absolutely do not want to be stung or for those of you who plan to be in



The Sherriff Half Suit – closed and open.

the bees a lot, it's time to roll out the big canon – the full suit.

These suits are generally the hottest, the heaviest and the most expensive, but they offer the most protection. They very nearly require two people to put them on and the zippers tend to lock up at the most inopportune place (behind your head), but I don't know of a suitable improvement. These suits are clearly intended to allow the beekeeper to work bees – no matter what the conditions. These suits are our big guns.

Commonly, the veil is attached with a zipper, but a slightly cheaper suit uses a veil that ties on. Though we have the zipper model, we still use the unzippered model. We can use the tie-on veil without the suit, but with the zipper on the veil, we are restricted to using that veil with that suit. These heavy suits are available from all the bee supply companies. Most are made of cotton, but in the past, such suits were occasionally made from rip-stop nylon. While several companies advertise a cotton/nylon blend, the W T Kelley Company is the only company that I found still making lightweight suits specifically from nylon.

W.T. Kelley nylon half suit.

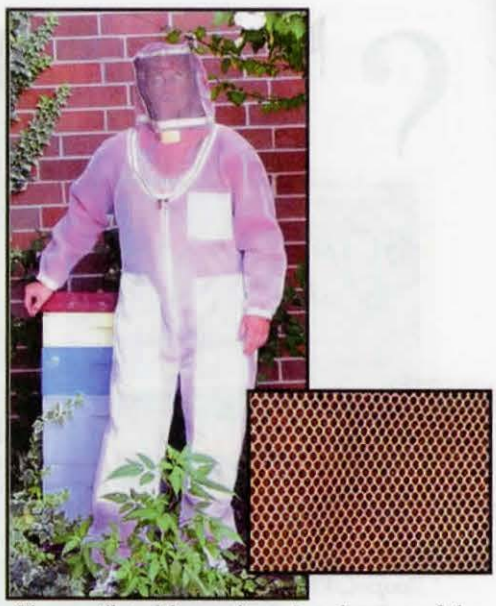
The paper suit

A general suit, made from reinforced paper, is available from the Dupont Company. Under the trade name Tyvek. We always have a few of these (somewhat) disposable suits around for special visitors or whatever. With light use, they last a long time, but they do not replace the heavy duty cotton suit.[1]

A heavy-duty full suit manufactured by Dadant & Sons.

The heavy ventilated suit

A unique heavy duty suit is manufactured by Golden Bee Products in Metairie, Louisiana. The suit is made from thick foam that is protected by a cotton net surface. Air freely moves through the nylon foam material but the foam is thick enough that a bees' sting cannot reach the beekeeper. The suit offers nearly complete protection from stings and is reasonably cool, but tends to be bulky and a bit scratchy inside. As with other suits made of synthetic materials, keep hot smokers away from them. This is a promising suit for someone who wants NO stings EVER.



The ventilated bee suit and a close up of the material.

Recommendations?

As quickly as possible, I would procure a very light veil and have a much heavier veil for the bigger days. The fact is that I don't always do big jobs every time I open the hive. Maintain your equipment. It's expensive and it keeps you from getting stung. I lean toward half suits. I can usually find a heavy pair of pants and I like the jacket comfort of the half suit.

As I wrote this article for you, I was honestly surprised to review all the different types and styles of protective equipment. There is truly a fashion statement to be made in beekeeping. Find your spot and make your statement. BC

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

[1] Brushy Mountain Bee Farm is one company that lists Tyvek coveralls.

? DO YOU KNOW ?

Feral Swarms & Nest Cavities

Clarence Collison
Mississippi State University

During the third week of July, while at 4-H entomology camp, we were out walking down a park trail collecting insects when we heard a roar above, so we began looking for bee activity or a bee tree. Eventually we spotted a dead tree with a hole in the side of it about 50 feet high, with bees hovering around the entrance hole. At first I felt that it was a bee tree with bees actively coming and going, but the roar kept getting louder and more and more bees were filling the air. So my second thought was that the bees were in the process of swarming or they had been disturbed by some animal in the hollow tree. In a few minutes, however, flight activity began to slow down and get quieter. Upon further examination, it was obvious that the bees were crawling up the tree trunk and entering the hole. We had just observed a swarm moving to a new homesite. This is a very unusual phenomenon, since we do not normally expect a colony to be swarming in July, especially in the south.

Answer the following questions to see how well you understand swarming behavior and the nest cavity characteristics that feral swarms would find desirable.

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

1. ____ Both the queen and workers use their Nasonov gland (scent gland) in guiding a swarm cluster to a new homesite.
2. ____ Beeswax combs are always constructed parallel to one another, but may be curved in the vertical plane.
3. ____ A combless cluster of honey bees, such as a swarm will start to build honeycomb provided they are accompanied by a queen and are hanging in a position where they are subject to low light intensity.
4. ____ In the natural or feral bee nest, bees build several parallel combs at one time.
5. ____ Honey bees prefer to have entrance holes at the top of the nest cavity.
6. ____ When scout bees search for a new homesite, they enter potential cavities and walk inside to measure dimensions.
7. ____ Feral bee nest entrances facing in an easterly direction are preferred by honey bees.
8. ____ Honey and pollen are normally stored to the sides and below the central brood area in the feral honey bee nest.
9. ____ Honey bees seem to prefer feral nest sites that are higher than those at ground level or close to the ground.

Multiple Choice Questions (1 point each).

10. ____ Honey bees prefer a feral nest cavity with a volume equal to:
    A. 60 liters
    B. 40 liters
    C. 20 liters
    D. 80 liters
    E. 100 liters
11. ____ The European honey bee natural or feral nest has all of the following characteristics except:
    A. Sheltered, darkened enclosure
    B. Small, defensible entrance
    C. Hexagonal beeswax cells molded into parallel comb separated by bee space
    D. Separation of brood and food
    E. Comb is attached at the top, on the sides and along the lower margin
12. In a feral nest, bees build about ____ of the comb area in drone size cells.
    A. 15%
    B. 5%
    C. 20%
    D. 10%
    E. 25%
13. The production of beeswax is energetically very expensive, costing the bees at least ____ pounds of honey for every pound of wax produced.
    A. Three
    B. Seven
    C. Nine
    D. Six
    E. Five
14. Honey bee swarms prefer to select bait hives that are ____ feet above the ground.
    A. 9
    B. 11
    C. 15
    D. 13
    E. 7
15. Describe two ways in which afterswarms are different than primary swarms. (2 points)
16. What two conditions are necessary for a colony to initiate comb construction in an established colony? (2 points)
17. Name two ways that sealed drone-size cells differ from worker-size cells. (2 points)
18. Please explain why a swarm cluster would return to the parent colony within five to 10 minutes after it emerged. (1 point)
19. Name two ways in which absconding is different than swarming. (2 points)
20. What are the two primary functions of comb in a honey bee colony? (2 points)

ANSWERS ON NEXT PAGE

?Do You Know? Answers

1. **False** Nasonov pheromone produced by the workers Nasonov or scent gland and queen substance produced by the queen's mandibular glands are involved in guiding a swarm cluster to a new homesite. Queens do not have Nasonov glands.
2. **True** Combs are always constructed parallel to one another, but may be curved in the vertical plane. Sometimes a colony will make two separate sets of comb which are not orientated to each other at all. Where two sets of comb of this sort meet, the mismatch will be brought under control by bending the comb or by building in thicker pieces of comb, some of which may be triangular in cross section, but the faces of these irregular combs will always be kept the normal distance apart.
3. **True** A combless cluster of honey bees, such as a swarm, will start to make honeycomb provided they are accompanied by a queen and are hanging in a position where they are subject to low light intensity. Bright light or queenlessness will inhibit a cluster from making comb, although it does not prevent them from making wax if they are full of honey.
4. **True** In the feral bee nest, bees build several parallel combs at one time. As the colony expands, additional combs are added. Comb consists of a back-to-back array of hexagonal cells, arranged in a mostly parallel series, with each comb a precise distance from its neighbor. The well-regulated distance between each comb (3/8 inch) is referred to as "bee space."
5. **False** The position of the entrance in feral nests are usually located below the area where the bees build their comb inside the cavity, although swarms accept other entrance positions.
6. **True** New homesites are carefully scouted, since the characteristics of the new nest will determine in part the likelihood of the colony surviving to reproduce the following season, and for many years beyond. Scout bees leave the swarm cluster and look for possible sites, extensively inspecting both the inside and outside of potential cavities to determine whether the site meets numerous criteria for a good nest. They enter potential cavities and walk inside to measure dimensions.
7. **False** Feral nest studies performed in the northern hemisphere indicate that south-facing entrances are preferred. Cavities with a more southerly exposure get more sunlight and may be drier than those facing in other directions.
8. **False** The organization of the feral bee nest is generally with honey stored in the upper and peripheral sections of the nest, and brood is reared in the lower areas of centrally located combs. Pollen is usually placed in cells next to the brood nest, where it is easily accessible to nurse bees. This arrangement places the heavier honey close to points of comb attachment, thus minimizing stress on the wax comb, while the brood is located so that temperature in the central part of the nest can be easily maintained and nursing activities concentrated in one area.
9. **True** Bees seem to prefer higher sites than those at ground level or close to the ground. Usually three meters (nine feet) is ideal.
10. B) 40 liters
11. E) Comb is attached at the top, on the sides and along the lower margin.
12. A) 15%
13. E) Five
14. C) 15 feet
15. Afterswarms are normally headed by one or more virgin queens, whereas, the older mated queen usually leaves with the primary swarm. The size of the worker population in swarms generally decreases with swarm number Afterswarms contain fewer bees than primary swarms, thus are smaller in size. Workers in afterswarms do not engorge as fully as in primary swarms and fewer young bees issue with afterswarms.
16. The colony must be having a good intake of fresh nectar. The comb they already possess must be filled above a certain threshold amount before they will initiate comb construction.
17 Drone-size cells are wider and deeper (with the bullet shaped cappings) than worker size cells. Drone cells measure four to the inch in comparison to workers that are five to the linear inch.
18. A swarm cluster returns to a colony soon after it emerges when it discovers that the queen is absent.
19. Absconding differs from swarming in that: a) the entire colony moves to a new location in response to unsatisfactory conditions in the nest; and b) it is not associated with the rearing of a new queen.
20. Storage of food (honey and pollen)
    Rearing of brood

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

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

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

GLEANINGS

OCTOBER, 2003 • ALL THE NEWS THAT FITS

Annual Ent Society
INSECT LOVERS UNITE

Each year more than 2,500 entomologists and professionals in related disciplines from around the world gather to exchange scientific information at the annual meeting of the Entomological Society of America (ESA). These scientists make significant contributions in such diverse fields as agriculture, biology, chemistry, ecology, forensics, forestry, genetics, human and veterinary medicine, and pest control.

The 2003 ESA Annual Meeting will be held October 26-29 at the Cincinnati Convention Center in Cincinnati, Ohio. Some of the latest findings in insect research will be presented in the following areas: Biotech Vegetables for Insect and Insect-Vectored Disease Management; The Great Endemic Diseases: Entomological Considerations; Vision, Resonance, and Spirit: Insects in Art and Culture. Other sessions will cover entomological research in biology, agriculture, medicine, and veterinary sciences, pest control, and the environment and over 30 talks, papers and posters on a variety of topics in apiculture. The meeting's program is available online via the ESA Personal Scheduler at esa.confex.com/esa/2003/scheduler. Details on the meeting and housing can be found at http://www entsoc org/annual_meeting/.

NZ SHUTS OFF BEE RESEARCH

HortResearch institute bee scientists were forced to shut down their work after a bid for NZ$700,000 in annual funding was turned down by the Foundation for Research and Technology.

The foundation said its goals were preventing the establishment of pests rather than on their management after they were established. A spokesman said the Ministry of Agriculture was responsible for managing individual pests.

In turn, a ministry spokesman said it was not the ministry's role to fund ongoing scientific research.

HortResearch scientist Mark Goodwin told local reporters the decision had left New Zealand without any bee research for the first time in 100 years.

The researchers had been looking for ways to slow the spread of the mite, including the development of organic pesticides and breeding *Varroa*-resistant bees.

National Beekeepers Association Auckland president Graham Cammell said about NZ$500,000 had been invested in research projects that would now be left unfinished.

Meantime, a NZ$800,000 plan to keep the *Varroa* mite out of the South Island received the backing of the Otago Regional Council.

Council chief executive Graeme Martin said much of the cost would have to be funded through property taxes because no one else had been found to fund a surveillance effort.

Beekeepers have agreed to meet $200,000 of the $800,000 cost of surveillance.

Alan Harman

HONEY BOARD VOTE PASSES

The U.S. Department of Agriculture announced in early September that honey producers and importers voted in a July-August referendum to continue their Honey Research, Promotion, and Consumer Information Order.

In the referendum, 59.24 percent of those who voted favored continuance of the program. Those favoring continuance represented 61.37 percent of the volume of honey produced and imported by those voting in the referendum.

To continue the program, voters representing more than 50 percent of the honey produced and imported by those voting needed to favor the program.

The honey research and promotion program is administered by the National Honey Board. It is funded by an assessment of one cent per pound on domestic and imported honey. The order is authorized by the Honey Research, Promotion, and Consumer Information Act. USDA's Agricultural Marketing Service conducted the referendum by mail ballot.

BEEKEEPER, CHEF, ARTIST

Michael Young from Belfast, Ireland, was a guest at the EAS and WAS conferences this Summer. Michael is a gourmet chef, encaustic wax painter, honey show judge, and ice carver. Here is one of his works – a smoker that would be a real challenge to light.

Australia, Canada, Argentina, U.S.

NEW PACKING COMPANY

Australia's largest honey processor Capilano Honey Ltd. has acquired half ownership of a Canadian honey packer.

Capilano Honey Ltd. will hold 50% of Capilano Labonte Inc. after merging its North American sales operation with Canadian honey packer, Miel Labonte Honey Inc. to create the new company.

Miel Labonte Honey was founded in 1937 by Roland Labonte and carried on by his sons Jean-Marc and Simon. It has been producing and distributing honey products throughout the provinces of Quebec and Ontario for more than 66 years.

The merger is expected to increase Capilano Honey's annual turnover to in excess of A$100 million this financial year.

Capilano managing director Roger Masters said the venture provided a platform for the marketing of Capilano-Labonte (CLI) branded products to the Canadian and U.S. markets in the grocery, food service and industrial sectors.

"This move is in line with our international business direction – think global, act local – and is all about showcasing an Australian business in the world marketplace," he said.

"The merger follows our recently established joint venture in Argentina to facilitate supply from the world's second largest honey producing country and means we can now build on our honey packing facilities in Australia, Argentina and Canada to reach and service the North American market."

Newly appointed CLI president Jean-Marc Labonte said he was delighted to be aligned with Capilano Honey in the new Canadian venture that positioned the new company as a more significant player in the industry.

"With the benefit of three packing facilities, continuity of supply available from three continents, and most importantly, quality blended honey, this new partnership will enable us to reach a wider customer base," he said.

While the move is expected to increase sales of Australian honey into Canada and the U.S., Capilano told the Australian Broadcasting Corp. that this will put pressure on supply and honey consumers may see foreign honey from countries like Argentina, blended with the local product.

Masters told the ABC the challenge is to maintain high prices for Australian honey and produce enough of it to meet demand.

"I think people looking at Australian honey are actually getting a very top quality there and it's in demand offshore as well so perhaps you may see some substitution at the lower end of the market," he said.

Capilano Honey was founded in 1953. It has grown from a A$6 million annual turnover to A$89 million. The volume it processes has reached 18,000 tons a year. Capilano now is one of the largest packers in the world with a capacity to process and pack more than 25,000 tons of honey a year. It exports honey to some 38 countries. – *Alan Harman*

OBITUARIES

Dan Hendricks was affectionately known as The Bee Man on Guam. That was where he spent the cold months – after he bedded down his hives for the Seattle Winter. That was where he passed away December 15th, at the age of 82.

A frequent, and enthusiastic, letter-writer to this magazine, Dan never discarded a single copy! Beekeeping was the joy of his retirement. He happily continued to pursue that hobby on this tropical island in the Western Pacific. For over 20 years, it was his annual routine to Winter with his son, David, daughter-in-law, Suzanne and grandchildren Crystal and Derek. "GrandDad/ Dan" would stay with us from November until Spring – when his "home-bees" started stirring.

Eagerly he joined in the care of neglected hives at the University of Guam. He built an observation hive for the University "bug room," and delighted in many teaching missions to the elementary schools on the island. It seemed there was always a Queen in the mail.

Dan's legacy has included the induction of new beekeepers on both sides of the broad Pacific Ocean. His meticulously maintained equipment, and enthusiasm have been passed on to another generation. And the memory of the Bee Man will remain with hundreds of school children and others with whom he shared his knowledge, and love.

Cecil C. Tonsley, 1915-2003, was one of the elder statesmen of British beekeeping.

Well-known internationally, Cecil was Vice President of Apimondia (1985-87) and President oft he British Beekeepers' Association (1983-84) after serving as its General Secretary (1954-60) and on its National Executive thereafter. He joined William and Joseph Herrod-Hempsall ont he staff of the *British Bee Journal* in 1951, taking over from them as Editor in 1953 until the Journal ceased publication in 1998.

Cecil was most loyally supported by his wife, Nora, to whm we extend our condolences. She has a special place in the hearts of beekeepers.

And More Of It

SWEETER SUGAR

It's on every kitchen counter. Many tea- and coffee-drinkers wouldn't do without it. But the simple, white crystals that we know as common table sugar are the product of some rather complex science.

This science, led by the Agricultural Research Service, along with the LA State University Agricultural Center and the American Sugar Cane League, is changing how LA sugarcane growers and processors do business. There, in the state that ranks second in sugarcane production, the industry has many reasons to cheer.

In July, a new cane variety – developed through conventional plant breeding – was released that should ease the minds of LA growers concerned because more than 85% the state's sugarcane acreage is now planted to just one variety. A new disease could wipe out the industry in a hurry, says Ed Richard, leader of ARS' Sugarcane Research Unit at Houma, LA. Bringing that needed diversity is the HoCP 96-540 cultivar, developed through a cooperative agreement between ARS, the LSU AgCenter and the ASCL.

The current standard variety caused much excitement when it was introduced a decade ago. While producing 30% more sugar per acre than previous sugarcane plants, the variety, LCP 85-384, has a downside: Its stalks tend to lie down, or lodge, late in the season, especially after heavy rains.

To take advantage of higher yielding variety, a new harvester was needed to replace the conventional "soldier" harvester that primarily collects upright stalks.

And, in researching how cane is processed, ARS chemist Gillian Eggleston has determined that "hot liming," which involves flash-heating cane juice to remove impurities, significantly reduces sucrose losses in factories.

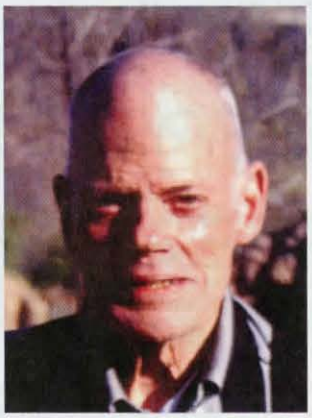
CHARLES DUNCAN
1926-2003

California beekeeping will be changed for ever with the passing of **Charles Duncan**, an avid supporter of honey bees and beekeeping, and he will be missed by members of the many beekeeping and other interest groups of which he was a member.

Born in Athens, Ohio, November 8, 1926, the city boy was much happier after his family moved out of town. Charlie walked to school, roamed the forests, and was happiest sleeping out in the woods in his sleeping bag. He graduated high school at 17 and served in the Navy from 1944 to 1946. Charlie then graduated from Ohio State University and the Milwaukee School of Engineering as an aerospace engineer.

While in Milwaukee, Charlie met his future wife, Phyllis. When Phyllis obtained employment in Washington, DC, Charlie followed along and found employment in 1951 with Army Ordinance in the Pentagon, working for 10 years on guided missiles. Then, in 1962, Charlie and Phyllis moved to California so that Charlie could work at McDonald-Douglas.

Charlie first became involved with honey bees in 1968, after bees had filled a swimming pool storage shed at Charlie's condominium. After reading a couple pages of a bee book and with no previous beekeeping experience, but armed with a garage-sale veil, black baseball cap, black leather jacket, welder's gloves, and a watering can with burning paper in it, Charlie went in to remove the bees. The bees had a number of six-foot combs in the shed and they defended them, vigorously. Charlie was stung more than 300 times and the bees chased him into a distant workshop, where he collapsed from the stings. Of course this simply fascinated Charlie and he became a true lover of honey bees from that moment on.



Charlie then worked for five years as an employee at the LA Honey Company, for Chase Walker. Charlie became thoroughly acquainted with the commercial beekeeping industry of southern California. Additionally, Charlie helped Dick Ruby do "bee extractions" from buildings. He developed a set of "rules" for finding the combs in a building, and he took slides and gave presentations on the famous Topanga Canyon Bee House, that had 58 active colonies in it at the same time. By this time, Charlie was a member of the Los Angeles County Beekeepers, California State Beekeepers' Association, the Western Apicultural Society, and was the only non-commercial beekeeper to serve on the California Apiary Board.

When in England, Charlie took microscopy courses with Brother Adam and visited frequently with Dr. Eva Crane. He also was personal friends with Dr. Walter C. Rothenbuhler, Charles Mraz, and Bill Maxant, and *Bee Culture* Editor, Kim Flottum as well as most U.S. researchers and extension specialists.

Charlie's greatest devotion was to his wife, Phyllis, his daughter Suzie, and especially to granddaughter Carly, the apple of his eye, whom he had been visiting in Wisconsin just hours before he passed away at home on July 11, at the age of 76.

Eric Mussen

important information network and extend your beekeeping horizons. For information contact: IBRA, 18 North Road, Cardiff CF1 3DY, UK. Phone +44 1222 372409. Fax +44 1222 665522.

THE AMERICAN BEEKEEPING FEDERATION has many benefits to offer its members. Send for a membership packet of information today! Contact the American Beekeeping Federation, P.O. Box 1038, Jesup, GA 31598, ph. (912) 427-4233, fax (912) 427-8447 or email info@abfnet.org.

IRISH BEEKEEPING. Read An Beachaire (The Irish Beekeeper) Published monthly. Subscription $22.00/ year, post free. Mr. Graham Hall, "Weston", 38 Elton Pk., Sandycove, Co. Dublin, Eire, email: Graham Hall@dtti.team400.ie.

THE AUSTRALASIAN BEEKEEPER. Published monthly by Pender Beegoods Pty. Ltd. Send request to: The Australasian Beekeeper, 34 Racecourse Road, RutherfordNSW 2320, Australia. Sub. $US 38 per annum, Surface Mail (in advance). Payment by Bank Draft. Sample free on request.

Bee interested. For beekeeping information read the AMER. BEE JOUR. New editorial emphasis on practical down-to-earth material, including question & answer section. For information or free copy, write to: AMERICAN BEE JOUR., Hamilton, IL 62341.

THE AUSTRALIAN BEE JOUR. Monthly, SeaMail $35.00 (Aus.), AirMail $50.00 (Aus.). Write to: Victorian Apiarists' Association Inc., Editor, Ms. Eileen McDonald, R.S.D. McKenzies Hill, Castlemaine, Victoria, 3450 Australia. Sample on request.

THE NEW ZEALAND BEEKEEPER. National Beekeeper's Association of NZ. Write for rates & indicate whether airmail or surface. NZ BEEKEEPER, P.O. Box 447, Hamilton, NZ.

SOUTH AFRICAN BEE JOURNAL. The official organization of the S.A. Federation of Bee-Farmers' Associations. Sample copies only available on receipt of a donation. P.O. Box 41 Modderfontein, 1645, South Africa.

CANADIAN BEEKEEPING The news media of the Canadian honey Industry. One year sub. (6 issues) in Canada and the U.S. $20. Foreign subscribers send $40. Send to Canadian Beekeeping, Box 678, Tottenham, ONT, Canada L0G 1W0.

BEES FOR DEVELOPMENT. Information for beekeepers in remote areas. Sponsor a subscription. $35, quarterly journal. Troy. Monmouth, NP254AB, UK. info@beesfordevelopment.org

HIVELIGHTS, published by The Canadian Honey Council. Write Suite 236, 239-5149 Country Hills Blvd. NW Calgary, AB T3A 5K8

THE BEEKEEPERS QUARTERLY is published by Northern Bee Books, Scout Bottom Farm, Mytholmroyd, Hebden Bridge, West Yorks HX7 5JS. Write or email jeremy@recordermail.demon.co.uk for a sample copy.

MANITOBA BEEKEEPER is published quarterly by the Manitobab Beekeepers' Association. Write for a sample copy to Lois Simpson, Lot 19, Kingsway Kort, RR #1, Brandon, MB R7A 5Y1.

INNER ... Cont. From Pg. 8

Big dogs were that large and loud, too. When a stray would lope across the yard, she'd hiss and growl and spit and growl some more, all the while beating a supersonic retreat back to the porch. She only tangled with one that I know of, and it was an ear piercing bloody draw. Nobody won, but the pooch left town. Stray cats, on the other hand were just the right size, and an interloper was immediately terrorized and chased and made to retreat, or was actually outright dispatched. Though uncommon for cats to fight to the death, I buried more than one over the years. She was a lethal and savage protector of her turf.

Not unlike honey bees, there was a line you didn't want to cross with her. You'd pay if you did. And, like honey bees, if proper care and appropriate attention was given there was a reward. I'm not sure who was in control, but then, with cats, one never is. That's the allure of the beast.

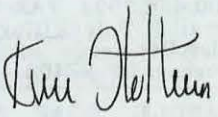
There was always the nightly argument over who gets the big chair, the absolutely gross stuff that comes in little round cans, and the painful yowls when the litter wasn't to her liking.

But as the years accumulated, the territory to defend diminished, the demands for favors fewer, and her threats to man or beast less vigorous. You know the routine. And August brought to a close her ninth and final life. Quietly, in her sleep. Her curiosity was finally satisfied.

Her one and only litter produced a basketful of stunningly beautiful, sleek and nimble hybrids. I'm sure by now she has great, great grand kittens guarding some turf just as ferociously as she once did. I'd like to find one. Or maybe two, so they have company. But then I'd be outnumbered, and that would be dangerous.

*

Enjoy the season before Winter. It's the best there is. Make sure your hive tool's sharp, your smoker clean, your beesuit washed and your bees are healthy. I hear it's gonna be another doozy of a Winter.



Display Advertisers

"T *"The king was in the counting house, counting out his money "*

My beekeeper boss Paul loves the Summer dog days because he gets to start extracting honey.

When he estimates the net weight of his honey-filled supers in the honey house, multiplies it by the market price, and makes a calculated guess about future production, it gives him an idea how much money he might make this year. Paul doesn't talk about it, but we all know. With honey prices hovering in the stratosphere, in his mind he's already tarpon fishing in the Keys.

Summer dog days you ask? Isn't the honey flow over, and the honey about all in now? Well, it might be October as you read this, but as I write, it's late July and the tail end of the hottest Colorado Summer anybody can remember.

The sheet metal honey house heats up above 100 during the day, and probably a lot hotter, although nobody actually checks the temperature. I guess you want a hot honey house, so the honey spins freely out of the comb. Paul cranks up the radio and works alone all day extracting. He sends the crew to work the bee yards from "Out South of Silt" to Rifle to Parachute to Meeker to the Flattops to Steamboat Springs.

Temperatures soar to the upper 90s most days. Of course none of the trucks has an air conditioner that works.

The July issue of *Bee Culture* ran a letter and photo from Dick Crawford of Morrissonville, NY The picture shows three beekeepers in their beesuits and veils standing shoulder-deep in a swimming pool.

Dick wrote: "We jumped into the pool with our beesuits on. Then we went and took off honey. Our clothes kept us cool while the temperature was 95 degrees I got the idea while working construction – jump in about noon and work in cool clothes all afternoon."

Stay cool merely by staying wet? This is too simple.

On the way to the Zehner beeyard outside of Hayden, Derrick and I laugh about Dick's picture. Later, loading honey supers onto the truck, I feel so hot it occurs to me I might actually get sick. Afterward I park by the Yampa River.

Derrick says, "What are we doin'?"

I say, "We're goin' into the river with all our clothes on."

He says, "We are?"

You never saw a kid jump out of a truck so fast.

Arms outstretched to the side, I walk across the stony bottom in my long-sleeved shirt, jeans and Converse All Stars. Maybe some stern-faced preacher will push me under and baptize me. From waist-deep in the current I plunge head first into the riffle, and the cool river gently sweeps me away. When I come up for air I'm 12 years old again, and the world looks new.

"No lifeguard on duty" only adds to the Huck Finn charm. But you could wedge your foot in the rocky bottom or get tangled in some barbed wire, and that would be it.

Fishermen drift by in a canoe, and I say, "Sorry for spooking your hole."

One of the anglers says, "That's O.K. It's a big river."

Now we go to the river every day. Even Mark succumbs to its Siren song. He sits hunched-over on the bank, struggling to remove an upturned cowboy boot, just like the cowpoke in corny cartoons. Then he steps gingerly into the river, grinning, as the sun illuminates his ghost-white cowboy shoulders.

Swimming-with-your-clothes-on as an energy-efficient personal cooling system totally changes my outlook on hot weather. A noon plunge keeps me chilled for about two bee yards. When I'm almost dry I put on my spare pre-soaked shirt, and it's October again, no matter how hot the day.

Derrick and Mark don't buy into the wear-all-your-clothes, soaking wet idea. They take their shirts off when they go in. That's their problem. As for Mark, well, everybody knows cowboys hate water. But Derrick basically works bees naked anyway He generally wears shorts, shoes and a veil. That's it. He does stay pretty close to the smoker, and he sometimes says a bad word, but who doesn't? People stop along the road to take his picture.

I don't get it. I can't understand why everybody doesn't walk around fully clothed and dripping wet all Summer.

The other day when I climbed out of the river I almost tripped over an old bison skull half-buried in the sand. I have the picture to prove it.

Right away I knew what it is. Broader and more massive than a cow skull, its short, up-curved horns gave it away.

Mark knows his western history and Indian lore. He said, "The Sioux used to come down here from Wyoming to chase buffalo." The skull had a hole in one eye socket, and we speculated about that.

Mark finds arrowheads and spear points all the time. Whenever we look together, he always finds stuff – at least chips — but all I ever see are rocks and dirt and sagebrush. After I found the bison skull he kept saying, "That's an unbelievable find. How'd you get so lucky?"

Lucky finds never happen when you put your head down and grind it out. We drive right past this spot all Summer. We could have almost seen that skull from the road.

Thank goodness for hot weather, an air conditioner that doesn't work, and a picture in *Bee Culture.*

Ed Colby

BOTTOM BOARD