



WWW.BEECULTURE.COM

SEP 2008
Bee

Culture

CATCH THE BUZZ

INSIDE IN SEPTEMBER

MEDINA'S LIBRARY GETS BEES! - 18

WHAT SUGAR IS BEST? - 20

DRONE CONGREGATION AREAS - 25

WHAT TO DO WITH NEW

BEEKEEPERS - 41

YELLOW JACKETS! - 55

ROOT
PUBLICATIONS

\$4.99



Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING
SEPTEMBER 2008 VOLUME 136 NUMBER 9

FEATURES

MEDINA'S LIBRARY GETS A BEEHIVE 18
What better way to teach, and learn about honey bees?

Kim Flottum

WHAT SUGAR IS THE BEST? 21
Sucrose, glucose, fructose, HFCS, is one better?
Harrington Wells, et al

BEE BOOK LIBRARY 29
Start your collection now.

Fred Hembree

BOB & SUZETTE BINNIE 31
Check out this well run Georgia operation.

Jennifer Berry

A SWARM IN JULY IS WORTH A CAT 35
Bees are outlawed and discouraged but cats cats get away with murder

Gwen Rosenberg

DEAD AIR SPACE 44
A hive configuration for all seasons.

John G Hoffman

THE JIG IS UP 47
A couple hours up front pays in the long run.

Edwin P Simon

CCD – ANOTHER OPINION 53
Is nutrition important in CCD? And are we encouraging the problem?

Walt Wright

YELLOW JACKETS 55
More like honey bees than you might suspect.

Abby Vogel



Marilyn the Librarian and her brand new observation hive in Medina. Find out all about Marilyn and her bees on page 18. (photo by Kim Flottum)

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

Contributors

Clarence Collison • James E. Tew • Ann Harman

Malcolm T. Sanford • Steve Sheppard

Larry Connor • Connie Krochmal

Subscription Information

U.S., one year, \$25; two years, \$48. Newsstand price: \$4.99. 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), September 2008, Volume 136, Issue 9, 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.

Contact Information

V800.289.7668 • V330.725.6677 • F330.725.5624 • www.BeeCulture.com
email: info@BeeCulture.com

Advertising

For information on advertising contact Dawn Feagan at 800.289.7668, Ext. 3220

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

Opinions expressed in articles or columns in this magazine are not necessarily those of the Editor or Publisher.

Published by The A.I. Root Co. Copyright© 2008 by The A.I. Root Co.
All rights reserved.

Bee Culture The Magazine of American Beekeeping
is



on



Recycled Paper

DEPARTMENTS & COLUMNS

MAILBOX 7

THE INNER COVER 10

The Complex; Selling Honey.

Kim Flottum

HONEY MARKET REPORT 12

What's important when selling honey?

THE BUZZ ABOUT BEES: EFFECTS OF THEIR SUPERORGANISMIC QUALITIES 17

Everything appears to be connected to everything else.

Malcolm Sanford

A CLOSER LOOK - DRONE CONGREGATION AREAS 25

Queen producers need to know all about these.

Clarence Collison

'BOUT A 100 - RAISING QUEEN CELLS 37

Fall queens are tricky, but worth the work.

Larry Connor

NEW BEEKEEPERS 41

What to do with them once we get them.

James E. Tew

2009 BEE CULTURE CALENDAR 43

Queens, queens, queens - that's the theme for next year's calendar

THE HONEY GARDEN 50

Have you tried adding edible flowers to your recipes. Lavender is one that is easy to use.

Connie Krochmal & Ann Harman

GLEANINGS 59

All the news that fits.

CLASSIFIED ADS 61

Buying and selling.

BOTTOM BOARD 64

The Workshop.

Ed Colby

IT'S FINALLY HERE!
From The Bee
Culture Book Store

UNCLE BUZZY'S BIG FAT BOOK O' BEE CARTOONS



By Lela Dowling & Friends

Over 150 of our gut-splitting hilarious bee and beekeeper cartoons. Many in color, including the most famous cover art ever done - "UPick Honey Farm." Buy one for yourself and a bunch to give as gifts. Get a jump on that Christmas shopping for those beekeepers in your life. Limited Supplies.

ONLY 6" x 9"
84 pages

\$14.99

The price includes shipping in the U.S. For foreign postage please contact *Bee Culture Magazine*.

Root Publications (a division of The Root Candle Co.)
623 W. Liberty St., Medina, Ohio 44256

ROOT 800.289.7668 ROOT

Or order directly from our online bookstore
www.beeeculture.com/store

Tulip Poplar Problems

As hard as I have tried to find out why the honey bees no longer visit the tulip poplar tree for nectar, I still have no answers. I have talked to a forester, a certified arborist, an employee of the forest service, a biologist at the local college and many others including many beekeepers. It seems that the only people who have any interest in such a thing are a few beekeepers from Southern Maryland. I did receive some ideas from other beekeepers but their reasons for no nectar have been ruled out over a period of almost 20 years.

The first thing is that there may be something else in bloom that has a higher sugar content than the tulip poplar. Maybe it was too cold, too rainy or too windy. Maybe there wasn't enough moisture in the ground. Maybe the flowers filled up with water and diluted the nectar so much so that the bees didn't bother to collect it. All of these things can be ruled out because it is easy to see that the flowers on the tree are not producing nectar. Not only are the bees not working the tree, no other insect bothers to even check it out either.

Over the past several years we have been watching the black locust tree which has been our second biggest producer of nectar. There are no bees or any other insect visiting that tree either.

Needless to say that our honey production in Southern Maryland is down.

It is understandable that most people have many other things to worry about and to take care of than to worry about a couple of trees that don't have any nectar. But I believe that this phenomenon is the result of climate change. It may be that we just don't have the cold weather we used to have and that may be the cause. I also believe that there are many other subtle changes that are taking place that we are not aware of.

The closest thing that I can equate this problem to is the sugar maple tree. "The freezing action during Winter months and Spring nights allows the maple trees to produce large quantities of carbon dioxide gas. It is this gas which forces the sap to flow upward inside the tree during the warming cycle of

the day. The sap moves along a pressure gradient from a zone of relatively high pressure to a zone of lower pressure." This is as close as I can think about what may be causing the problem.

William Bartlett
Leonardtown, MD

Responsible Removal

I saw your blog on the daily green (www.thedailygreen.com) today and I wholeheartedly support your views on preserving and protecting honey bees. I do have one issue that I have experienced that I feel beekeepers should perhaps take more responsibility on.

We had bees make their home in our home a year or so ago. While we let them go for one Summer, when it was obvious this Spring that they weren't going away we decided something needed to be done.

They made their hive in a stucco framed column supporting our deck, about 8 feet above the ground and very accessible. So rather than exterminating, we chose to call around to see if a local beekeeper would like to take them off our hands.

Well, once I confirmed that they were in fact honey bees by sending one a photo, every one of the beekeepers contacted responded that it would cost a minimum of \$250 just to show up and that it would likely cost \$500.

My question to you, if bees are so important and such a special resource for us all, why are the people who would benefit most from taking the bees off of our home charging us so much to do so?

Bee Culture Information



Suggestions

Comments

Unfortunately, extermination, either from a service or do-it-yourself would not have cost anywhere near as much. We still chose to bring out a beekeeper and he literally took about 90 minutes to cut a hole in the stucco and extract the bees. All for \$500, and leaving damage that will likely run around \$1,500 for us to repair.

So my point is, while I would like to support you and your industry as much as possible, it is experiences like this that makes me pause.

It would be wise for you as an industry to address these situations more intelligently.

Thanks for your time,

Bob Wilson
Denver, CO

Kudos To Bee Culture

I just wanted to let you know that I'm very pleased with the service from Bee Culture.

I recently got back into beekeeping after about a 12-year hiatus and wanted to subscribe to your magazine. Usually a magazine subscriber can expect to receive their first issue within six to eight



HARDEMAN APIARIES

P.O. BOX 214 • MT. VERNON, GA 30445
PHONE: 912.583.2710 • FAX: 912.583.4920



	"ITALIAN" QUEENS	"RUSSIAN HYBRID QUEENS" QUEENS
	1-24 \$10.25 25-up \$10.00	1-24 \$12.50 25-up \$12.25
	MARK \$1.25	CLIP \$1.25
		

Yearly inspected by The Department of Agriculture. Queen prices do not include postage. All shipments must be paid before shipping date. All postal claims are to be made by the customer. Hardeman is not responsible. We accept VISA, American Express, and MasterCard.



weeks of their order. Well, imagine my surprise when I received my first issue just seven days after I subscribed through your Web site. I appreciate the fact that you sent me the July issue so I wouldn't have to wait over a month.

Thanks again for the great service. And thank you for a great magazine.

Mark Leberfinger
Hollidaysburg, PA

The Sting - Be Prepared

It happens when you least expect it though it may have happened many times before. When it happens, it becomes "The Sting" After doing a honey bee presentation to a group of 10 year-olds at El Song Gardens here in Monroe, LA (a great success-the kids loved the observation hive), I put the girls back in the hive, and was walking back to the house when she caught me on the left forearm. Removing her and the stinger as I have done innumerable times over the last 10 years, I went into the house to wash up. The tingling started in my hands, went to my feet which was like poison ivy on a hot August day-shredded glass would have made the itch go away-maybe. I felt flushed and light-headed, and my wife asked if I had been stung. I replied, "Yeth." Going to get a Benadryl, I saw what I looked like in the mirror of the medicine cabinet-eyes extremely bloodshot, face and tongue swollen. I realized I couldn't swallow the benedryl, or anything else right then. To make a long story short-the ER doctor said had she not passed through several red lights in route to the hospital, the outcome would have been very negative. My airway was all but closed off when I arrived in ER - collapsed veins, extremely weak pulse - but an excellent St. Francis ER staff pumped me full of epinephrine and Benadryl. Several hours later, I left

ER and, with the admonition and advice of the doctor and my wife, I reluctantly retired from beekeeping since I had received "The Sting."

At the next meeting of the Hill Country Beekeepers (one of the best groups of beekeepers you'll want to meet), I told this story and told them to keep a cell phone with them when they're working their country bee yards. My recommendation to beekeepers is to go ahead and get an EpiPen from their physician because you never know when "The Sting" will get you.

Jim Turner
Monroe, LA

Bees And Trees

I thought you might like to see some wicked storm damage to one of my hives. Two more toppled over and we saved them but this one just didn't know what hit them.

Marina Marchese
Weston, CT



Government Protection?

Some years ago I had two beeyards sprayed by an aerial applicator. The Colorado Department of Agriculture investigated. The applicator was advised if he sprayed any more bees he would lose his license. Needless to say I had to move bees out of the area.

Long Creek Apiaries, Inc.

Certified Russian Bees and Queens*

Queens \$25.00 Ea. Packages \$75.00 Ea.

Prices do not include postage
Shipping season starts May 1st
depending on weather

*Produced under approved USDA-ARS protocol

3223 Long Creek Rd., Parrottsville, TN 37843
Phone: 423.623.2345 Fax: 423.613.4567

Website: <http://www.longcreekapiaries.com>
Email: sales@longcreekapiaries.com

Member Russian Honeybee Breeders Association

I am also a farmer. In July I had a field of corn sprayed with Furidan. I called the C.D. of A. again. They investigated again, and found the following - the field sprayed was a mile away from where he was supposed to spray, on a different land owner; the temperature was 87° with a 16-mile wind; the plane sprayed over an irrigation canal; sprayed the bottom of an alfalfa field in partial bloom; the hay cannot be harvested for 28 days, it should be cut now; they sprayed within 100 yards of our house.

The State investigator says the applicator will probably be fined, but probably will not lose his license, *because he didn't injure anybody*. The State advised me that EPA has no jurisdiction in the matter.

This is the kind of protection our government gives us!

L. Dooley Toyne
Sedgwick, CO

What's Going On?

I do have an idea why my bees are staying outside my hive but I am curious what you or your readers think.

My wife noticed that at 6:30 am this morning when the temperature was only 67° my bees were sleeping outside of the hive.

This hive was started with a package of bees on May 8th and I added a new super and super of Ross Rounds just a few weeks ago.

What could be going on?

Michael Munroe
10307 Carlow Road
Chesterfield, VA 23838
804.240.7188
<http://munroe.ws>





INNER COVER

Colony Collapse Disorder hasn't gone away, but its perception in the media and even among beekeepers has changed this Summer. From what I can tell it's the beekeeper's perspective that has changed mostly, rather than the Disorder itself. Time will tell as Autumn and early Winter approach – the season of Disorder Discontent is nearly upon us again.

The discussions that have come out of this phenomenon are interesting however, whether they are directly related to CCD or not. One topic that has not diminished in attention is the discussion regarding 'pesticides'. When using that word however, you have to divide the sources....those pesticides used outside of beehives but end up inside beehives, or those pesticides used in beehives that seem to stay in beehives. Sometimes they are the same pesticide so you have to spell out use along with source. It gets complicated.

As an aside for a moment, we here at *Bee Culture* have been working with a beekeeping magazine published in the U.K. by Northern Bee Books but edited in Greece...such is the global publishing world. You see adverts (that's an English term) for *The Beekeeper's Quarterly* here every month. Each issue usually has a sort of theme, and the columnists from many countries relate to that theme from their perspective. It is only produced four times a year (hence the name), but Editor John Phipps makes each issue engrossing with a good mix of science and practical information, along with bits of history and culture. I sometimes make contributions, but the rest of the list of contributors is an international Who's Who in beekeeping circles, making the magazine well worth reading, at least in my opinion.

John recently asked for perspectives on pesticides for an upcoming issue. He wasn't specific about which or when or where, but simply wanted some generalizations from a U.S. perspective. John typically asks difficult questions but as a result gets excellent articles. I'm not so sure that what I produced for him falls within those parameters but the research I needed to do to produce that article was enlightening and, at the risk of repeating perhaps just a little of what John received, I'd like to ramble a bit here about this subject...it is, as you know definitely a part of the ongoing CCD discussion so it seems to fit well here.

The toxic mix inside beehives the Penn State study uncovered is a part of this, but a different part so far

Fifty or so years ago Dwight Eisenhower spoke of what he considered to be a looming menace in the U.S., the formidable *Military Industrial Complex*. His premonitions of the dangers this gang of thieves were capable of proved more correct than not, and we are the poorer for not paying attention. A similar *Complex* again exists and is increasing in strength and influence daily. I refer to *The Agrochemical Agricultural Complex*. Never heard of them? Just listen.

This *Complex* encompasses our farms and fields and pharmacies, our homes and our work and our whole way of life. This *Complex* blatantly influences our government from the highest position there is to the decision makers in the Cabinet and Congress all the way down to the county Extension agent making choices favoring them over us. And their best trick yet is that they have changed the core of who the EPA is sworn to protect.

This *Complex* is the green revolution for the world's poorest peoples but an unforgiving, destructive monster when crossed by Nations, Industries, or innocent individuals saving seeds. It is evil and it is a Godsend. It is a gaggle of attorneys, a litter of scientists, a consortium of bankers and a gang of thugs. It is *The Agrochemical Agricultural Complex*.

They control health care and lawn care, the productivity of farms and fields, the seeds for our crops and the fertilizers and chemicals we need to grow and protect those crops. They let us have our food and shelter, our clothing and our health. At their discretion we are allowed to live. They have the whole

world, in their hands, they have the whole wide world. They own the food chain, and we are bound within.

You know them, those that belong to this *Complex*, because they are everyday household names. Our tiny industry uses and abuses them daily, and curses the fact that we must. You and I, our parents and our children stay alive because of the life-saving drugs they produce and sell at obscene prices. And they keep our homes, our food, our pets, our livestock, our gardens and even ourselves from diseases and pests and predators and things that go bump in the night because we use their necessary, lethal products – the products of *The Agrochemical Agricultural Complex*.

No discussion about pesticides, and CCD is complete without considering the influence the *Complex* has on the honey bees that roam, or is it trespass on the fields and forests of our land. And when our bees and their chemicals meet in open combat...the bees never win because it is *The Complex* that is in control. *The Complex* tests for safety and finds their products safe. *The Complex* tests for contamination and finds none. *The Complex* tests for efficacy and shows that they are good. *The Complex* tests for residues and none are ever found. *The Complex* tests for synergy with other *Complex* things and finds the marriage fine. *The Complex* looks for harm but no harm is ever found. But when questioned, the *Complex* doesn't tell what it sometimes knows because *The Complex* writes the rules, and ultimately they are the referees. Who do you think wins regardless of logic or the law?

Colony Collapse Disorder may be influenced, it may be caused by or it may have nothing to do with the pesticides in our lives. But CCD has opened this door a crack letting some light shine in, showing some of what *The Complex* is, what it does and

Continued on Page 58

The Complex; Selling Honey

SEPTEMBER - REGIONAL HONEY PRICE REPORT



honey on the label was important, and you can see the results.

Container material importance hasn't changed much, with glass still outweighing plastic by quite a margin. The importance of the size or type of container has moved a little. 12 oz. continues to be less important, 1 pound important, 2 and 5 steady. Quarts are down a little but pints steady in importance.

The importance of prices continues to decline, which is good news, and the store honey is sold in continues to be less important, which reflects the decline in price importance too.

You can use some of this information, especially when opening new markets, or changing the image in markets you have now. What do your customers find important? Use this survey to find out for yourself in your markets.

What's Important When Selling Honey?

We polled our reporters again this month because we wanted to know what marketing techniques were important to them when selling honey. We have done this for three years now and have some comparison data that is beginning to show some changing trends for some things, and stability for others. Take a look at the data. We asked if each item was Important, Moderately Important, or Not Important. The per cent of each is listed for all three years.

Label design seems off this year for some reason, as does having your name on the label. As important as it can be, even having Local Honey advertised isn't as important this year as in years past. This year we asked if putting the variety of

	% Important			% Moderately Important			% Not Important		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
My Label Design	78	87	63	14	13	13	8	0	25
Glass Container	39	49	45	31	40	33	30	27	23
Plastic Container	20	24	23	40	49	44	40	27	33
12 oz. Size	42	34	25	37	39	18	21	29	57
1 lb. Size	64	62	62	19	21	28	16	17	14
2 lb. Size	45	44	38	25	20	32	33	36	30
5 lb. Size	31	44	42	28	16	19	41	24	39
Quart Jar	56	54	50	9	12	20	36	34	30
Pint Jar	43	42	42	16	20	26	41	23	32
Price	68	56	47	27	34	47	5	10	7
Local Honey	97	99	79	3	0	15	0	1	6
My Name On Label	71	80	72	18	16	14	11	4	15
Variety On Label	-	-	23	-	-	27	-	-	29
Time of Year	42	37	18	29	36	29	29	27	37
Store I Sell In	64	55	29	10	22	26	25	23	21

REPORTING REGIONS

	REPORTING REGIONS												SUMMARY		History	
	1	2	3	4	5	6	7	8	9	10	11	12	Range	Avg.	Last Month	Last Year
EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS																
55 Gal. Drum, Light	1.41	1.35	1.35	1.52	1.23	1.42	1.51	1.41	1.41	1.55	1.39	1.45	1.23-1.55	1.42	1.45	1.07
55 Gal. Drum, Ambr	1.20	1.35	1.20	1.29	1.07	1.24	1.50	1.20	1.21	1.20	1.23	1.28	1.07-1.50	1.25	1.23	0.93
60# Light (retail)	120.00	123.00	118.00	116.00	120.00	125.00	119.28	114.16	125.00	124.14	127.40	138.33	114.16-138.33	122.53	123.96	114.77
60# Amber (retail)	120.00	112.00	116.50	114.29	120.00	118.33	113.10	110.00	125.00	121.63	126.00	144.00	110.00-144.00	120.07	115.55	109.76
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS																
1/2# 24/case	52.08	60.98	42.00	45.62	66.35	54.00	45.33	66.35	66.35	42.00	45.93	87.43	42.00-87.43	56.20	54.68	51.24
1# 24/case	65.52	71.28	65.39	84.00	76.27	64.98	63.30	60.00	94.44	77.36	94.47	94.47	60.00-94.47	74.03	72.97	70.12
2# 12/case	69.72	61.08	64.20	56.39	81.00	61.80	63.58	78.00	56.00	69.40	55.60	76.88	55.60-81.00	66.14	65.09	60.30
12 oz. Plas. 24/cs	64.32	64.68	51.00	63.81	76.80	60.00	57.06	53.16	54.00	53.04	58.32	68.00	51.00-76.80	60.35	58.96	55.33
5# 6/case	76.41	69.98	75.00	65.20	74.44	92.00	71.34	77.40	72.00	64.41	72.00	89.00	64.41-92.00	74.93	72.90	68.74
Quarts 12/case	92.19	100.35	112.20	93.29	78.00	81.80	86.22	82.20	102.00	120.00	88.40	114.00	78.00-120.00	95.89	96.60	97.47
Pints 12/case	60.95	70.98	66.00	62.76	59.00	49.83	53.17	47.57	66.00	56.25	50.60	65.00	47.57-70.98	59.01	57.31	57.15
RETAIL SHELF PRICES																
1/2#	2.88	3.07	2.27	3.00	2.19	2.75	2.97	3.94	2.39	2.78	2.91	4.91	2.19-4.91	3.00	2.87	2.78
12 oz. Plastic	3.25	3.84	3.19	3.51	3.99	3.60	3.65	3.23	3.43	3.29	3.42	4.25	3.19-4.25	3.55	3.61	3.48
1# Glass/Plastic	3.83	4.22	4.56	4.52	4.49	4.88	4.25	3.91	4.13	4.34	4.94	6.10	3.83-6.10	4.51	4.55	4.31
2# Glass/Plastic	8.25	7.96	7.77	6.46	6.65	7.05	7.09	6.30	6.12	6.76	7.88	10.25	6.12-10.25	7.38	7.29	7.19
Pint	6.92	8.25	6.50	6.35	5.70	5.59	6.62	5.93	6.50	7.00	6.38	8.33	5.59-8.33	6.67	6.93	6.09
Quart	12.10	9.65	11.00	9.73	8.92	9.37	10.66	8.87	10.67	13.54	9.80	12.85	8.87-13.54	10.60	10.99	10.26
5# Glass/Plastic	15.25	14.74	18.30	14.62	18.00	23.00	16.13	15.50	18.00	12.68	16.60	22.00	12.68-23.00	17.07	16.16	16.18
1# Cream	5.25	5.61	8.32	5.25	8.32	4.00	4.73	5.99	8.32	5.43	5.46	6.83	4.00-8.32	6.12	5.23	5.13
1# Cut Comb	5.50	5.07	5.49	5.50	8.24	4.75	7.80	4.02	8.24	8.00	5.15	8.12	4.02-8.24	6.32	6.48	6.12
Ross Round	6.81	4.20	5.49	4.88	6.81	4.00	7.62	5.50	6.81	6.81	6.50	8.44	4.00-8.44	6.15	6.15	4.91
Wholesale Wax (Lt)	3.67	3.58	2.48	2.61	2.15	4.00	3.56	3.00	3.25	4.60	2.96	3.19	2.15-4.60	3.25	3.05	2.66
Wholesale Wax (Dk)	2.00	3.08	2.43	2.40	1.90	3.67	3.17	3.38	1.95	3.39	2.78	3.00	1.90-3.67	2.76	2.88	2.07
Pollination Fee/Col.	72.50	87.67	67.50	44.29	107.50	51.33	53.33	57.50	86.10	140.00	62.50	100.00	44.29-140.00	77.52	85.44	67.99

Professor Jürgen Tautz has written a provocative volume entitled, *The Buzz about Bees: Biology of a Superorganism*.¹ It deserves to be read closely by beekeepers because it provides a different slant on the state of knowledge about honey bees in general, their status as a superorganism and importance to the global web of life. The book received a brief review here in the July issue.

Professor Tautz is at the University of Würzburg in Germany. He has much in common with other scientists who possess a knack for communicating their ideas to others. Thus, he has been compared to Carl Sagan and Konrad Lorenz, and dedicates his book to his mentor, Professor Martin Lindaur, well known in bee research circles for contributions to the knowledge of honey bee biology, in turn a student of the legendary Karl Von Frisch.²

The preface to the English Edition says it is filled with “deeper” messages related to many basic and important principles of modern biology. As such, the publication should appeal to natural historians, students, biology teachers, and yes, beekeepers. “We are all in this together,” Professor Tautz says, “the greatest threat is our own staggering ignorance and cavalier treatment of the natural world to which we belong.” He concludes, “Our exploitation of natural systems without understanding them and their vulnerabilities in detail has disturbed fine balances, established over thousands of years.” Fortunately, he says new ones will undoubtedly replace them, but unfortunately they may not be to our “advantage.” He hopes to bring to light information in such a way that “Those still persuaded by the creationist arguments and intelligent design may pause to think about the emergent properties of self-organizing and adaptive complex systems.”

It would seem obvious that mammals and insects are groups of self-organizing, adaptive systems

Malcolm T Sanford

The Buzz About Bees: Effects Of Their Superorganismic Qualities



“Everything appears to be connected to everything else.”

and thus have similarities. But eyebrows are raised when honey bees are compared directly to mammals. Consider the following, however, as related in Professor Tautz’s book in the Prologue: “The Bee Colony – a Mammal in Many Bodies”.

1. Mammals have a very low rate of reproduction – so do honey bees (Chapters 2 and 5).
2. Female mammals produce nourishment (milk) for their offspring in special glands – female honey bees do also via royal jelly in pharyngeal glands (Chapter 6).
3. The uterus of mammals offers their developing offspring a precisely controlled, protective environment, independent of the control variables of the external world – honey bees do the same in the “social uterus” that is the comb (Chapters 7 and 8).
4. Mammals have body temperatures about 36°C – honey bees maintain a brood nest temperature of 35°C (Chapter 8).
5. Mammals’ large brains have the highest learning and cognitive capacities of all vertebrates – honey bees possess a highly developed capacity for learning and cognition the eclipses even some vertebrates (Chapters 4 and 8).

The similarities do not end there. In 2006, I wrote that the honey bee genome shows greater similarities to vertebrate genomes than in insects like *Drosophila* (fruit fly) and *Anopheles* (mosquito), for genes involved in

circadian rhythms, RNAi, and DNA methylation among others.³

Chapter 1 of *The Buzz About Bees* reveals something many might not immediately consider, the inevitability of the honey bee and its colony. The development of such a superorganism had to occur, Professor Tautz says “sooner or later.” More intriguing is the idea that there are probably additional organized life forms on the way, and actually may already be in existence in certain ant species. Honey bees could “happen” he concludes, only because “they brought the necessary conditions with them.”

Chapter 2 introduces the reader to the daughter colony, usually propagated by swarming. Rather than strictly discuss the standard topics of swarm production, Professor Tautz provides a background analysis of this activity. “Reproduction by establishing a complete daughter colony is an unusually extravagant strategy, and within insects is known only to occur in honey bees, stingless bees (which adopt the role of honey bees in the tropics), and some ants in which reproduction takes the form of a nest division.”

Humans have established cities (civilizations) in search of immortality; individuals die, but these entities live on. And honey bees too have achieved this state via their colony, made possible through replacement of its members. “Worker bees are replaced every four weeks to 12 months, depending on the season, and the queen every three to five years. Drones survive only two to four weeks, and are as short lived as many workers. In a colony of 50,000 bees, with a daily death rate of 500 individuals, this amounts to a daily replacement of one percent



"Given the above descriptions of function and form in beeswax comb, is it any wonder that the routine use of chemicals by beekeepers inside the beehive continues to come under scrutiny? The biomagnification of pesticide molecules (either soft, like organic acids or hard, like organophosphates) in the wax itself is more and more suspect, the reason that so many beekeepers have taken to renovating their combs on a scheduled basis."

of the entire colony, with the exception of the queen, within about four months." This change over, however, does not alter the genetic identity of the colony, which resides in one individual, the queen.

Chapter 3 discusses honey bees as a success model and the fact that although a relatively species-poor group of animals, they exert an extensive influence on the environment. Again, the parallel with humans is striking. A relatively few species of humans have affected the earth in a huge ways via fossil fuels and the industrial age leading to global climate change, while the eight species of the genus *Apis* have helped plants achieve a "domination of the world's vegetation by flowering plants."

The reasons for this are found in Chapter 4 entitled "What Bees Know About Flowers." Plenty it turns out and much of it due to the honey bee's communication abilities. Unsurprisingly, much of this it turns out is attributed to what bees communicate on the "dance floor"

In Chapter 5, among detailed descriptions of the mating process,

Professor Tautz discusses queen survival. In local mating situations, almost every fertilized queen makes it back, but in "different" situations, thirty percent may be lost. This could be caused by the relative organization of worker group flights (the "herring shoal effect"), and/or the workers controlling access to certain drones.

Chapter 6 gives the reader a good description of the honey bee colony's nutritional protein engine, royal jelly "Bee larvae hatched from their eggs land in paradise," a rich soup made up mostly of royal jelly. This "designer diet" is under the control of bees themselves; is an example of honey bee uniqueness; and allows bees to determine their own developmental conditions. To reiterate, like mothers' milk, royal jelly provides larvae with immunity from bacterial infection due to its "defensive proteinaceous components."

Perhaps the most eye-opening chapter is number 7, where Professor Tautz characterizes the comb as the "largest organ of the bee colony." "The comb of the bee nest is in a sense a part of the bees themselves."

It is not only produced by the insects themselves, but is an inseparable part of their lives, and "bound up with the function of the superorganism." Consider the functions of the comb with its 100,000 to 200,000 cells: shelter, a place to produce honey, storage for honey, storage for pollen, a nursery, a telephone system, information storage, colony-specific identity, the first line of defense against pathogens. The first four items on this list do not require building materials with any special properties, only an appropriate division of particular regions of the nest. The last five functions depend on special physical and chemical properties.

Professor Tautz gives some prominence to a discussion of the comb in communication, something few books to my knowledge about these insects mention. He concludes, "The details of this communication pathway, insofar as they have been understood, indicate that the comb is not a defined transmission line for vibration, like a plant stem is for the tapped signals of some insects. Instead, it seems that bees have discovered a complex interaction between the physical properties of wax, and their own communication behavior. Three questions posed by the material and architecture of the comb are worth closer examination, according to Professor Tautz: What possibilities are open to bees for tuning of their telephone network? Are private lines possible, or do simultaneously occurring communications jam one another? How is the ever-present background noise of 10,000 bees filtered out?"

It turns out temperature plays a huge role as the mechanical resistance of wax to oscillation decreases



GloryBee®
Candle Making Supplies

- Molds, Wicking, Wax Equipment, Packaging, and more!
- Fast Shipments, Friendly Service

Ask for our free 108 page catalog

www.CandleMakerSupplies.com • Eugene, OR 97402 • 800-456-7923



"An Association Strictly For Beekeepers"
THE AMERICAN HONEY
PRODUCERS ASSOCIATION

The AHPA is the **only** national beekeeping organization that reserves its voting privileges for beekeepers. All segments of the honey industry are welcome, but only our beekeepers have a vote in the organization.

Join and Help us:
★Promote U.S. Honey ★Promote Bee Research ★Stop Pesticide Abuse Near Bees ★Educate Congress of our Beekeeping Needs ★Keep the Beekeeping Industry Updated with our *Honey Producer* Publication

Dues: Hobbyist - \$50; Sideline - \$150; Commercial \$300

Make checks payable to: AHPA
Ellen Smoot, P.O. Box 158
Power, MT 59468

with rising temperature. Climatic conditions and the addition of propolis to the comb also can affect vibration, as can the wooden frame used by beekeepers. "A frame that completely encloses the comb on all sides restricts the motion of the surface network, which is not able to spread out across the rims of the cells, there no longer being a free edge that can expand and contract. Bees on combs on which they do not dance are not disturbed by this. On combs where dances take place, bees introduce large gaps between the wax and the wooden frames, and the signal transmission is thereby fully restored."

Although constructed from beeswax, a unique product in the colony, few authors generally put little emphasis on the comb's memory storage capacity. Professor Tautz concludes that "Beeswax alters its chemical composition with time, through decomposition of long chain carbohydrates, and the evaporation of wax components into the air surrounding the hive. Enzymes that the bees mix into the wax also alter its structure. In addition, the comb becomes progressively 'dirty' through the effects of larval debris, excreta in the brood area, and imported pollen and resin. Initially chemically homogenous honeycombs eventually turn into a chemically colored patchwork carpet."

Rather like the honey bee colony itself, Professor Tautz describes the beeswax comb base as coming together on its own. "Bees use their own bodies as a template as they begin to construct the walls of the cells, and build cylindrical tubes around themselves." The comb cell pattern forms on its own when beeswax is warmed. "With the passage of time, the bottoms of the cells become so thin that the self-same organizing principle explained for the walls also results in three rhomboids, a perfect honeycomb."

Given the above descriptions of function and form in beeswax comb, is it any wonder that the routine use of chemicals by beekeepers inside the honey beehive continues to come under scrutiny? The biomagnification of pesticide molecules (either soft, like organic acids or hard, like organophosphates) in the wax itself is more and more suspect, the reason that so many beekeepers have taken to renovating their combs on

a scheduled basis.

Chapter 8 looks at several issues unique to honey bees including temperature control, but emphasizes the broader aspect too of a superorganism constructing its own environment. Again both humans and honey bees have taken steps to become independent of the variability of the natural environment. "We are gradually beginning to understand the highly complex and numerous feedbacks and interactions between bees and their self-controlled environment. One of the latest advances is the recognition that the temperature of the brood nest is of great importance for the entire biology of honey bees." Topics addressed here include: hot bees and warm pupae, sweet kisses for hot bees, half-baked sisters, and the influence of temperature on metamorphosis and subsequent duties of worker bees.

Chapter 9 takes into consideration the fact that Charles Darwin saw the family (colony) as a problem threatening his entire evolutionary theory. Fortunately, he found a solution, that the conceptual problem depicted could be reduced if one accepted that natural selection could act both on the individual and colony. Paternity matters in honey bees, including variable sensitivity to stimuli. "The colony as a whole responds optimally." Exactly the right effort is mobilized that is appropriate to the level of disturbance. Thus, "...multiple paternal lines in a beehive, and the resulting character diversity of its members, has an impact not only on climate adjustment, but also on every aspect of the life of bee colonies."

Chapter 10 discusses self organization and emergence. The whole is more than the sum of its parts and in turn determines the behavior of the component parts. "Everything

appears to be connected to everything else, making the isolation and study of single control loops very difficult." Thus, in the epilogue Professor Tautz concludes that "By supporting honey bees, we support ourselves."

Remarkably for a honey bee book, there is absolutely no mention of the effect of emergent problems in keeping bees, especially the effects of exotic organisms like *Varroa*, beekeeper use of chemicals for mite control, and the recent appearance of Colony Collapse Disorder (CCD). What the book does, however, is provide the reader with an in depth background to be able to understand just what these phenomena might mean to the honey bee colony. For example, *Varroa* must now be considered an integral part or a honey bee colony, and only thinking of it in this manner will beekeepers have much hope in the future of managing their complex superorganism.⁴ Thus, *The Buzz about Bees* admirably fulfills its stated purpose: to increase "appreciation of the intricacy of the sociophysiological and behavioral mechanisms, as well as the internal checks and balances, which must remain intact for bee colonies to function properly." **BC**

Dr. Sanford is a former Extension Specialist in apiculture at the University of Florida.

References:

1. For sale at Springer.com: <http://www.springer.com/life+sci/book/978-3-540-78727-3>, accessed July 16, 2008.
2. http://en.wikipedia.org/wiki/Martin_Lindauer, accessed July 16, 2008.
3. Sanford, M.T. *Update on the Honey Bee Genome Project*, Bee Culture (December 2006) Vol. 134 (12): 21-24.
4. Sanford, M.T. *The Fourth Individual in a Colony of Honey Bees*, Bee Culture (September 2006) Vol. 134 (9): 17-19.



Order today!
Ready-Made Patties
From
Global Patties
In North America Call Toll Free
1-866-948-6084

Elsewhere worldwide call 1-403-948-6084 or email mike@globalpatties.com

"We make Protein Patties for Honey Bees to your specifications"

Visit us at www.globalpatties.com for the latest news on pricing, quantities, discounts, shipping and distributors

Ask us for a quote on your requirements for the coming season. You'll find that Global is faster, better and cheaper than your other options.

Medina's Library Gets A Home For Honey Bees

K m Flottum



Sometime during the Fall of 2006 Marilyn Sobotincic and her husband were visiting a nature center near Medina, Ohio. While her husband was taking care of some business with the Center's staff Marilyn wandered around looking at the displays. One that caught her eye, and held her attention was the observation beehive the Center had. Something clicked.

Marilyn has worked for the Medina County Library System for almost 20 years, and is now the Children's Supervisor for the library in Medina. There are several libraries in the system in different cities in Medina County but the one in the city of Medina is the largest. And in the Fall of 2006 plans were underway to make Medina's library much, much larger

Part of the expansion plans in the children's section included new fixtures and decorations with an emphasis on insects including honey bees. The photos show how that idea was used in this section...the chairs,



Honey bees adorn the floors

the floor and the book shelves all reflect different insects in different locations throughout the entire children's section.

Because of her position Marilyn was consulted when it came to designing the new children's section of the library. She knew what was needed for the expansion but there were a lot of things that she wanted, and after her visit to the Nature Center, one more thing she wanted was an observation hive as part of her new Children's Section. With insects as a theme, what better highlight than honey bees?

So first off she had to get the powers that be to agree to this; if that worked then it was how to get an observation hive (that is, how to get one paid for); and once that was taken care of she needed to find someone to actually take care of it.

The first obstacle was simple to solve...ask the Library Director, who simply said ...sure, why not? Next she needed to find the money to get one and to work with the architect to make sure it fit the spanking new surroundings. These tasks were not quite so simple. However Marilyn's husband is a member of the Medina Rotary which had already committed to spending several thousand dollars in furnishing the new Children's area. Adding something as simple as a box with bees seemed to present no additional problems as long as everyone was in agreement.

But the architects are a group of very, very fussy people. There was only one place in the children's section the hive could go...and placing it there raised a few construction issues. Plus, it had to be stained with only a certain color and type of stain, and it had to have very specific hardware... hinges, clasps and handles. The architects would be able

to furnish all of the specifics for the hive's builders, but the builders had to use them.

That left only finding someone to produce the hive and at the same time finding the people who would manage it once it was installed. Marilyn didn't know quite where to begin. She didn't have a budget for a hive because she didn't know how much it would cost or even where you could buy one. Nor did she have any idea what to do with it when it showed up. But this is a library for goodness sake, and libraries are, if nothing else, full of information.

Like all libraries, the Medina Library maintains an active list of community resources including groups, associations and the like... and one of them is the Medina County Beekeeper's Association. What better place to start thought Marilyn, so she looked us up and gave me a call.

The Medina group, like most beekeeping associations is set up to supply educational opportunities for its members and to support beekeeping in the community. It was easy to see that this was a great chance to introduce young, impressionable children to honey bees in an entertaining and educational setting, and, even better, to be able to do so with the only cost being our time, since all the hardware was going to be supplied by generous donors.

As soon as she had the OK she discussed her plans with the architects and then called me in to view their ideas and plans so we could get a hive that fit the décor and location needed.

Since I have been working with an observation hive from Drapers Super Bee in Millerton, Pennsylvania (<http://draperbee.com/>) for several years and was familiar with the design I contacted them for a quote. I



and chair backs and book shelves.



The hive is securely fastened, has child-proof glass, and a protected entrance box.

gave the requirements dictated by the location and the architects....we needed shatter proof glass, a sturdy way to fasten the hive to a counter top but still be easily removed, it had to be made from birch wood, and have some of the decorations they typically used removed.

Draper's quote and hive design were approved by the Library Board and all we had to do was wait for over a year until the builders had completed the Children's section to the point where we could actually go in and make exact measurements.

During this time we weren't idle. The architects very carefully outlined the exact type of stain to be used on the wood, and the hardware to use so it would match other decorations in the new section, and sent it off to Drapers. The builder had a problem with a steel girder that was in the wall in the exact location the exit pipe was to go, so we moved the counter just a tad to solve the location problem. We

designed and built the entrance/exit pipe covering and prepared the counter it would sit on. Meanwhile, Drapers, with much patience, finished the customized hive to the exact specifications needed, including the color and finish, and delivery was made in early January this year

A three-pound package had been ordered by the club to arrive in April and when it came it was established in a small, three-deep frame nuc, exactly the requirements of the observation hive (the hive holds three deep frames and one shallow frame, but we introduced the bees on just three drawn deep frames in the nuc). We waited until they were established, made sure the marked queen was laying well and in mid-May introduced them to the hive, and the hive, with great fanfare, to the Library.

The public relations people at the Library were quick to realize the attention this could bring to the new Children's unit and helped spread the word to newspapers, television and more newspapers. So now after several newspaper articles and a live TV show the hive is the most visited section of the Library, with adults and children in about equal numbers visiting on a regular basis.

If you have managed an observation hive you know they can be a microcosm of honey bee management. The infrastructure is so limited, the available storage space and brood rearing space so restricted, that if either one gets out of balance you can very suddenly have an incredible overpopulation explosion with a resulting food shortage. And that can happen in as small a window as a day...one day fine, the next nearly

starved. This happened in this hive not long after they were installed. The queen was very, very prolific, and the honey flow not so prolific, and suddenly there was way more open brood and adult bees than food available to feed them, and there was trouble brewing. Sound familiar?

We managed to catch it, but these hives need to be monitored everyday to make sure events like this don't occur. By now the library staff is becoming quite skilled in knowing what's going on, and we are visiting more regularly, so we are fairly certain we will avoid any catastrophe in the future. But other events can, and I'm sure will occur that need to be watched for and prevented by early intervention. It's a learning process for everybody involved.

But the hive has been a sensational hit with the Library patrons, and interest in bees, beekeeping and the Medina County Beekeepers has exploded. The Medina Beekeeper's Association was the recipient of a \$1700 grant to use in the program which has made it possible to provide additional hardware for the hive, new bee books for the library, and funds for additional educational material to be placed around the hive for people to read and enjoy. Plus, being realistic, those funds will also go to supply additional bees for the hive as time and Mother Nature take their respective courses.

Just so you know when you visit our Library, Marilyn is the lady standing over there by the beehive, wearing the grandest smile you can imagine and telling anyone who will listen all about the bees, and all about her new beehive. **BC**

Which Sugar Is Best?

Sucrose or HFCS?

Harrington Wells¹, William Potter²,
Charles Abramson³

Should I use high fructose corn syrup or table sugar as a supplemental feed for my bees? Simple question, widespread interest, lots of opinions! Here we provide insight for choosing what sugar to use when feeding bees by considering what sugars occur naturally in nectar, what we know about honey bee sugar preferences and what happens to these sugars metabolically in a bee.

Nectar Composition

Nectar is composed almost totally of sugars in aqueous solution. That is, nectar is sugar water for all practical purposes. However, trace amounts of plant secondary compounds are also found in nectar in most plant species. These trace compounds commonly are organic acids, alkaloids or ethereal oils. Although present in tiny amounts in nectar, they impart distinctive aromas and tastes to honey produced from nectar of different plant species. Familiar examples are the difference in taste between orange and clover honey. So, a very, very, very little amount of these secondary plant compounds in nectar can impart significant taste and odor properties to the resultant honey.

Sucrose (table sugar $C_{12}H_{22}O_{11}$), fructose (corn sugar $C_6H_{12}O_6$) and glucose (metabolic sugar $C_6H_{12}O_6$) are by far the predominant sugars found in nectar. They are the "big three" sugars in nectar. Much smaller quantities of other sugars, such as maltose and raffinose, are found in the nectar of some plant taxa. The ratio of sucrose to fructose and glucose varies widely among plant taxa. Members of the mustard family (Cruciferae) have nectar which contains almost exclusively fructose and glucose, while species of the buttercup family (Ranunculaceae) have nectar of virtually pure sucrose.

Thus, honey bee foragers collect almost exclusively (in terms of quantity) the sugars sucrose, fructose and glucose. Which of these "big three" sugars predominates in nectar depends on the plant species a bee visits.

Bee Preference

An old beekeeper's notion is that glucose is least liked of the three primary nectar sugars because to humans glucose is less sweet than fructose or sucrose. When we tested this we found, in fact, the relative preferences of bees for the "big three" nectar sugars seem to follow the energetic value of these sugar molecules. Thus, a little

knowledge of the chemistry of these sugars gives a lot of insight into bee preferences. A molecule of sucrose is composed of a molecule of glucose linked to a molecule of fructose. Glucose and fructose are the same size molecules, and have approximately the same combustion energy content per molecule. In simple terms, one pound of sucrose is almost the same as one pound of fructose energy-wise, since the pound of fructose has twice the number of molecules as a pound of sucrose, but each molecule of fructose has half the energy content of sucrose. The same relation holds between sucrose and glucose.

When discussing bee nectar preferences note that some articles are comparing 'concentration' of sugar in terms of a sugar's weight in a specific nectar volume (e.g. a 20% sucrose solution has 20 grams of sucrose per 100ml of solution), and others by number of molecules of sugar in a specific nectar volume (e.g. a 1M (1 Molar) sucrose solution has 6×10^{22} molecules (342.3g) per 1000ml of solution). Thus, bees will choose blue flowers offering a 1Molar sucrose reward over white flowers offering either a 1Molar fructose or 1Molar glucose reward (180.2g of either sugar in 1000ml of water). However, no preference exists if the choice is 1Molar sucrose solution versus a 2Molar fructose solution (or 2Molar glucose, or even 1M fructose + 1M glucose solution – which would be 360.3g in 1000 ml water).

If a beekeeper is dealing simply with weight of sugar, 20 grams of sugar is 20 grams either as a dimer (disaccharide, like sucrose) or monomer (monosaccharide, like either glucose or fructose). Its only the Molarity (1 vs. 2) which changes. From a calorie content point of view, there is only a small difference.

So, nectar preference is not only based on sugar *type* but also on the *concentration* of sugar in the nectar. In fact, bees are known to ignore some plants until their nectar has been concentrated through water evaporation during the day. From this point of view, it does not make a difference whether a beekeeper's supplemental feed is high fructose corn syrup or table sugar, or even glucose. However, from personal experience, glucose crystallizes more readily than the other two sugars and once crystallized is frustratingly difficult to get back into solution.

Metabolism

Bees, in their honey stomach cleave the large sucrose into the two simple sugars: glucose and fructose. Honey is almost all glucose and fructose, but typically has slightly more fructose. Fructose and glucose are very similar molecules. They are both simple sugars, each with a skeleton of six carbons. In fact, they both have the same molecular formula ($C_6H_{12}O_6$). Sucrose is a disaccharide, which is to say that it is two simple sugars joined together (fructose and glucose which are monosaccharides).

Both glucose and fructose are known as 'reducing sugars'. This means that they have aldehyde or ketone groups which can react with certain metal ions such as copper (II) ions under alkaline conditions. For sucrose, the bond between glucose and fructose makes it a stable 'non-reducing sugar'.

Glucose and fructose metabolic pathways can be pictured as parallel, interlinked highways – much like neighboring city boulevards running in the same direction. Midway the roadways intersect. Here, in both cases the six carbon sugars are broken into two – three

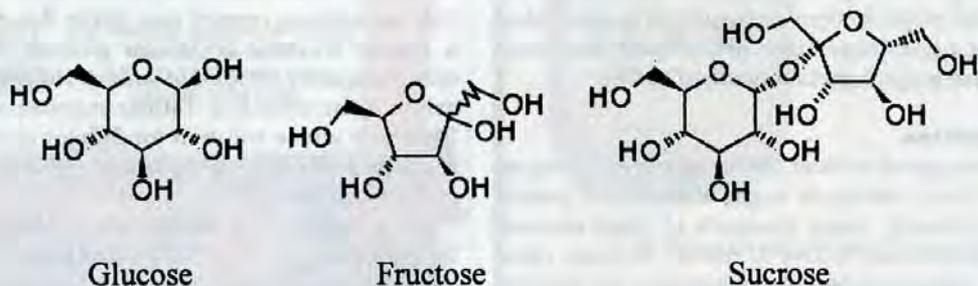
¹Biology, University of Tulsa, Tulsa, OK 74104

²Biochemistry, University of Tulsa, Tulsa, OK 74104

³Psychology, Oklahoma State University, Stillwater, OK 74078

carbon molecules. The fructose pathway midway yields glyceraldehyde and glyceraldehyde 3-phosphate, while the glucose pathway results in two glyceraldehyde 3-phosphate molecules.

Glyceraldehyde can readily enter a number of biochemical pathways related to fat production (fats, oils, waxes, phospholipids, etc.), or can be converted into glyceraldehyde 3-phosphate. Glyceraldehyde 3-phosphate is typically metabolized further into *pyruvate* and passed to mitochondria for further catabolism, or if needed, the metabolism can be shunted to the production of fat related molecules. So these biochemical pathways are much like a home plumbing system with different sized pipes where flow patterns depend a lot on how much is coming into the system at different points and the pipe sizes relate to the different metabolic needs of the bees.



Although the glucose and fructose pathways are highly interlinked, current thought based largely on mammalian models suggests that fructose metabolism favors production of fat related products whereas glucose metabolism favors the more direct production of cellular energy. Bees have insulin as well as the two different enzymes called aldolases that cleave the six carbon sugars into two three-carbon sugars, but differently. For fructose, the key control step of glycolysis is bypassed and bees that are fed very high fructose levels could have similar metabolic shifts as what occurs in humans fed high fructose diets (that is, an increased propensity for fat production). High fructose corn syrup (HFCS) comes in different varieties. Most common are HFCS 90 (90% fructose & 10% glucose), HFCS 55 and HFCS 45. Soft drinks typically use HFCS 55, as do most baking uses and of course beekeeping.

What this may mean is that even though 20 grams of sugar is 20 grams either as a dimer (disaccharide = sucrose) or monomer (monosaccharide = glucose or fructose) has little difference in calorie content (as discussed above), from a metabolic (and metabolic control) point of view there could be a bigger difference when the metabolic control points are considered. For example, with humans, intestinal sucrase and the related GLUTs (glucose/fructose transporters) can be down regulated, and more sucrose should pass into the lower intestine microbial digestion process rather than uptake to the liver. When given just fructose, the constitutive GLUT for fructose is not regulated. Thus in that sense, free fructose can have a larger uptake than sucrose, and when you consider the rapid fructokinase process (making fructose-1-P) the amount of free phosphate can be lowered. This

is a problem for some people: 'hereditary fructose intolerance' For bees, this may or may not matter

The take home message is that metabolically a bee can use glucose, fructose or sucrose, and when needed can shunt metabolic products from one pathway to other pathways. The most likely high fructose corn syrup that a beekeeper will obtain is HFCS 55, which closely mirrors the natural fructose-glucose ratio of honey. However, in an environment where bees are relying solely on fructose, some mammalian studies suggest that it may produce metabolic changes that differ from sucrose or even equal mixtures of glucose and fructose.

Conclusions

Bees naturally utilize a lot of sucrose, fructose and glucose. For the beekeeper, a significant question is cost

and work. How much sugar are you getting for your dollar? Prepared syrup solutions are easy since they do not require mixing, but pound for pound, they have less sugar content than dry sugar (water is heavy!). Of course, if feeding bees HFCS 90 syrup the result will be stored food that is high in fructose rather than the even ratio of glucose to fructose typical in honey made from flower nectar. Of course, as Carl Harrison (President of The Northeast Oklahoma Beekeepers' Association for many years) pointed out, the richest 'nectar' as a supplemental feed is not always best for beekeeping since it may stimulate robbing in the beeyard. The take home message is that HFCS 55 and sucrose are both good sugars for supplemental feeding from a purely caloric perspective, but if you used HFCS 90 you and your bees would probably have problems. **BC**

References

- Champe, P.C., Harvey, R.A. & Ferrier, D.R. 2008 *Biochemistry* 4th Ed. Lippincott, Williams & Wilkins, New York, NY
- Metabolic enzymes found when sequencing the honey bee genome*: http://www.genome.jp/dbget-bin/www_bget?pathway+dame00010
- Harman, A., Shimanuki, H. & Flottum, K. 2007 *ABC & XYZ of Bee Culture* 41st Ed.. A.I. Root Company.
- Percival, M.S. (1965) *Floral Biology*. Pergamon Press, New York, NY
- Valle, E. & Summers, D. 1988 *Honey Hunters of Nepal*. Thames & Hudson LTD, London.
- Wells, H., Hill, P.S. & Wells, P.H. 1992 *Nectivore foraging ecology: Rewards differing in sugar type*. *Ecological Entomology* 17:280-288.



A CLOSER LOOK



DRONE CONGREGATION AREAS

Carence Collison

Queen producers need to know all about these.

Mating during the queen's nuptial flight takes place in drone congregation areas (DCA), where many drones from nearby colonies gather. On warm sunny afternoons, sexually mature drones flock to these aerial zones. When a queen approaches a congregation area, drones chase her, forming a comet-like swarm in her wake. Several drones copulate with the queen in midair (Gries and Koeniger 1996), and then die immediately. The DCA's persist from year to year whether or not a queen is present. It is still unclear why drones choose particular areas in which to congregate and how queens locate these areas, although DCA's and the mating behaviors of queens and drones have been extensively studied.

Drones take their first flights between five and eight days post-emergence (Ruttner 1966). These first flights are short, possibly for orientation, and are followed by longer potential mating flights approximately 10 days later which can last more than 30 minutes (Witherell 1971). Drone flights take place in the afternoon, generally beginning about one hour before virgin queens take their nuptial flights (Ruttner 1966). When atmospheric conditions are favorable during the late Spring and Summer, drones can make several trips to the local DCA's in a given afternoon. When drones reach the congregation areas, they remain flying in wide loops until their depleted energy stores bid them return to the colony to feed. Congregation zones have highly variable areas of 30-200 m wide by 15-40 m above ground. Several thousand drones participate in the congregation, which is formed irrespective of the presence of a queen (Ruttner 1966). A congregation is limited to its spatial parameters, and drones are not attracted by a queen flying outside the area (Ruttner and Ruttner 1965a, 1966).

The distribution of DCA's has been studied using balloons carrying tethered or caged queens and by radar (Gary 1963, Loper et al. 1987). Such studies have shown that several drone congregation areas can be found within the flight range of an apiary (Zmarlicki and Morse 1963, Ruttner and Ruttner 1966). Interestingly, the location of DCA's remains consistent for several years, which indicates that the DCA's location has an attraction that transcends generations. The orientation mechanism that drones and queens use to find the congregation areas is not well understood, although it is believed that light distribution and the contour of the horizon have some influence (Pechhacker 1994).

Zmarlicki and Morse (1963) found that DCA's were located within an open location for at least a hectare (2.47 acres) and were protected from strong winds. It appeared that the absence of obstructions such as high trees and buildings made a site more appealing to drones, but not all open, well-protected areas were congregation areas. The study of DCA's is difficult because drones occupy a lot of air space, flying well above the ground. Although it is generally assumed that numerous colonies delegate drones to these congregations, experimental data on the number of colonies and the relative drone

contribution of each participating colony have seldom been determined. The composition of drone congregations has important consequences for the genetic structure of honey bee colonies. The number of colonies represented in a congregation influences the relatedness between a queen and her mates, hence the amount of inbreeding and the overall genetic diversity in a single colony are determined at the congregation zones.

Modern technology has revealed the dynamic nature of the drone's flight pattern between drone congregation areas. Using X-band radar, which tracks large groups of flying drones, scientists have found drone flyways that connect nearby DCA's. The drone's flyways form along prominent features of the land (tree lines, etc.). The DCA's tend to form where the drone flyways branch. Presumably the drones are accumulating in the congregation areas as they re-orient and select their next flight direction. It is possible that mating could also occur in the flyways, but the flight pattern of virgin queens in this system of drone flyways is still unknown (Loper et al. 1992). An X-band radar unit was used to document honey bee drone flyways and DCA's in a nearly flat desert area (Loper et al. 1992). Within an area measuring 5.0 x 2.0 km (km = .62 mi), adjacent to a commercial apiary, 18 km of flyways and at least 26 DCA's were identified. These studies were conducted during March and April for four years (1987-1990), and they confirmed that the location of flyways and DCA's were re-established day af-

ter day, year after year. Based on film records of radar images, researchers defined a DCA as a site approximately 100 m (1 m = 39.37 inches) in diameter where drones fly higher and are more numerous than in surrounding flyways. Flyways formed alongside the most prominent physical features – e.g. tree lines formed in washes – but these flyways also branched, particularly when additional tree lines became visible on the near horizon. Most DCA's occurred at these branch points; thus the accumulation of drones at a DCA may result from rapid turning and altitude changes as the drones re-orient and select their next flight direction. The maximum height of drones in flyways was 21 m, whereas in DCA's drones were 30-50 m above ground. Flyways are more prevalent than DCA's and contain large numbers of drones, so it is possible that virgin queens flying upwind or alongside flyways may be mated en route to the DCA.

Selected drone congregation areas were regularly observed for five years to verify that the dimensions of these congregation zones did not change greatly during this time (Ruttner and Ruttner 1968). When strange colonies were introduced into the vicinity, new drones were found at the congregation areas on the first day in equal proportion with local drones. This was true for congregation zones both near and distant to the apiary (2-3 km). Drones of different races of *Apis mellifera* (*carnica*, *ligustica*, *mellifera*, *intermissa*) were found at congregation areas, sometimes several races at one place (Ruttner and Ruttner 1972). One study showed that drones tend to have fidelity to a particular DCA during mating flights. Of the 446 drones caught a second time at each of two congregation areas 1.2 km apart, 90.8% had been previously caught at the same DCA, and only 9.2% at the other. The frequency with which drones switched from one DCA to another was higher if both congregation areas were in about the same direction from the apiary (but at different distances) and lower if they were in very different directions. Individual drones were caught at the same DCA more than five weeks after their first capture.

Drone congregation areas are commonly visited by drones from almost every apiary in the neighborhood, although ground elevation

“Interestingly, the location of DCA's remains consistent for several years, which indicates that the DCA's location has an attraction that transcends generations.”

changes between the DCA's and the apiary may reduce or prevent approach flights. In mountain districts at least, there appears to be no correlation between the number of drones in the congregation area and the distance from the apiary. Areas as far as five km from an apiary may be visited regularly by numerous drones; some drones were found coming from more than six km away. It is suggested that drones may orient themselves by means of near and distant physical features of the landscape (Ruttner and Ruttner 1966). Apparently a mountainous terrain negatively impacts the formation of flyways and congregation areas.

In flat country, it was impossible to get pure matings if there were other colonies in the neighborhood; at least 6 km must be free of bees or inhabited by the same strain in order to prevent crossing. A physical barrier of over 500 m seemed to be necessary to prevent colonies as close as three km away from intermingling. Drones, and apparently also queens, will not willingly fly over water (Ruttner and Ruttner 1965b).

The flying space of a DCA typically varies from 98 to 656 feet in diameter (30-200 m) with a height of 33 to 131 feet (10-40 m). The flight altitude of drones within a congregation zone is inversely related to wind velocity (Loper et al. 1992). Although the number of drones in a congregation area is quite variable, one such area had an estimated 25,000 drones from more than 200 colonies (Winston 1987). Several regularly frequented DCA's were observed 500-1000 m from the nearest apiary. In these areas the hum of flying drones was distinctly audible, but visible only when the drone formations were pursuing queens.

Baudry et al. (1998) sampled and studied the parentage of 142 drones collected in a DCA near Oberusel, Germany. The sample contained one group of four brothers, six groups of three brothers, 20 groups of two brothers and 80 singletons. From the sample it was determined that the composition of the DCA contained equal representation from the local colonies, approximately 240 in number. Considering the density of colonies around the congregation area and average flight ranges of males, the results suggested that most colonies within the recruitment parameter of a DCA delegated equal proportions of males to a DCA. Consequently, the relatedness of a queen to her mates – and ultimately the inbreeding coefficient of the progeny – should be minimal. The relatedness among the drones mated to a common queen is also very low, maximizing the genetic diversity among the different patrines (paternal sub-families) of a colony. **BC**

References

- Baudry, E., M. Solignac, L. Garnery, M. Gries, J.M. Cornuet and N. Koeniger 1998. *Relatedness among honeybees (Apis mellifera) of a drone congregation*. Proc. R. Soc. Lond. B. 265: 2009-2014.
- Gary, N.E. 1963. *Observations of mating behaviour in the honeybee*. J. Apic. Res. 2: 3-13.
- Gries, M. and N. Koeniger 1996. *Straight forward to the queen: pursuing honeybee drones (Apis mellifera L.) adjust their body axis to the direction of the queen*. J. Comp. Physiol. 179: 539-544.
- Loper, G.M., W.W. Wolf and O.R. Taylor, Jr. 1987. *Detection and monitoring of honeybee drone congregation areas by radar*. Apidologie 18: 163-172.
- Loper, G.M., W.W. Wolf and O.R. Taylor, Jr. 1992. *Honey bee drone flyways and congregation areas – radar observations*. J. Kan. Entomol. 65: 223-230.
- Pechhacker, H. 1994. *Physiography influences honeybee queen's choice of mating place (Apis mellifera carnica Pollmann)*. Apidologie 25: 239-248.
- Ruttner, F. 1966. *The life and flight activity of drones*. Bee World 47: 93-100.
- Ruttner, F. and H. Ruttner 1966. *Investigations on the flying activity and the mating behaviour of drones. 3. Range and direction of drone flights*. Z. Bienenforsch. 8(9): 332-354. (Apic. Abst. 323/67).

- Ruttner, F and H. Ruttner 1968. *Investigations on the flying activity and the mating behaviour of drones. 4. Distance orientation and place constancy of drones during their mating flights.* Z. Bienenforsch 9(6): 259-265. (Apic. Abst. 922/70).
- Ruttner, F and H. Ruttner 1965a. *Investigations on the flying activity and the mating behaviour of drones. 2. Observations at drone congregation areas.* Z. Bienenforsch 8(1): 1-8. (Apic. Abst. 536/65)
- Ruttner, H. and F Ruttner 1965b. *How far do drones and queens fly?* Bienenvater 86(1): 15-21. (Apic. Abst. 535/65).
- Ruttner, H. and F Ruttner 1972. *Investigations on the flight activity and the mating behaviour of drones V. Drone congregation areas and mating distance.* Apidologie 3: 203-232.
- Winston, M.L. 1987 *The Biology of the Honey Bee.* Harvard Univ. Press, Cambridge, MA.
- Witherell, P.C. 1971. *Duration of flight and of interflight time of drone honeybee, Apis mellifera.* Ann. Entomol. Soc. Am. 64: 609-612.
- Zmarlicki, C. and R.A. Morse 1963. *Drone congregation areas.* J. Apic. Res. 2: 64-66.

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

WEAVER'S FAMOUS QUEENS

BUCKFAST & ALL-AMERICAN
OVER 120 YEARS OF SERVICE

Visit us online at: www.rweaver.com

THE R WEAVER APIARIES, INC.
16495 C.R. 319, NAVASOTA, TX 77868
936.825.2333 • Email rweaver@rweaver.com

THE BEE SPACE



www.TheBeeSpace.com

Rauchboy
Smokers Stay
Lit! They Just
Won't Quit

U.S. Distributor of
Rauchboy Smokers



Get Ready for Reno!

North American
Beekeeping Conference
& American Beekeeping
Federation Convention!

JOHN ASCUAGA'S
NUGGET CASINO RESORT
HOTEL
RENO, NEVADA
JAN. 13-17, 2009



Join us at one of the
most exciting places
on Earth! In addition
to enjoying everything
Reno has to offer, you
can:

- Hear top industry speakers.
 - Learn something new at our workshops!
 - Shop for supplies at the U.S. Beekeeping Trade Show
 - Socialize with beekeepers from across the country.
- AND MORE!**

About the Reno Area

Reno is called a 24-hour entertainment town. Take your pick from limitless choices of winter adventures, more than 40 golf courses, a year round Arts District, or many more activities. Whether in the sky, in the streets, on the slopes, or under the stars, Reno events make participants out of spectators.

Just contact the ABF for more information! **SEE YOU THERE!**



American Beekeeping Federation
P.O. Box 1337 • Jesup, GA 31598 • Ph. 912-427-4233
Fax 912-427-8447 • Email info@ABFnet.org
Visit our website: www.ABFnet.org

ROSS ROUNDS™

Ross Rounds, Inc.

Round comb section equipment
and Sundance pollen traps.

Contact your dealer for supplies.

P.O. Box 11583, Albany, NY 12211
V 518-370-4989 • F 518-381-6370
www.rossrounds.com



Plastics Packaging Concepts

Honey Angel

12 oz. Capacity

(14 oz. net wt.)

Available in LDPE and Clear.

- John 3:16 Engraved on back
- White caps available
- Custom Labels - 20 characters per line
- 5 Lines Maximum

P.O. Box 617

Garden City, MO 64747

816.862.8703 or

FAX 816.862.8702

Clear Material

MasterCard & Visa

Accepted

www.ppc3.com

MAXANT

WORLD'S FINEST STAINLESS
STEEL HONEY PROCESSING
EQUIPMENT

www.maxantindustries.com
sales@maxantindustries.com

978.772.0576

MASSACHUSETTS - USA

WORLD
FAMOUS

Bee Book Library

Start Your Collection Now

Fred Hambree

Do you remember your first bee book? I sure do. It was the late Walter Kelley's, *How to Keep Bees and Sell Honey*. I read that little book from cover to cover several times before making the decision to get my first hive. Over the years I have enjoyed acquiring a number of bee books and I want to encourage you to do the same. Having a good library of bee related information is a tremendous resource that will enhance your beekeeping knowledge and skill.

The next bee book I obtained was the 1983 edition of *The ABC and XYZ of Bee Culture*, published by the A.I. Root Company. That book provided numerous hours of reading enjoyment and beekeeping facts that proved helpful to me over and over again. On those long Winter nights when you can't fascinate yourself by peering under the cover of a hive of bees, having that book captivated my interest and kept me inspired with bee thinking! Thus, began my efforts to develop a personal bee library.

Over the years I have been fortunate to acquire several good bee books. They have been valuable assets in the quest for more beekeeping knowledge. Realizing that personal libraries are usually developed over time, and also understanding budgetary constraints that many of us face, here are a few ideas to consider.

Share your desire to develop a personal bee library with family members and friends. After all, a good book makes an excellent gift to give on holidays or for birthdays or other special occasions. Quite frankly, sometimes people struggle with what to give a friend or family member as a gift. Help them out! Sharing your desire to develop your own bee library may prove beneficial to you and to them.

Remember, that for the uninitiated in beekeeping, knowing the right book to get and where to get it may sometimes be a daunting task. Consider developing a list of books you wish to have and also where they may be purchased. Post it on the refrigerator or in some spot where others can refer to your book list from time to time. Fortunately, most bee supply companies and many

Internet booksellers have a number of good bee books available. If family and friends know the titles of books you are looking for and where to get them, your chances of expanding your bee library increase dramatically. Of course, you will need to update your list periodically as you get your hands on some of the books you wanted. If you don't, you may end up with two (or more) copies of the same book!

Another method of building your bee library is to have a goal of purchasing at least two or more bee books annually. Give yourself permission to do this! Consider it an educational investment. Check your local bookstore to see if they have titles you are interested in. If they don't have what you want, many bookstores will order a specific title for you. All you have to do is ask them. Additionally, you may find slightly used bee related books at online auction sites or at stores or web sites that sell used books for bargain (and sometimes not so bargain) prices.

In your quest to develop your bee library you should also consider taking advantage of opportunities to attend a regional beekeeping conference or a state beekeeping convention. Bee related books are often available at these types of events. Furthermore, noted authors and editors are frequently in attendance and are usually more than happy to personally autograph your new bee book.

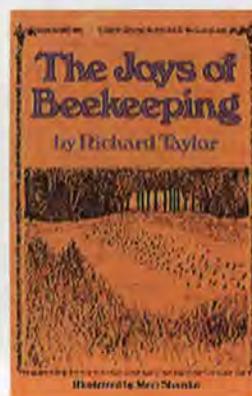
For example, at our last state beekeeping association's annual conference, I purchased the 41st edition of *The ABC & XYZ of Bee Culture*. This is the most recent version of the classic work I had obtained many years ago. Updated with current developments in apiculture, this edition also includes a number of new articles and color photographs. Just as I was completing my purchase of the book, it was announced that a workshop I wanted to attend was beginning. My wife encouraged me to go ahead to the workshop and stated that she wanted to look at our new book and peruse the displays. After the workshop I was attending concluded, you can imagine my delight when my wife greeted me saying; "I just met Ann Harman and she signed our new bee book!" Incidentally,

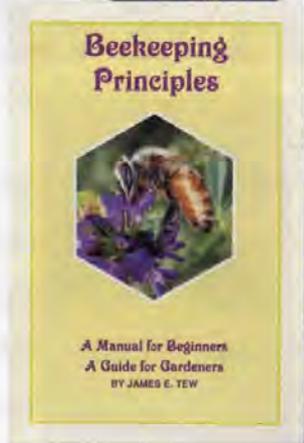
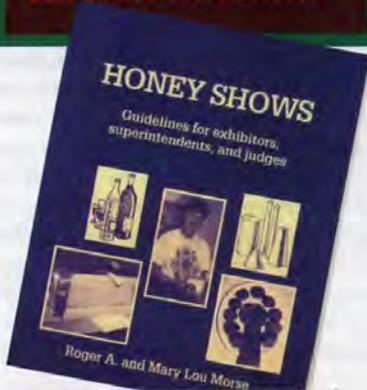
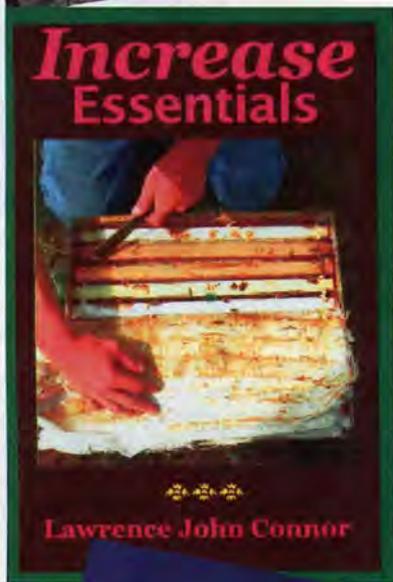
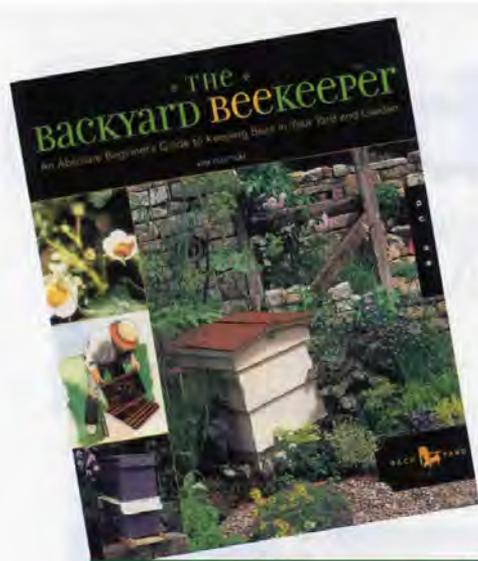


September 2008



BEE CULTURE





Dr Tammy Horn led the workshop I was attending. I put her *Bees in America* on my bee book wanted list. Later on, I was able to add that book to our bee library.

My spouse and I recently attended the "Beekeeping Institute" held at Young Harris, Georgia. While there, Debbie, my wife and beekeeping partner, attended a workshop called, "Getting Started: A Minimalist Approach." She seemed to resonate with the presentation that was conducted by Ross Conrad regarding organic approaches to apiculture. Debbie is one among many concerned about the use or misuse of chemicals in beekeeping. As she talked about the presentation, I realized that I had found the perfect opportunity to repay the favor she had bestowed on me previously by having Ann Harman sign one of my books. I picked up a copy of *Natural Beekeeping* by Ross Conrad at the book table. Sure enough, Ross was pleased to sign it. What a joy it was to present this new acquisition to my spouse!

The bookcase at our home is beginning to fill up and take on the look of a genuine bee library! Gazing at those books brings back many fond memories. For example, I remember years ago corresponding with Richard Taylor. When I was a new beekeeper, I would write him with a variety of beekeeping related questions and he was always generous in writing to me in return. Now that he has passed away, my appreciation for his books grows even greater. *The How-To-Do-It Book of Beekeeping* by Richard Taylor is one of my personal favorites. It sits on my bookshelf next to another one of his books called, *The Joys of Beekeeping*. Richard's down to earth common sense approach to beekeeping was refreshing to me. Reading his works often caused me to philosophize a bit about bees, nature and our place in the grander scheme of things.

Being a minister by occupation, I had a desire to read about Brother Adam and his work, *Beekeeping at Buckfast Abbey*. So, I added his book to our collection when I got the chance. It sits on the shelf between *The Beekeeper's Handbook* by Diana Sammataro and Alphonse Avitabile and *Beekeeping Principles* by James E. Tew. When our friends come by the house and want to look at a book on beginning beekeeping I show them *First Lessons in Beekeeping* by Keith

Delaplane, Howard Blackiston's *Beekeeping For Dummies* and Kim Flottum's, *The Backyard Beekeeper*. These are excellent books for aspiring beekeepers! When a colleague shares a desire to increase the number of hives he or she has, I point them to Lawrence John Connor's book, *Increase Essentials*. When I really want a personal challenge, I peruse Clarence Collison's, *What Do You Know?* This book is filled with over 1,500 questions and answers relating to numerous subjects in apiculture. It is an exceptional resource to test your bee knowledge.

As you can see, I have really enjoyed developing a bee library and reading these books. What a treasure store of information! I often find myself referring to these books and their practical implications as the beekeeping year progresses. Have a question about seasonal management? Check your bee library. Want to know how to split one hive and make two? Might be nice to have a book that explains the process. How do you deal with diseases and pests? The bee books often cover those subjects. Time to harvest your honey and you want to know ways to clear bees from your supers? Helpful information is as close as your personal bee library. You get the idea.

Some may suggest that having "hands-on" experience with the bees is better than "book knowledge." Certainly, nothing takes the place of working with bees and learning from your personal experiences. Nonetheless, a great deal of excellent educational information is available to beekeepers. Systematically developing and expanding your bee library can prove beneficial in knowledge, practice and shared memories. Reading the materials available today will expand your horizons as a beekeeper tomorrow. Having a bee library in your home also says to your family, friends and associates that you are serious in your desire to be the best beekeeper you can be.

Now lets see, someone told me that there's a book by Roger and Mary Lou Morse on *Honey Shows* that we should add to our library. Hey, I think we also need some honey cookbooks! **BC**

Dr. Fred Hambree reads bee books, and keeps bees at his home in Murfreesboro, Tennessee.

Bob & Suzette Binnie

Jennifer Berry



A well run commercial operation in Georgia.

Since being elected president of the Georgia Beekeeping Association last year, Bob Binnie has worked exceptionally hard to organize meetings that are not only educational but also entertaining. If you attended the Spring GBA meeting in Covington this past February then you experienced just that: a well assembled, informative, fun meeting. Well, he is doing it again for this year's GBA fall meeting. It will take place September 26th and 27th at the Rabun County Civic Center in Clayton, Georgia. Bob has brought

together top-notch speakers from across the U.S. to address issues that are important to beekeepers. He has also arranged for a laid back evening in which we will be entertained by an auctioneer while consuming fresh shrimp, sausage, corn and potatoes. Not only is the program exceptional but the location of the meeting is picture perfect. The mountainous region of North Eastern Georgia is breathtaking. Since the meeting is in close proximity to North and South Carolina, we Georgians would like

to extend an invitation across the border for you to attend. For those who aren't Carolinians, please don't misunderstand, we extend the invitation to you as well. Anyone, anywhere is welcomed. It would be our pleasure to host our neighbors and kin alike. Here's a sample of what to expect at the GBA Fall meeting.

Dr Tom Rinderer will be joining us to share his experiences in research and queen rearing. Dr Rinderer is the Research Leader for the USDA lab in Baton Rouge which focuses on bee breeding, genetics, and physiology research. Dr Rinderer has been heavily involved with developing genetically resistant lines of queens.

One of Bob's many beeyards in north Georgia. Notice the bear fence. No fence, no bees in the mountains.



Removing honey.



Unloading supers. Note the gate, storage boxes and tie downs.

The line he is most passionate about originated in Russia and are called, easy enough, "Russians." He will talk about his experiences with the Russian line, their traits and the Russian Bee Breeder Program.

Another heavy hitter in the Russian world of queen rearing is Carl Webb. He will be giving us more information about Russian stock and how he keeps bees without using chemicals.

Dann Purvis, owner and creator of Purvis Brothers' Apiaries, will be sharing his experiences with queen breeding and how he developed his

own resistance stock by selecting for survivability.

A Californian will be joining us also. If you have in recent years picked up an issue of the *American Bee Journal* then you have come across the name Randy Oliver. Randy is a monthly contributor to the magazine focusing on issues that affect beekeepers today. He is a teacher and researcher in all things to do with honey bees.

Steve Forrest, always a crowd pleaser, will be talking about the evolution of beekeeping equipment. Steve is owner of Brushy Mountain



300 gallon honey tanks.

Bob checking for moisture.



Cowen 60 frame air ram parallel radial extractor.

Bee Farm and has been in the business of honey bees for over thirty years.

Berry Wright from the Wrights Honey will be teaching about Fall management while working colonies in the beeyard. He has been a beekeeper for decades with his operation located in the mountains of North Georgia.

And of course Robert Brewer will be helping us to prepare honey for show. For more information about the meeting you can go to the GBA website at gabeeking.com. Hope to see you there. It will be worth it!

Before you arrive to the meeting there is some history I found out about the man who made it all happen, Bob Binnie. This past spring I sat down with Bob and Suzette Binnie and got a brief glimpse of their past and how beekeeping became their future.

Years ago, Bob was living in California when he married his wife Suzette. Shortly after their wedding they decided to move to Alaska. They packed up their belongings, threw them into a 20-year-old pick up truck and headed north with only \$700 in their pockets. They weren't too concerned about what they would do when they arrived because at the time the pipeline was being built, so jobs were plentiful. Bob and Suzette settled in the back country of the Wrangell Mountains of Alaska. After many different side jobs, Bob landed



Part of Bob's bottling process.



Bob's honey.

employment as a Winter watchman for a hunting camp and then later guided big game hunters through the rough terrain. They lived in a rustic, 16 X 16 foot cabin, but for two adventurous spirits, it was just ideal.

Living in Alaska definitely has its fine points: majestic mountains, untamed wilderness, wide open spaces, unimaginable night skies, minimal people, and crystal clear streams. However, the winters can be harsh. It's not just the extreme cold, blowing snow and howling wind that can take its toll while living off the beaten path but also the isolation. So during these days of confinement Bob read, and read, and then read some more. One day he came across information about beekeeping in a Mother Earth catalog and it caught his attention. He didn't realize it then but beekeeping was about to become his life's ambition. Immediately he ordered Walter T. Kelly's book, *How to Keep Bees and Sell Honey*. After reading the book from cover to cover Bob was hooked and began to order every beekeeping book he could get his hands on. He said he knew instantly that commercial beekeeping was for him. However, he had never laid his hands in or even near a colony of bees.

When the weather allowed, Bob ventured out and met with local beekeepers. One in particular, a retired beekeeper, gave him some excellent advice. He told Bob that before he started his own business

he recommended that he work for a commercial beekeeper. He explained about the numerous pitfalls involved with beekeeping. He told Bob it was essential for him to work with a professional. It will help you avoid potentially hazardous career moves which inevitably come with a lack of experience. So after six years of living in the wilderness of Alaska, Bob and Suzette packed up and headed to Oregon where Bob took the advice and worked for a commercial beekeeper. Beekeeping came very easy to Bob. During the three years of his employment Bob learned about pollinating almonds in California, pears in Oregon, apples in Washington, and honey production in North Dakota. Bob slowly built up his own outfit on the side (500 colonies) while absorbing every bit of knowledge he could. Once he was confident to step out on his own, Bob began pollinating numerous crops in California and Oregon. This was his life for 10 years.

A job offer brought Bob and Suzette to the Blue Ridge Mountains of North Georgia where he briefly changed careers and no longer kept bees. But it didn't take him long to quickly build up colonies and return to what he loved the most, beekeeping. For the first time Bob decided to delve into honey production. The West coast offered pollination while the North Georgia Mountains offered sourwood honey.

Bob's beekeeping operation over

the years has ranged from 400 to 700 colonies, but for a one man operation the optimal number for him is 500. Along with producing his own honey Bob also buys and packs honey from beekeepers he trusts. He sells to grocery stores, produce stands, farmers markets and to other beekeepers. But lately Bob has begun selling nucs. This past year he sold over 600. Presently his honey operation consists of the optimal number of colonies, 500, with half located at permanent locations in North Georgia and Western North Carolina. The other half are situated on four-way pallets and travel back and forth from North to South Georgia.

Since Bob has been in Georgia he has become a member of the Georgia Beekeepers Association, and the Macon County Beekeepers Association in North Carolina. He is also a member of the Mountain and North East Georgia Mountain Beekeepers Association. The latter he served as president for three consecutive terms. Currently he is the president of the Georgia Beekeepers Association and in 2003 received the Beekeeper of the Year Award. He has also served as a board member for the GBA several times. Not only does he take on these extra activities but he is often a guest speaker for many clubs and associations and teaches numerous classes at Beekeeping Schools. Honestly, I don't know where he finds the time but he always does.

The first opportunity I had to work with Bob in the field was one Spring about six years ago. The UGA bee lab was starting a queen breeding program and Bob generously donated over 100 frames of bees, brood and 50 queens. I gained a lot of experience working with Bob. He was very calm and methodical in his techniques. It was obvious while working with him that his beekeeping experience spanned decades. That's not the only time Bob has helped out our lab and hence other beekeepers. Several years ago he was very instrumental in providing bees, equipment and time for a three year IPM research project.

Bob is a conscientious beekeeper who is not only concerned with his own bees but the future of beekeeping in general. He is always researching and fine tuning ways to become a better beekeeper. For instance he doesn't fall into the philosophy that newer, stronger or a combination of chemicals are the answer to our beekeeping problems. He believes that healthier bees are born in chemical free environments. One way he avoids using harsh chemical treatments is by choosing superior bee stock. His primary stock comes from queens purchased from Dann Purvis. In addition to Purvis Brother's queens he has Russian and South Georgian blood mixed in as well. "I want bees that won't succumb to every little sniffle that comes around" he says. So he chooses wisely. Bob is also aware of the number of colonies he puts into a yard. Only 32 colonies are allowed. "The more colonies per yard the worse they perform" he said.

Bob also shared his step by step procedure of how he gets his honey from the apiary to the extracting room, a timely piece of advice right now. He starts by making a trip to the beeyard the day before he plans to pull honey and places escape boards on all his colonies. "Most commercial beekeepers would probably think I'm crazy for doing this because it adds an extra trip into the formula. However it removes the bees with minimal disturbance to the colony, you are in and out quickly, there is little to no robbing and they clean up the dripping burr comb by the next day" He can enter a yard, pull the honey supers, toss them onto his truck and be gone. However, Bob explained that you **must** have bee tight equipment or

this method will not work. Normally in the field his is a one man operation except for when he is pulling honey. His neighbor joins him for the time it takes to remove all the supers which helps out tremendously. During some months he has a college student who builds equipment and another person to help bottle honey.

Once at home, Bob unloads the supers with a hand truck and places them into a "comb room." This room has a de-humidifier which removes any excess moisture from the honey. He won't extract honey until the moisture content is 18% or lower. Once the honey is ready he moves eight supers at a time into his extracting room. Here he places the supers into a Cowen uncapper in preparation for the conveyor which loads them into a 60 frame, parallel radial extractor. Bob explained if he has all his ducks in a row he can extract 200-240 supers per day by himself.

The honey flows into a two barrel sump tank below the floor. When the tank is full an automatic pump kicks on and sends it into one of four, 300 gallon settling tanks. "Our honey is course filtered not micro filtered or pasteurized so we can advertise it as natural and raw" he says. Once the honey has settled for several days

he begins to bottle it directly from the tanks into drums for storage or individual jars and buckets for sale. He wholesales about 85% of his crop by the case, while the rest is sold in buckets or drums.

Bob and Suzette raised three children all of whom have worked at one point in their life for the family business. Suzette runs the book-keeping, shipping and website for the operation. Their oldest son is returning this year and will be distributing honey in Atlanta. This past spring when I had the opportunity to sit and talk at length with Bob and Suzette I realized that a story about their honey bee operation, the Blue Ridge Honey Company, needed to be written. Their dedication to the well being of honey bees, producing quality honey in America, the beekeeping industry, and the environment is admirable. How lucky Georgia is to have such an outstanding beekeeping operation and beekeeper in her midst. The saying definitely applies here; honesty and hard work pays off (for us!).

See ya! **BC**

Jennifer Berry is the Research Coordinator at the University of Georgia Bee Lab.



Queen Right Colonies, Ltd.

The Beekeepers' Shop

A full line of beekeeping supplies.
Package bees & nucs, group rates available.
Extractors and bottling equipment.
Bulk honey, wax and pollen.
Beekeeping apparel.
5-frame nucs and more

We carry a full line of Maxant Extractors



We are currently taking orders for Packages for 2009

It's time to get ready for those Fall Treatments.
We offer Mite-Away II

Queen Right Colonies, Ltd.
43655 State Route 162 • Spencer, OH 44275
440.647.2602 • FAX 440.647.0922
Email: queenrightcolonies@yahoo.com • www.queenrightcolonies.com
www.LorainCountyBeekeepers.org

A Swarm In July Is Worth A Cat

Gwen Rosenberg

Bees are outlawed and discouraged, but cats cats get away with murder!

My neighbors have cats. Three cats live next to me, six behind me and several cats live across the street. I have four beehives. I keep my beehives hidden away behind an ugly privacy fence which is meant to discourage snooping and keep me out of trouble with my neighbors and subsequently my city council.

The other night while enjoying the cool breeze and gazing through binoculars into the trees behind the house, one un-neighborly cat came into my yard and ate a robin right in front of me. If I were the type to anthropomorphize animals I would say that Mr. Pussycat sneered at me, uttered a few choice words about my affection for trees and then with the gusto that one bites into an apple picked off a tree the first day of Fall, he sunk his jaws into the neck of my friend Robin. Once he crunched through Robin's wind pipe and disjointed the vertebrate he looked directly at me, spit out the lifeless bird, shrugged one shoulder and said "I guess I'm not hungry for Robin, I'd rather go for a chickadee." With that he made a rude gesture with his paw and turned to leave. He paused at the fence to lift his tail and give the gate a good spray I think I heard him grunt something about being "above the law."

As far as pets go, I don't really care what people choose to keep. I'm a poodle, canary, honey bee type myself. It does irk me quite a bit though when other people's precious pals poop in my yard, attack my kids, you know, that sort of thing. But after my experience with Mr. Pussycat I really began to think about how far above the law the kitties in this town have gone. He was right. That stupid cat with the bloody feather stuck to his chin - he's untouchable. If I chased him, sprayed him with the hose, trapped him, poisoned him, hurled insults or disparaged his mother I could be arrested for cruelty to animals. Cruelty to animals however, does not apply to all animals. Only the critters with a fierce lobbying force and are cute as babies. Honey bees are not considered pets for that very reason. Bees aren't pets, but neither are they considered landscaping or livestock either. Most folks regard them as bugs, stinging bugs that are cute only when cross-stitched on a baby's bib, but in all other circumstances angry, stinging machines.

Obviously, beekeepers know better. Honey bees are

not generally aggressive and although some people have severe allergies to stings that is the exception. I'm allergic to cats. Granted, if I get bit I won't keel over dead, but my eyes itch and burn, and I sneeze. My nose runs if I pet one, or say for example, it sleeps on my sweatshirt when I leave it outside. Millions of people are allergic to cat fur and dander. Some friends have it so bad that even being near a cat can seize up their sinuses like a brick. Never have I heard anyone proclaim a cat allergy to a cat owner the way folks parade a bee sting allergy around town as the justification for spraying every living insect in a town ship. There are no sprays that kill cats on contact.

Could you imagine what would happen if a pickup truck spewing a white fog up and down the streets left a trail of withered cats in its wake? It's unfathomable, but beekeepers have lost entire colonies due to legal spraying with no legal recourse.

Cats and bees differ greatly for sure, and I'm not suggesting that the affection one feels for a cat is at all like the attachment I have for a young worker bee who lives for only three weeks. But as two animal owners, or responsible parties, why is the cat above the law while the honey bee is treated more like a public enemy? The cats in my neighborhood are free to defecate in my yard, kill birds and wildlife in my yard, urinate in my kids' sandbox and cause an allergic reaction - legally. Cat feces commonly carries toxoplasmosis, which is a parasite that can cause all manner of birth defects if women are initially exposed while pregnant. Exposure while weeding or cleaning poop out of a sandbox can even abort a healthy pregnancy. That's why pregnant women (cat owners or not) are told to wear gloves while gardening. Cats can contract rabies and other nasty diseases and share them with my pets on my property. Bees do not spread diseases to mammals or people. Bees do not get into loud fights in the middle of the night or mate under my porch. Bees don't cause car accidents because they unexpectedly chase squirrels into the street. Bees do not kill approximately one billion birds every single year, including rare and endangered birds struggling to survive in dwindling habitats. Bees also don't walk around meowing all over the place with their tail in the air, which I have to admit is kind of cute, but they do tear open the trash, which is not.

The point is that bees are outlawed and discouraged



"Could you imagine what would happen if a pickup truck spewing a white fog up and down the streets left a trail of withered cats in its wake?"

in many towns despite their ever growing importance in agriculture and food production. Beekeepers must register their apiaries and have hives inspected by a county inspector for disease. Additionally, beekeepers have to fear lawsuits, town ordinances and angry neighbors. Meanwhile, the house around the corner gives kittens away every three months to owners who do not need to license their cats, or fear lawsuits from allergic, pregnant women. Incredible!

The cats and I can live in harmony but should I ever

feel the weight of social and legal pressure regarding my hives I think that what's fair is fair. The same attorneys that sue beekeepers would also sue cat owners. The same ordinances that register apiaries can register felines. Veterinarians can inspect cats for diseases, luckily cats do not get infected with foulbrood.

Thanks to my furry friend Mr Pussycat, I have a new attitude about my bees. I'm going to tear down the privacy fence and expose my hives to the sunshine and scrutiny of my neighbors. There will be no apologies about my bees, no warning signs or camouflaging shrubbery. I like my bees, no, I love my pet bees. It is their nature to fly and pollinate flowers all over the neighborhood. My bees are going to poop in other people's yards and sting their pets. How could I possibly stop them, it's in their nature. If my town doesn't like it I'm going to take a bite out of Mr Pussycat. **BC**

Gwen Rosenberg is carefully watching cats, and unabashedly keeping bees in her backyard in Kent, Ohio.

nozevit 

All Natural Honeybee Feeding Supplement

Your Partner In Helping Maintain The Intestinal Integrity And Health Of Your Honeybee Colonies.

 P.O. Box 110828
Anchorage, AK 99511 

(907) 727-8200 **opivito**
Nozevit.com Product of Croatia

Available in 50ml, 250ml, 500m & one liter bottles



MILLER BEE SUPPLY, INC

Manufacturer of Quality Beekeeping Supplies Since 1976

888-848-5184


woodnwax@embarqmail.com
www.millerbeesupply.com

496 Yellow Banks Road
North Wilkesboro, NC 28659

 **FOR A GREAT TIME IN THE BLUE RIDGE MOUNTAINS, JOIN**

**Dr. Tom Rinderer • Randy Oliver • Steve Forrest
Dann Purvis • Carl Webb • Berry Wright • Robert Brewer**

**Georgia Beekeepers Association Fall Meeting
September 26-27, 2008**

Rabun County Civic Center, Clayton, GA
Info Tom Bonnell - hortpa@uga.edu

770.473.5434




Millstone Honey Farm and Supply

Bees Honey Bee Supplies

Frankie and Cynthia Spradlin

Home: (740) 226-1085 888-855-2337 Cell: (740) 222-7947
www.millstonehoneyfarm.com

'Bout a 100 – Sideline Beekeeping

RAISING QUEEN CELLS

Fall queens are tricky, but worth the work.

Larry Connor

Maybe the year 2008 will be one of those small benchmark moments where folks will point back and say “that’s when people started to talk seriously about raising queen cells. And some actually did.” At the risk of repeating myself (why that has never stopped me before will remain a mystery), we should take some time to discuss queen cell sales as a double whammy for local beekeepers.

First, the local sales of cells will train beekeepers to think outside of the hexagon (or whatever) – shaped box they have put themselves into and find ways to promote beekeeping in their own area by producing and selling ripe queen cells for use by local beekeepers. Or not so local, since cells may be easily shipped to other beekeepers in more remote areas for use.

Second, we need to look at the timing of these sales. For many northern beekeepers an abundance of queen cells will provide a method of putting highly desirable genetic material into the hands of willing and waiting beekeepers for Summer and Fall use. It will have the tremendous advantage of getting beekeepers to think about and actually learn how to use queen cells. To do this, they

Removed from the shipping bank, the beekeeper is holding a queen cell with a cell protector around it. Cell protectors are essential for shipping queen cells because they prevent early emerging queens from destroying other queens while still in the cell. Some beekeepers leave the protectors on the cells during introduction, while others experience higher queen acceptance without them.



With the cover and insulation removed, you can see the queen cells, each in its own cell protector. Nurse bees are shaken onto the cells and provided water during the shipping process. These bees had been in this container for three days when this photo was taken. In spite of the bees there was some evidence of delayed development of the queens, so fast transport of nearly ripe cells is the key for these containers to succeed.

will probably need to learn something about splitting hives or making increase colonies. And by using queen cells in such colonies, they will effectively handle cells and learn essential aspects of queen use and rearing.

So, when should you use queen cells in your area? Could you really install ripe cells into colonies in the months of September and October in your area? The answer to that question is actually pretty simple. You have to look at the developing supply of drones in the colonies that will ordinarily provide them for mating to your virgin queens. Remember, these are NOT the drones produced in the beeyard where the mating colonies are located, but in surrounding apiaries!!

The simple test of your local colonies and of neighboring colonies is this: **DO YOU HAVE YOUNG DRONES IN DEVELOPMENT IN SURROUNDING HIVES WHEN YOU PLAN TO INSERT THE CELLS INTO THE COLONIES??** Of course, you need to have adequate drone numbers in these surrounding hives. A single colony with 50 to 100 young drones can hardly provide enough drones for a mating of 50 or 100 queens from queen cells you plan to use.

AND what is the correct aged drone? The rule is that you must have drone brood sealed for five days (when the pupal eyes turn purple) at the date you start cell production. It is such a simple rule, and so hard to convince folks that it is important. But in the Fall it is very easy to produce drones that are off the mark. Adult drones in a colony at the time you graft queen cells will probably mean that they will be dead and gone when the queens go out to mate.



A weak colony was selected to split into several new increase colonies. The original queen was removed. Her spermatheca was light in color, and suggested poor mating. However, Nosema infection was not ruled out. By dividing the assets of the hive into three or four nucs (three to five frames each), the brood and stored food was immediately put to use. Here the last frame is added to the increase colony.



One of the queen cells from the queen bank is being installed into the increase colony. This is a simple process – just separate the frames enough to safely put the cell between the two frames. One reason to fill the box with empty frames with drawn empty comb or foundation is to insure that the cells do not fall when the colony is moved. The cell protector may be removed or left on the cells, and results compared to determine future procedures.



Once the queen cell is in place, the colony is ready for the lid.



Since this unit was being assembled in an apiary where robbing was present, the colony entrance was screened for the rest of the day. In the evening the screen should be removed and an entrance reducer placed on the colony to prevent this weak colony from being robbed out. Many beekeepers load these increase colonies onto a truck and move them to another location at least a mile away to prevent drift. However, most of these bees were young nurse bees and unlikely to leave.

The problem we have in the Fall, of course, is that colonies conservatively invest in young drones late in the season without some plan to keep them around for mating, so I think the key question is when and how many drones are in production, and managing colonies so that they continue to feed and support drones well into the cooler weather, and after the nectar flow is well over. This is not easy to do. If you have installed drone combs into the hives in the mid to later Summer and you have had a nectar flow that stimulated the queen to lay into the drone cells, then you are on track for adequate drones for good mating. This is especially true if you have stimulated drone production from those colonies that you have designated “target drone producers” because they carry genetic traits you see that you want to propagate. These are varied queens producing a wide range of target drones.

But if you do not have drones in production, and



The objective of all this work with increase colonies and queen cells is to get good queens laying lots of eggs at the right time of the year. This queen is inspecting an empty cell just prior to laying.

do not stimulate their production by heavy feeding, you probably will not have enough drones for the queens you want to produce.

All this means is that the beekeeper must get into the hive and monitor drone numbers as the Summer winds down and Fall begins. As long as the goldenrod and aster remain in bloom in many areas, you may be fine. But if a September or October blast of cold air shuts off the flow, the drones are often ejected for the rest of the season. Unless you have colonies already set up with the conditions of queenlessness or queen replacement it is pretty unlikely that any drones will be maintained.

Drone holding colonies do this job – they are just increase colonies or nucleus colonies containing frames of brood of both worker and drone pupae, plus a caged unmated queen. The colonies must, absolutely, have abundant pollen for drone feeding. This colony duplicates the colony undergoing supercedure and the drones will be held long after other colonies have given the drones the no vacancy notice.

Using queen cells

Most queen producers use the plastic queen cells with a wide base. These cells have the advantage of being easy to ship and handle, and they are easy to place between two frames, or push into a frame of brood for introduction to a colony. These photos were taken at a queen rearing class in Essex County, Massachusetts in July. Rollie Hannan, Jr of Connecticut co-taught a queen rearing course there and he supplied 60 queen cells in a queen bank. Some of these cells were used to demonstrate how to put together summer increase colonies. **BC**

Dr. Connor's books, including *Bee Sex Essentials*, are offered for sale through many bee supply dealers, and at his website, www.wicwas.com. A PayPal store is available on that site for those who want to have the convenience of purchase via this option.

NEW BEEKEEPERS

James E. Tew



What to do with them once we get them.

The only thing that never changes is the fact that *everything* changes. Through the years I have noted some of the changes that have occurred in beekeeping. For instance, the use of plastic in beehive equipment and beehive parts has resulted in prominent alterations in the equipment we use and the bee clothes we wear. I always remind myself that this general bee industry evolution is a healthy thing – even necessary. My high school is still in operation. How terrible it would be if that school had never changed from the day I graduated. I just bought a new mower, but I kept my old one. After just a few mowing sessions with the new one, I can't conceive of ever using the old one again. Cell phones, themselves a fundamental change, seem to dramatically change every year. Diet Cokes represented change from traditional Coca Cola but now Diet is being replaced with "power drinks." If beekeeping were not changing to meet current conditions, as an industry, it would die. So change is a necessary thing, but not necessarily without some pain.

New beekeepers as change elements

Each time an individual becomes a new beekeeper they introduce an element of change. Primarily, new beekeepers are unintentional elements of change. They are not radicals intent on redesigning everything. They simply don't come with the baggage of past beekeeping procedures and events. That new person who started beekeeping on this very day will never have kept bees that didn't have *Varroa* mites. They will never be required to learn all the peculiarities of basswood sections. They will not be using 60# tins but will be using five-gallon plastic pails. They will have an abundance of plastic containers for retailing or gifting their honey

In essence, the new beekeeper will not be burdened with the "the way we did it way back when" attitude. Unfortunately, today's beekeeping is not any less simple than bee ways of yore. The new beekeeper will have to be much more disease and pest savvy and will have to deal with a multitude of chemical controls and, increasingly, municipal restrictions.

New beekeepers are not the only element of change

There is a bigger changing picture. Not only are beekeepers and their ways evolving, but things all around us are changing. Though I don't see some looming cataclysmic change in society that will obliterate beekeeping, many of these outside changes are not particularly good for beekeeping. Increasingly, our neighbors are not agriculturally based and are not lovingly concerned for bees and their keepers. I just recently wrote a *Bee Culture* piece about various city ordinances that restrict beekeeping. The beekeeping industry seems to be drifting toward increased urban/suburban restrictions. Recently, on the front page of *The Wall Street Journal*¹ was an eye-catching article entitled, "To be or Not to Be a Beekeeper is the Question Facing Hobbyists." The article reported that a (somewhat) new beekeeper put hives in his small backyard in South Portland, Maine. He tried to keep things low-key, but as commonly happens with bees, they don't stay low-key. They drifted to a close neighbor's water sources causing angst for the neighbor and his kids. The low-key project became a "high-key" project. Even though beekeeping organizations buried the city commissioners with support for beekeeping, and

though nearly no one supported the issue, it passed by a 5-2 vote. This is a common theme and I suspect it will only become more common as time passes. Things change. People change.

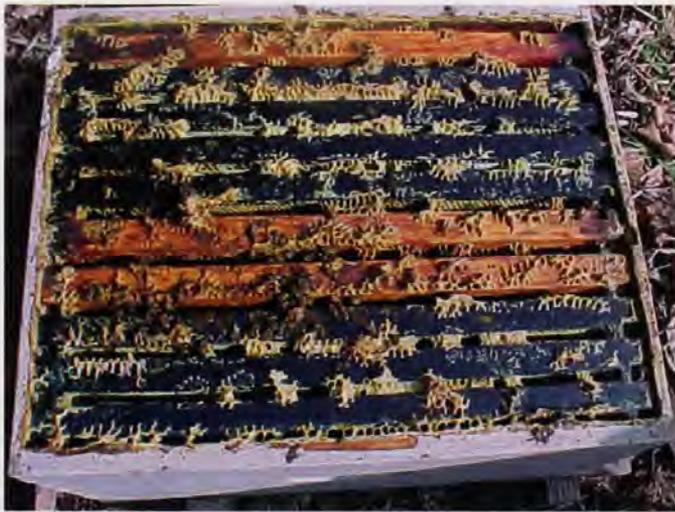
While I am in real danger of repeating myself because of statements written in previous articles, this increasing restrictive attitude is not surprising. In general, people have changed – or at least are changing. No doubt, many of those people who wrote to support city beekeeping are the older, established beekeepers who have been keeping bees in urban environments for years. (*I have no statistics to substantiate this guess.*) Beekeeping enterprises are increasingly becoming to be like a county landfill. Everyone wants one, but no one wants it near them. Everyone knows they need bees, but many non-beekeepers do not want bees kept near them. This is an evolving issue. Presently, the answer is unclear

What to do with new beekeepers?

As has always been the case, we need a constant supply of new beekeepers. We need them to grow into established, old beekeepers and then have them worry about attracting yet more new beekeepers. The cycle must be continuous. Where to find these people and how to train them to become accomplished beekeepers is unclear

My Grand Dad taught me to drive his 1952 Dodge pick-up on rural roads. As a child, I could drive the farm tractor nearly anywhere I wanted to – and it was legal. That seems quaintly shocking now. Even my grown daughters were required to attend a sanctioned driver-education course. Young drivers today are more trained and restricted than I – as a young driver – could ever imagine. My only requirement was to take my

¹ The Wall Street Journal. Friday, July 11, 2008, pp 1 & 11.



Using new plastic frames with traditional wooden frames.

Grand Dad's training experience to the licensing office and take both the written and driving test. I did and I passed both the first time. (*On the road test, I was required to parallel park on a hill. I'm not sure I could do that even now.*) As an industry, what are our plans for training and certifying new people? I sense that increasingly the process of just having one teach themselves or having another show a new person how to keep bees may be passing. While driving certification is one example, gun safety training is another evolving issue. Then there's swimming classes. I seem to be surrounded by formal training and certification programs for nearly everything² Will there be a future time when a new person will be required to take training and become certified before becoming a sanctioned beekeeper?

A case history of a new beekeeper

I was approached last Winter by a friend of my daughter asking me how to get started in beekeeping. The only procedure I really had to recommend is the old traditional way of starting into the craft. Get a book. Get a beekeeping friend and order a package. He got the book and ordered the package, but he stumbled on the friend part. He asked me to help. Please understand that while I love beekeeping, I don't have the time – and not much energy – for individual training so I probably was not the best choice. I installed his two packages on a clear Spring day

and all went well. I gave him a few instructions and pronounced him a beekeeper. It's the traditional way of teaching beekeeping. You either sink or swim. As I write this, I am reminded of the way I was taught to put on composition shingle roofing. I got a 30 second course from a professional roofer. *Start at the drip edge. Reverse the first row. Nail above the gullet. Trim the edges. Use flashing. Keep the rows straight. You'll do fine.* I had to essentially do the same type training for the new beekeeper

All seemed to go well. I got reports a couple of times that sounded okay (I suspect that one of the hives queened themselves.) In my defense, I did tell him that as the colony packages grew and as the nectar flow subsided; the colonies' personalities would evolve toward the defensive. I told him, *"As the colony grows, the sting penalty will become greater."* He said he would watch that.

Six weeks later, I got an email message that the new beekeeper had grown in confidence and knowledge. So much so that he took a group of friends out to see his bees. Correctly being concerned for his novice charges, he gave them his protective equipment and admonished the others to stand back while he did the hive deed. He reported that the colony he opened immediately ate him alive. He had bees everywhere and he had civilians watching in stark terror. He took a reasonable number of stings and did not get anyone else stung, but the colony spent the night with the top off. As the days passed, it became somewhat funny to him and he counted it as a "learning experience." I correctly told him that we all

make mistakes and we all learn from those mistakes. That's true, but I am asking here how much longer can beekeeping be taught this way? This particular beekeeper keeps his bees on a remote location on a farm. What if his close neighbors had been the ones in South Portland, Maine? Our industry requires new people to become beekeepers but what should be done with them once we get them?

Loss of university training – a negative change in beekeeping

I was initially trained in a university beekeeping class for which I was given college credit. Now that class is gone. That program is gone and my esteemed old professor has passed. For many years my university, The Ohio State University, offered a structured, credited bee class. That too is all gone. I don't know how many colleges and universities offer traditional bee programs, but in my arena there is a clear decline. Yet, in Ohio, I remain responsible for beekeeping education programs. My challenge is how to offer effective programs. Two years ago, expecting about 25-30 participants, I offered a training program for advanced beekeepers. About 145 showed up and 50% of them were new beekeepers. On one hand this is great but on the other hand, I was buried. To truly teach one to manage and manipulate a bee colony, that person needs to truly be inside a substantial bee hive. Reading, watching videos, and visiting web pages only accomplishes so much. In the case of my surprisingly large class, I simply could not show every person every aspect of the bee colony that we opened; plus the knowledge range of the individual participants was diverse. The new beekeeper demand is there, but our training system needs review.

The price of gas is high. Time is tight. In many instances, participants are driving for hours to get to a meeting and then must drive for hours to get home. In my case, local bee groups are becoming ever more important in training and assisting local new beekeepers. Driving is reduced and personal attention is greater. Essentially, I am passing the buck. Since I simply cannot be at innumerable bee training sessions, the path of least resistance is for local bee groups to train local newbies. How to train is the perpetual question.

²Strangely, woodworking has currently been skipped. Anyone can buy a table saw and a nail gun and immediately go to work.



New beekeepers in a field class.

I don't have the answer, but I have some suggestions

One size does not fit all. The best program in one state will not fit the needs of another group in another state. But in general, I would suggest the following general training points.

1. Keep the group size manageable. You really can't have many more than 10-15 people around one beehive. If the group numbers are more than that, try to have more than one hive and additional instructors.
2. Don't use large, defensive hives. Consider moving colonies during the day when field bees are out. Leave a trap box in place to house the field bees until you can return the parent hive to the stand.
3. Make sure everyone has protective gear and is suitably protected. Stinging situations can turn off new people.
4. Have a nicely stocked observation hive for biological discussion. Much of this can be done in the open hive, but a nicely stocked observation hive allows for close and risk-free examination.
5. Don't try to accomplish too much in one session. People are of all ages and their health varies. Don't plan an eight-hour session and try to cover all known bee topics. Many people can't be on their feet that long. Take small bites.
6. Give a certificate of completion upon ending the class. Most of the time the paper will be tossed, but most of us could profit from

having something – anything- to present to a challenging county commissioner meeting to prove that one is a qualified beekeeper. Also, give this for the group to learn to certify new people. At this point, it is perfunctory, but we all know that at some point – some beekeeper is going to be sued for something. Legal action happens all the time.

An improperly planned party?

Have we invited people (new beekeepers) to a party (beekeeping industry) for which we are not properly prepared? We desperately need new, qualified people, but we don't have a uniform way to train and support them. Master Beekeeper programs and other certification programs are great for authorizing legitimacy and competency. Resisting change is normal but some of us need to develop plans for what happens after things do change. **BC**

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

DON'T FORGET!!



Bee Culture's 2009 Calendar Photo Contest

QUEENS! Big Queens, Little Queens, Yellow Queens, Black Queens, Any Queens!

See last year's calendar for more info or

Go to www.Beeculture.com For Specs

Deadline **October 1, 2008**

HURRY!

DEAD AIR SPACE

A Hive Configuration For All Seasons

This report describes the "Dead Air Space" configuration when used with the Open Bottom Board (OBB) and Commercial Open Bottom Board (COBB) systems. It is not recommended for use with any other closed or open bottom board system that restricts the bottom opening in any way other than:

1. The permanent use of a ½" wire mesh critter guard screen.

2. The temporary 24 hour partial closure of the opening when the "sticky" board is being exposed to the hive debris drop.

The large unrestricted opening of the OBB/COBB system is a critical non-negotiable factor required to assure optimum Dead Air Space system performance.

Dead Air Space Description

The Dead Air Space is a simple hive configuration consisting of all the space in the brood chamber and, in season, will include all the space in the surplus honey chamber. The only opening in both the brood chamber and the surplus honey chamber is the large bottom opening created by the OBB/COBB system.

Reference Information

Information pertaining to the assembly and application of OBB & COBB systems can be found in the following papers published in the listed issues of *Bee Culture*

1. December 2006, Page 49. (J. Hoffman, "Look Ma No Door")
2. March 2007, Page 50. (J. Hoffman, "Open Bottom Board Assembly & Application Notes")
3. January 2008, Page 37. (J. Hoffman, "Testing An Open Bottom Board")
4. May 2008, Page 45. (J. Hoffman, "A Commercial Grade Open Bottom Board")

System Installation:
Installation of the Dead Air Space system requires

no additional effort or expense other than permanently closing all holes and openings in the sides of the brood and surplus honey super chambers. The opening of the OBB/COBB system, installed under the brood chamber, will provide sufficient air passage necessary for the bees to maintain the temperature and humidity of the interior airspace.

Application

It is important to emphasize that the large opening of the OBB/COBB unit remain open all year, in all seasons. The opening must never be restricted except for either the permanent ½" wire mesh critter guard or the temporary 24 hour use of the "Sticky Board" test panel.

The "Dead Air Space" is not a stagnant air space. Rather, it is a "Stable" air space with its stability being maintained entirely by the bees. Through all seasons, the bees are quite adept at controlling both the temperature and humidity conditions within the brood and surplus honey chambers to meet their needs.

Project History

My quest to find an operational Dead Air Space began in 1940. I was nine years old and just finishing a two year training program to learn the basics of beekeeping. My mentor was Albert F. Skelton (1882-1969), better known as "Bert". He lived on East Market Street in Williamstown, Dauphin County, PA. He and my father worked together at the coal colliery.

I spent every Saturday for two years (1939 & 1940) studying beekeeping with Bert. He was an outstanding beekeeper with 40 years experience, an excellent teacher and therefore demanded excellence and perseverance from his students. He had tremendous foresight. He

explained the Dead Air Space concept, design, application and benefits to me in great detail. He also added, "unfortunately, we can't use it until we solve the moisture problem."

Moisture Problem

The moisture problem is the same one we still see today during cold weather

The inside surface of the hive body becomes cold enough to induce, upon its surface, condensation of the ever present moisture found in the brood chamber.

The moisture, for the most part, is a by-product of the bee's activity when they are either processing nectar into honey or consuming the honey. As the inside surface of the hive body becomes colder, the rate of condensation increases.

When using the standard solid closed wooden bottom board during cold weather, the moisture would run off the internal sides of the hive body forming a pool on the wooden bottom board. Some of the liquid in the pool could run out the front entrance - if the hive was tilted enough. However, most of it mixed with the ever accumulating hive debris where it remained all Winter causing premature rotting of the bottom board and other adjacent wood products.

Conversely, when using either the OBB or COBB systems the moisture runs unobstructed off the internal surfaces of the hive body, through the 1/2" mesh critter guard and, along with the hive debris, falls harmlessly to the ground.

As the ambient outside temperature becomes colder, the internal hive body surfaces also become colder and, depending on the insulating factor of the hive body walls, will eventually reach the freezing point.

Frozen Condensation Problem

The liquid moisture condensation running through the OBB to the ground is of no concern. However, if the condensation begins freezing on the internal surfaces of the hive chamber, it then becomes a very serious problem. The ice is capable of very rapid accumulation. It will spread and soon become obstructive enough to restrict the airways around the frames of comb, adversely affecting the bees ability to control the moisture level and temperature within the brood chamber.

The ability to reach an internal hive wall surface temperature low enough to induce freezing depends upon the insulating factor of the hive body wall. The normal temperatures typical of our South Central Pennsylvania location are seldom low enough to create the problem when using the standard wood hive body. In colder climates we will need more than a 3/4" thick hive body wall to prevent the freezing problem.

Frozen Condensation - the search for a solution

Over the years, I have used various hive wraps to improve the insulation factor. None seemed to be very effective. Most likely, they were ineffective because of all the holes I had left open in the hive body during the Winter. The holes were used to reduce the interior moisture using natural ventilation.

Now, using the Dead Air Space with either the OBB or COBB system, it is time to take another look at hive wraps and Styrofoam hive equipment for added insulation.

I am currently assembling and installing temperature measurement devices to study internal hive temperatures this Winter (2008 - 09) in two standard wooden hives while using various combinations of hive wraps. Both hives are configured using the Dead Air Space/OBB system. I will also be comparing that information with data obtained from a Styrofoam hive. The Styrofoam hive is configured using the Dead Air Space/COBB system.

My hypothesis is that the added hive wrap insulation on the wood hives will prove very effective and the Styrofoam hive without added insulation cover will prove to be far superior compared to the wood hives.

Strange and selfish as it may seem, I am praying for a very cold Winter this year

Preliminary Report - Initial Dead Air Space Application

Last October 2007, using two colonies, I began my Initial field evaluation of the operational Dead Air Space system. Both standard 10 frame hives, without hive wraps or other insulation, are wood outfitted with the OBB system. The results have been quite favorable, exceeding all my expectations.

Although I have insufficient information to either accept or reject any null hypothesis, there are two obvious events to be mentioned:

1. There was no evidence of the bees forming the normal "Winter cluster." They remained quite active all Winter using all available brood chamber space.

2. Despite the unusual extra activity, the Winter food storage supply ended up with a larger than normal surplus.

During the Winter of 2005-06, when I was frequently using the sticky board to evaluate the new open bottom board devices, I found it interesting to observe the formation of the Winter cluster by watching the hive debris pattern go from almost 90% coverage of the sticky board down to less than 25%. When the cluster became small enough, I could then follow it's slow counter clockwise movement within the brood chamber throughout the Winter.

During the Winter of 2007-08 with the Dead Airspace system installed, there was no evidence in either hive that a Winter cluster had formed. The brood chamber configuration in both hives is one full depth super on the bottom with a shallow super on top. Our 2007-08 Winter was relatively mild. Our lowest temperature spell lasted just three days with low readings ranging between 12°F and 14°F

During the Winter, with obvious continuous bee activity throughout the entire brood chamber, I became concerned that the apparent extra activity would lead to early depletion of the Winter food supplies. Actually, both colonies were in great shape in the Spring with the largest surplus honey supply in the brood chambers that I have ever seen. I expect this scenario will be repeated this coming Winter.

Conclusion

After 68 years, Bert F. Skelton's concept and design of the "Dead Air Space" has proven to be quite accurate requiring no modification. The addition of either the OBB or the COBB system was all that was required to make it operational. **BC**

The Jig Is Up . . .

Edwin P. Simon

A Couple Hours Up Front Pays In The Long Run

A large part of the fun of beekeeping is the construction and assembly of the equipment. Since it is a hobby, I decided when I started that I would build the equipment if I could.

Well, that was a fantastic idea except that execution is not always in line with reality.

Subsequently a friend and I bought out another hobbyist and split the equipment. Again this was great until I found out that I was short of medium supers. After searching the internet and measuring the current supers I drew up the plans and made my first medium super.

The box was a **Disaster**.

I'm glad I decided to only build one on a trial basis.

The box was:

Not square – Despite all my good intentions

Dimensions – Although good, caused some problems on assembly

Therefore subsequent boxes were not going to be compatible or interchangeable.

That brings us to the substance of the following article.

A finish carpenter I once knew related that you had to build a "Story Stick" if you wanted to repeat operations with exactness. Hence the **Super Jig** came into existence. Subsequently a jig for frames, the cutting of grab holes and the positioning of screw holes were created.

In making a jig a few concepts are important.

- 1) All fixed positioning alignment plates must be in an exact position (i.e. Square)
- 2) They must not move – ever-ever-ever
- 3) It must be easy to insert pieces and get them into position

With the following **Super Jig**, I am able to assemble large, medium or small supers in about ten minutes. Additionally I know they will be compatible with the rest of my equipment.

The **Super Jig** can be used to assemble:

1. Large, medium and small supers
2. Nuc boxes
3. Screened bottom boards

Part List

1. Drywall screws or wood screws 1 1/4 inch
2. Carpenters glue
3. 1 1/4 inch Brads for a nail gun

Tool List

These are the tools I used. They are here for a reference. I'm sure that the jig can be created without everything listed.

1. Framing square
2. 3/4 inch or 1 inch wood drill bit.
3. Electric hand drill (reversible helps)
4. Brad gun

Assembly

These directions assume you are using a standard 3/4 inch thick board for your supers and are building supers to the standard Langsworth dimensions.

Step #1 – Base Plate Assembly

Base Plate – This 22"x19" piece of 3/4" plywood should be cut as square as possible. Exact squareness is not required but it allows you to visually double check for the correct placing of other parts.

Use a framing square to draw two lines perpendicular to each other about 1 3/4 inches in from the edge of the base plate. This provides the starting point for all dimensions and the 90 degree reference for the rest of the jig. These lines will be two sides of the outside of the finished box.

Using the square again mark the outside of the rest of the box. The box drawn should be **19-7/8** inches by **16 1/4** inches. Double check that the lines are square by measuring the diagonals. They should be the same. If they aren't, recheck the corners for 90 degrees.

Glue Relief Holes – With repeated use of the jig glue will build up at the corners of the base plate. These holes allow extra glue to drain out of the joints and not buildup on the jig. If they are not there you have to make sure extra glue does not build up on the corners and cause a skew to your box.

Mark the center of the holes by using a scrap piece of 3/4 inch board to find the inner corners of the box. Then drill a 1 inch hole centered on the line and splitting the 3/4 inch board dimension. (see drawing)

This jig has the capability of helping you to assemble Nucs since the only difference is the width of the box. To



The finished product.

help with this measure the width of the Nuc you want to build and use that measurement to position two more glue relief holes. An alternative to this is to align one of your Nucs on the outside lines and mark where the Nuc corners are. Be sure you use the first corner you drew as the alignment reference point. Drill these holes where the glue would run if you were assembling a Nuc. (see drawing)

Step #2 – Back and Side Positioning Plates

Back and Side Outside Positioning Plates – The back and side positioning plates (Parts B and C) are set along the outside of the first two lines you drew. It is extremely important that they are square with each other. Use carpenters glue and screws to insure the permanent placement of the parts. The two pieces may partially cover some of the glue relief hole.

Hint: I used small finish nails to keep the pieces in position while I screwed them in. This ensured that they were where I wanted them.

Back and Side Inside Positioning Plates – The back and side inside positioning plates (Parts G, H and I) are located by placing the side of an unassembled side of a super against the outside positioning plates and sliding the inside positioning plates against them. Then glue, tack and screw these into position. The inside plates should be snug so the sides of the super you are assembling stand up and do not move.

Step #3 – Side Positioning Plates

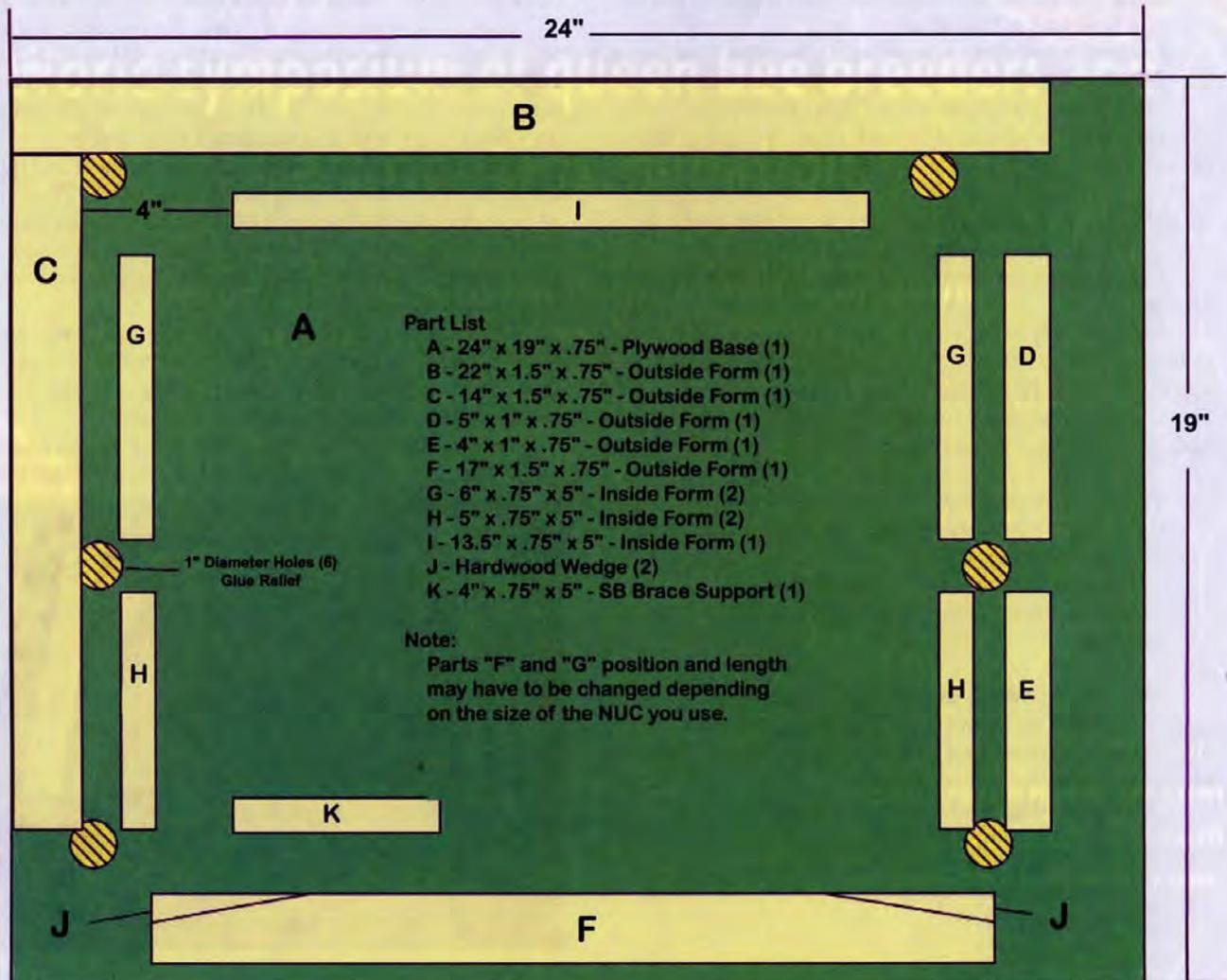
Outside Positioning Plate – The side positioning plate (Parts D and E) are set along the outside of the second set of lines you drew. Here again it is extremely important that it is square with positioning plate A. Please note that this piece does not contact piece “B” The gap allows for some flexibility when placing the super’s side in the jig. Use carpenters glue and screws to insure the permanent placement of part “D” Here again the piece may partially cover some of the glue relief hole.

Inside Positioning Plates – The side inside positioning plates (Parts G and H) are glued, tacked and screwed into position.

Double check: At this time you should be able to see the jig’s relationship to your new supers. When placing a side and the front and back of an unassembled super into the jig they should be snug enough to stand upright and not be able to move without some effort on your part. Because the jig is so tight, I use a small hammer to position the super’s parts.

Step #4 – Front Positioning Plate

Front Positioning Plate – The front positioning plate (Part F) is set along the outside of the marks you made in the beginning. BUT!!! This plate is set ½ to ¾ inches outside of the outside line. Make sure it is reasonably parallel to the outside marks. Wedges (Parts J) will be used to force the last side of the super into position with



the rest of the assembly. Make sure the angled portion of the plate is on the inside of the box. This plate does not have an inside component.

Step #5 – Screened Bottom Board Helper

Part “K” is unused when assembling a box. If you use the jig to assemble a screened bottom board, it helps hold the board in position. I recommend not installing this part (K) until you try to make a screened bottom board.

CONGRATULATIONS!

Allow the jig to dry overnight and be ready to try it in the morning.

Usage

Super Assembly

Any of the supers can be assembled extremely easily. Needless to say the more you assemble the easier it becomes.

The following instructions are for Butt Cut or dove tail cut corners.

Tools needed

1. Super Jig
2. Nails or screws at the box corners
3. Squaring Helper – This is a tool used by people who make picture frames. It is used to hold the top of the box in a square and rigid position while you are applying the screws.

1. Place the side box side in the slot between pieces “B” and “I”, making sure it is butted tight against Piece “C”

Hint: for dove cut joints it may help to leave some wiggle room so you can insert the front easier

2. Put glue on all the edges of the front of the super
3. Slide the front into slot between pieces “C” and “G” Position it tightly against the side piece.
4. Put glue on all the edges of the back of the super
5. Slide the front into slot between pieces “G” and “D” Position it tightly against side piece.
6. Take the second side and put it carefully against the

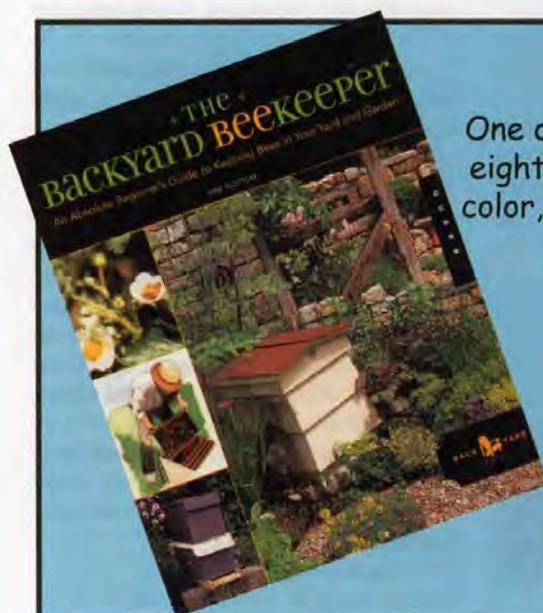
- glued ends of the front and back
 - 7 Using the 2 wedges, insert them into the wedge slots and hand tighten them.
 8. *Important!* Using a small hammer or a rubber mallet, Tap the pieces so they are tight against the positioning boards and aligned correctly Then tap the top of the boards so they are seated correctly against the bottom of the jig.
 9. Using the hammer, tighten the wedges so they hold the sides in alignment.
 10. Place your squaring helper over the top of the new box and tighten it down.
 - 11 *Important!* The top and bottom edges need to be aligned. If they are not then use a pry bar, hammer or anything else available to align the edges before screwing them together
 12. Screw or nail the edges of the new box together
- Hint:** Use dry wall screws for a more secure joint. They are also easier to remove if you need to adjust something.
- Hint:** Add three brads on each side of the ends to reinforce the 3/8 inch flange.
 13. Use a wet cloth to remove the excess glue.
 14. Remove your squaring helper from the new super
 15. Remove the new super from the jig. You may have to persuade the jig to let the new box loose. Remember – never force anything, just get a bigger hammer
 16. Clean all the excess glue from the new super
 - 17 Clean the glue from the Super Jig. Glue buildup can cause misalignment in the future.
 18. Clean the Glue from your squaring device.

Ten minutes from start to finish and you have a super that will be compatible with all your other supers.

Nuc Assembly

This is the same as a super assembly except:

1. You use the Nuc slot on the base and not the super slots for positioning
2. The wedges are not used – Consequently you have to be a little more careful to make sure the box is aligned correctly. **BC**



Backyard Beekeeper - X141

One of the best books for beginning beekeepers. Features eight-frame preassembled equipment. Stunning photos, all color, plus honey recipes, beeswax how-to for lotions, soap, and great all around information. Kim Flottum

\$25

Postpaid in the U.S.



Coming in January! Watch For It Here – **The Backyard Beekeeper's Guide To Producing, Harvesting & Using Honey**

The Honey Garden

Combining honey bee pollinated garden crops with honey recipes. The best of two worlds.

Lavender

Make room for lavender A member of the mint family, this deserves a place in the kitchen garden. With 30 to 40 species worldwide, there are types to suit every climate. Once established, these require minimal attention.

These shrubby evergreens range from 1½ to three feet in height with a matching or greater spread. The needle-like foliage can be toothed. The new leaves are green. As they age, they typically become gray or silver

Growing Conditions

Choose lavenders that are most suited to your climate with regard to winter hardiness and heat tolerance. While the hardy ones are reliably hardy to zone five, the tender species typically survive winters in zones seven and higher

Generally, the English lavenders aren't reliable perennials for hot, humid climates. The solution is to select ones that are heat tolerant. Or grow them as annuals.



Lavender Lady

Lavenders need a sunny spot. A well drained soil is essential. Otherwise, root rot can result. If your soil is heavy or poorly drained, it is still possible to grow them on hillsides, berms, mounds, and in raised beds. Other suitable situations include rock gardens and containers.

These plants do best in a loamy soil. They prefer a neutral pH between 6.4 and 8.3.

RECIPES

Ann Harman

Cooking with flowers gives us a taste treat that cannot be achieved with any other seasonings. Besides flowers are attractive and their appearance can liven up a dish. Unfortunately many people are surprised that you can eat flowers. Perhaps you can introduce them to a new way of looking at their flower garden.

Lavender is one of the flowers that is easy to use. Are you familiar with the seasoning *Herbs de Provence*? Look at the jar and you will see the little purple blossoms of lavender mixed in. Lavender is very aromatic and its flavor is much like the smell. Lavender can be used sparingly in many dishes and blends very well with berries.

You can prepare a scented sugar

to use in all sorts of sweets such as cakes, cookies, whipping cream and custards. Although you may have prepared vanilla sugar you can easily make a lavender-infused sugar

Use a clean pint jar with a tight-fitting lid. Fill the jar about 1/3 full with sugar. Sprinkle lavender blossoms over it. Add more sugar to about 2/3 full. Sprinkle more lavender blossoms over the sugar. Then add more sugar, leaving about 1/2-inch head space. Put the lid on, shake the jar



English Lavender

and put it in a cool, dark place for about two to three weeks. It will be ready to use but will continue to become more flavorful. As you use sugar from the jar, replace it. It will take on the lavender aroma and flavor

Lavender flowers can be used fresh or dried. The varieties with darker buds are more attractive and flavorful. Store the dried flowers in a jar with a tight lid in a cool, dark place to maintain the color and aroma.

If you cannot grow lavender, or if you have used all yours up in cooking, you can find the dried flowers at natural food stores, farmers' markets and by mail order. You can find other flowers also.

Here's a recipe for a refreshing drink for a hot day.

LAVENDER ICE TEA

17 cups water, divided
2 cups sugar

Planting Lavender

Amend the soil with organic matter when you're preparing the bed. Allow two feet or more between plants so they get good air circulation.

These can be grown from cuttings or seeds. The latter should be planted one-fourth inch deep. They will germinate in about five to 10 days. The seeds of cold hardy types will sprout faster if they're pre-chilled for one to two weeks before planting. Seed-grown plants usually bloom the second year

Caring for Lavender

Once they're established, lavenders can tolerate some drought. However, these plants will need an occasional watering during the first season. Drip irrigation is best as this doesn't wet the foliage.

For lavenders, avoid organic mulches. These can encourage root rots and fungal problems. Instead, use light colored sand, grit, or gravel.

To prevent frost heaving in cold climates, apply a Winter mulch once the ground has frozen. Use pine straw or other airy material. Leaves aren't suitable as these can mat together and retain too much moisture. Remove the Winter mulch during early Spring once the ground thaws.

Lavenders benefit from a balanced fertilizer that is low in nitrogen. An example is 5-5-5. Apply this during the Spring. Because these plants grow slowly, avoid adding too much fertilizer. Compost is a suitable alternative.

Keep the bed free of weeds. This ensures the lavender plants will enjoy good air circulation.

The tips can be pruned lightly during the Spring before growth begins. If the plants become terribly dense, thin the stems to help prevent diseases. In most cases, deadheading will encourage lavender to rebloom.

Over time, lavender plants can become woody and less floriferous. Usually, it is necessary to replace them every seven years or so.

2 tablespoons dried lavender blossoms
12 tea bags
ice cubes
dried lavender sprigs (optional)

Bring five cups of water, two cups sugar, and lavender to boil in large saucepan, stirring until sugar dissolves. Boil until reduced to four cups, about 14 minutes. Bring remaining 12 cups water to boil in large pot. Remove from heat. Add tea bags; steep for five minutes. Strain into very large pitcher. Syrup and tea can be made one day ahead. Chill separately until cold. Cover and keep chilled. Fill 10 glasses with ice cubes. Pour one cup tea into each glass. Stir in four to six tablespoons syrup, adjusting to taste. Garnish with lavender sprigs, if desired.

Bon Appetit

A fruit soup can be served hot

or cold to fit every season. This soup is easily made but the recipe makes about 4-1/2 quarts so plan to serve it to your friends.

LAVENDER BLUEBERRY SOUP

4 quarts fresh or frozen blueberries
1 cup hearty red wine
3 cups water
12 ounces honey
4 ounces orange juice concentrate
2-1/2 tablespoons dried lavender flowers
juice and rind of 3 medium lemons
2 cinnamon sticks
1 teaspoon freshly ground black pepper
1/2 teaspoon ground cloves
1 teaspoon salt.

Put all ingredients into a stock pot. Bring to a boil, then reduce heat and simmer 10 minutes. Can be garnished with a dollop of crême fraiche and a sprinkling of fresh blueberries

Problems of Lavender

Lavender is pretty much insect-free except for an occasional caterpillar. Slugs don't even bother it.

When grown in hot, humid areas, gray-leaved lavenders are prone to diseases, including root rot. Such problems are minimal if you provide the plants with good growing conditions. If a plant remains wilted for several days for no apparent reason, destroy it. It probably has root rot.

Flowering and Pollination

Depending on the species, lavenders can bloom any time from late May through September. They often produce a second flush of blooms following the main blooming period.

The tiny blooms open in crowded whorls. Typically, these occur on 1 1/2 foot tall flower stalks. The blossoms range in color from white and rose-pink to purple. Bees are invariably attracted to the blossoms, which yield nectar and pollen.

Lavender honey is unmatched. With a smooth body, it has a buttery consistency. This is noted for its delicate fragrance and mild, pleasing flavor. The color ranges from straw colored to gold or amber.

Species and Varieties of Lavender

English lavender (*Lavandula angustifolia*)

Also known as true lavender, this is by far the most popular species. There are over 40 cultivars or varieties of this available. The species plant is 1 1/2 to 2 1/2 feet in height. However, some cultivars are much taller. The straight, unbranched stems have narrow, lance-shaped, gray-green foliage.

English lavender blooms from late June through July. The 1 1/2 inch long blooms form whorls, which appear on spikes that are 1 1/2 foot or more in height. Usually, these are blue-violet. However, some varieties have white or pink flowers. ▶

and lavender flowers. Serve hot or cold. Makes about 4-1/2 quarts.

Fetzer Vineyards

Lavender goes well with fish and with meat. The next time you are grilling or broiling tuna use this recipe for a taste treat.

LAVENDER TUNA

1 tablespoon lavender flowers, finely chopped
1 tablespoon fennel flowers, finely chopped
1 teaspoon freshly ground black pepper
4 tuna steaks

Preheat grill or broiler. Mix lavender flowers, fennel flowers and pepper together in a small bowl. Rub the tuna with the mixture, lightly coating all sides. Grill to desired doneness.

Edible Flowers

Cathy Wilkinson Barash

Among the hardiest, this thrives north to zone five. It isn't recommended for the Southeast.

Lavender Lady is an outstanding variety of English lavender. Suitable for zones five through nine, this adaptable plant was named an All-America Selections winner. This grows to a foot in height with a slightly larger spread.

The flower stalks are 1½ feet in height. Lavender Lady starts blooming about three months from the time the seeds are planted.

French lavender (*Lavandula dentata*)

Also called fringed lavender, this tender species is winter hardy in zone eight and higher. This tolerates light frost, and grows well in the Coastal South. Reaching three feet in height, it is noted for its fragrant green foliage.

Spanish lavender (*Lavandula stoechas*)

Recommended for zones seven through nine, this is an excellent choice for the South. It tolerates a range of pH levels.

With gray-green foliage, this dense, bushy plant can be three feet tall and wide. It has huge, flamboyant, petal-like bracts that arise from the crowns of the flower heads.



Spanish Lavender

This next recipe makes a chutney that is different from the usual recipes. It is definitely worth the short time spent preparing it.

LAVENDER APPLE CHUTNEY

2 cups apple juice
2 cups sugar
1 cup apple cider vinegar
1 red onion, coarsely chopped
1 cinnamon stick
1/8 teaspoon red pepper flakes
2 cups Granny Smith apples, peeled, seeded, diced
1/2 cup lavender flowers, chopped
1/2 cup sweet red pepper, chopped
1/2 cup golden raisins

Combine apple juice, sugar, cider vinegar, red onion, cinnamon stick and pepper flakes in a saucepan. Simmer until a syrup starts to form.

Add the apples and cook over a low heat until tender. Remove the apples, set aside. Reduce the syrup until it thickens. Add the apples, lavender flowers, red pepper and raisins. Cook for five minutes. This is a spicy-sweet condiment that is delicious with poultry or pork.

Mudd's Restaurant

Here's a quick and easy lavender dessert.

ORANGE AND LAVENDER SORBET

1 quart freshly squeezed orange juice, divided
9 ounces sugar
1 tablespoon lavender flowers, finely chopped

In a medium saucepan heat two cups of orange juice with the sugar

These overshadow the inconspicuous, pinecone-shaped blooms. They open on dense, crowded spikes. This can bloom year-round.

Spike lavender (*Lavandula latifolia*)

Adapted to acidic soil, this tender species must have perfect drainage. It has gray-white foliage. The large, unbranched flower stalks have numerous smaller spikes below the main stems. This blooms later and longer than most – from early August through September.

Woolly lavender (*Lavandula lanata*)

This tender species is easily killed by wet soils and high humidity. Much more adaptable, Goodwin Creek Grey is the preferred variety.

Known for its balsam scent and very silver-white foliage, it reaches two to three feet tall. The narrow leaves are lance-like. These are covered with dense white hairs.

The branched flower spikes open in mid-Summer. The blooms are deep purple.

Culinary Uses for Lavender

Lavender foliage and flowers are used as a fresh and dried herb. Before harvesting the blooms, give the bees a chance to collect nectar and pollen first.

Lavender has many uses in the kitchen. For main dishes, they're used to flavor meat, poultry, fish, quiche, and pasta. They're excellent in spreads and condiments, such as herb butters, sauces, flavored cheeses, cream sauces, relishes, and ketchup.

Lavender is used for various kinds of drinks, including fruit-based blends, liqueurs, and alcoholic beverages. This herb lends flavor to vegetable salads and dressings/stuffings. It is ideal for all sorts of preserves from jelly and jam to marmalade.

This herb is a favorite for baked goods, including scones, bread, fruit tarts, cakes, cookies, baked fruit desserts, fruit crisps, and muffins. Lavender can also be added to hot soups as well as cold fruit soups. This makes an exquisite ice cream and sorbet. **BC**

Stir to mix. Add lavender flowers and bring to a boil. Lower heat and simmer 15 minutes. Strain. Pour the liquid into the remaining two cups of orange juice and mix. Pour the mixture into an ice cream maker and process. Scoop into glasses and serve garnished with additional chopped lavender. Pour a splash of Cointreau on top for an interesting variation. Serves six to eight.

Once you are familiar with the flavor of lavender in cooking, don't be afraid to experiment with salads, meat sauces, cookies and spreads. You will find that lavender from different sources will have different characteristics. See which ones you like and begin the enjoyment of cooking with flowers. **BC**

CCD – ANOTHER OPINION

The colony with the pollen reserve in place gets started on the Fall build-up in a timely manner regardless of field forage support.

Walt Wright

Much of what we think we know about beekeeping are opinions. As it applies to internal operations of a functional colony, most of “conventional wisdom” is entrenched opinion. Some is accurate and some is not.

If there is anything that beekeepers in general agree on, it's that hive design is optimized in the Langstroth hive. There are variations in dimensions affecting frame count per box, but basically, all U.S. Beekeepers use the Langstroth design. The intent of this submittal is to plant a seed of doubt about the desirability of that design from the using resident point of view. The resident colony survival instincts are adversely affected by the quarters we provide (my opinion). Their internal operations are different from the way they do it in the tree hollow (fact).

In the tree hollow comb is continuous from the top down. Continuous cells of functional comb permits the brood nest to “float” up or down with incoming forage available. Pollen at the bottom pushes the brood nest upward and honey at the top puts downward pressure on the brood area. In the natural operations of the wild colony the floating brood nest serves them well. The season sequence follows:

1 The Winter cluster is formed on the lower comb, with honey stores above.

2. In late Winter, when brood nest expansion gets underway, the colony expands the brood nest upward and outward into honey. Concurrently, with field pollen availability, pollen is stored at the bottom of the brood nest. This pollen is stored for the long-term and is ugly with honey preservative. It is maintained until late Summer, and is considered a “pollen reserve” to be used for the fall buildup to rear wintering young bees.

3. In the swarm prep period of late Winter/early Spring, two avenues are available. Any colony that is strong enough to build their brood volume so it reaches the honey reserve limit will begin their brood nest reduction as the first action of swarm preparation. The colony that is not strong enough to reach the honey reserve limit in brood nest expansion will, however continue to slowly expand their brood nest through the swarm prep period.

4. Reproductive swarm cut off is the period in vegetative development when a colony perceives that a swarm will have less than a fair chance at establishment if issued. This means it is time to abandon swarm ambition and switch to protection of the existing colony. If they survive as a colony, they can have another chance at reproduction next year. Survival of the existing colony has

priority over reproduction in any given season.

Those colonies with queen swarm cells in process will continue on the path to issue the swarm, however. Those without having swarm cells in work will abandon swarm ambition. Either way, both get serious about brood nest reduction. The timing for this decision is a brood cycle before the beginning of the “main flow,” and they have reared the workers that can be gainfully engaged in storing honey during the flow. Time to slow brood rearing.

5. During the “main flow” the honey is stored that will carry them through the following Winter. They will conserve that honey by several means. In periods of dearth they often reduce brood volume, and/or limit adult population activity to a minimum. They do not squander their honey reserve.

6. In the mid-Summer doldrums (that period between the Spring and Fall flows) they often nearly shut down operations. Even scouts are sometimes not flying. The doldrums are not as conspicuous in northern locations with a compressed season, but in my area of Tennessee the dearth sometimes exceeds two months duration.

7. Late in the doldrums period, the colony starts brood nest expansion to rear young bees for wintering – sometimes called the Fall buildup. *They use the pol-*



len reserve stored in late Winter for this buildup. Pollen is scarce in the field at this time, and this reserve is an important assist in the Fall build up. What is important in my area is that the Fall buildup starts in early August. Without the pollen reserve, Fall buildup is slowed at the very least.

8. Consumption of the pollen reserve from the top, permits the brood nest to settle into the lower comb, where the space is organized for the Winter brood nest. This is not seen in the Langstroth hive.

The abbreviated sequence above is included here to make the point that the bee colony is very good at accumulating and protecting food reserves for periods of need – if permitted to do it their way. Pollen is stored in the early Spring buildup for use in the Fall buildup. Honey is stored in the “main flow” to carry the colony through the Winter and into next season’s forage availability. The reserves of both carbs and protein are essential to colony health and welfare. We, as beekeepers, are fairly well tuned in to the requirement for a honey reserve. The results of lack of honey to sustain the colony are stark. Starvation of the colony is an ugly thing. But generally we have ignored the other food requirement – protein.

When observing colony internal activities, by reading comb content, it was conspicuous that the colony made no deliberate effort to store pollen for Winter. Knowing >

they were going to start brood rearing in mid winter, this was puzzling. Recent descriptions of the colony use of vitellogenin stored in the fat bodies internal to the wintering bees solved that mystery. The protein for rearing Winter brood is stored in the bees, themselves. Makes more sense, now. The crux of that concept is they must rear young bees in the Fall while pollen is plentiful. Those young bees eat a lot of pollen to store the protein in their fat bodies for Winter brood rearing.

That brings use back to the pollen reserve stored in late Winter/early Spring. The Fall build up to rear young bees for wintering is dependant on the pollen reserve, especially if field pollen is scarce in early August.

There is good reason that most beekeepers do not see the pollen reserve stored in the early Spring build up. It isn't there!

Langstroth hive design inhibits the storing of that reserve. Three observed impacts on their survival instincts are offered for your consideration.

a. The colony does not "like" the break in functional comb at box joints. The gap in comb is about an inch and a half with wooden frames and somewhat less with plastic frames. In both cases bee space is incorporated in the transition from box to box. The colony shows their disrespect for the gap in several ways. They are often slow to jump the gap, and definitely don't want the Winter brood nest spanning the gap. They often use the break in functional comb as a separation line between brood and stores.

b. The colony much prefers to rear brood on the expanse of comb provided by a deep frame. It's as close to the continuous comb of the wild brood nest as they can get with Langstroth boxes.

c. For reasons unknown, often the brood nest on deep frames has brood at the bottom all the way across the bottom bars of a deep frame, or nearly so. There may be a fringe of stores at the extreme outside, but basically brood is continuous all the way across the bottom bar. We suspect that this penchant for brood across the bottom bar is the basic reason that the pollen reserve is not stored in the early build up. Periodic reversal for swarm prevention compounds the problem.

Two articles prepared for this medium have received little attention. Evils of the Double Deep appeared in Nov 03, and Pollen Box Overwintering in Sept 04. Some of the info of the Pollen Box article is inaccurate. The inaccuracies are related to timing of storage and use. I only know of one beekeeper who changed his colony management approach to incorporate the pollen box maneuver. He is happy with the results.

When the news broke about CCD in early '07, it tweaked my interest. It is well-known that a colony benefits from good nutrition. Perhaps the pollen box maneuver would provide better (or at least more) nutrition and help them ward off the effects of losses to CCD whatever other contributing factors might be involved. It was time to learn how, and when, the pollen reserve was used. All that was known at that time was that it improved wintering, was present in July, and had been consumed in late Fall. It had been left in position, empty, going into winter in prior seasons. (Serves the same purpose as the slatted rack.)

Some of what was learned in the '07 season has been factored into the season sequence up front in this submittal. There were several surprises in monitoring the pollen

box use for the full season. In addition, the local season was quite unusual. First, the mild late winter had the bees and trees at least two weeks ahead of their normal schedule. Then, an Easter freeze (5 April) took out all pollen sources for three months. On the advanced schedule the colonies were checkerboarded on Mar 1 (late, but not too late.) The pollen box maneuver had been performed just before that (I didn't record the date).

The first two surprises were how early they stored the pollen reserve, and how long they protected it. By mid March the shallow of brood lowered to the bottom board had been filled with long-term stored pollen. Not only did they store the pollen early, but they also protected it through several months of no new pollen coming in. They avoided tapping the reserve through very trying times. One could conclude from these indications that the pollen reserve is dedicated to a use later in the season.

A third surprise was when they *did* use the reserve. Consumption started in early August. I consider August summertime, but the bees apparently consider it Fall. Their processes are slow and deliberate. They started Fall buildup, using the pollen reserve, earlier than I expected. One could conclude from these indications that if the Fall buildup starts during the Summer doldrums, without the pollen reserve, Fall preps would be slowed. Now, I think I understand how wintering is improved. The colony with the pollen reserve in place gets started on the Fall build up in a timely manner regardless of field forage support. Over the eight years the pollen box was used, all colonies came through Winter with good cluster size. No weaklings to pet in the Spring. Enough promotion of the pollen box thing, but if I kept bees in more northerly locations, where winter losses are a given, I think I might take a hard look at the concept.

Back to CCD: The experts are charged with investigation of nutrition as a contributing factor. They have already concluded that there are multiple causes. Even the symptoms vary by time and place. What would be more common to all those variables than the hive design that we use? If, as I suspect, the Langstroth hive is a root cause, the experts will not come up with that answer. Any experiment that they contrive will be done with bees in our standard hives. No matter what results they get, the results are not likely to indict hive design. They don't even know about the natural pollen reserve.

We, mankind, keep on adding new survival threats by importing new pests. Existing organisms keep developing resistance to our solutions as time passes. Add to these worsening conditions the vagaries of weather in a period of climate change. The big picture for honey bee survival is fairly bleak. The bees have been able to cope with these conditions with a little chemical assistance from us. They have eons of coping in their genes and we will likely not ever know the extent of those limits.

They have survived and performed in spite of our ignoring the protein requirements built into their natural, seasonal agenda. That's a testament to the "work a-rounds" built into their genes. We lose some, but most make it.

Is it wise to continue to ignore protein requirements of our colonies? It is both simple and free to insure the pollen reserve is stored for building Fall strength. Is CCD not a Fall phenomenon?

Although this submittal is not well written, and a lot of detail left out, I have cast my vote. **BC**

Yellow Jackets

More Like Honey Bees Than You Might Suspect

Michael Goodisman could be called the Maury Povich of the yellow jacket world. In his laboratory, Goodisman determines the paternity of yellow jackets to study family dynamics within a colony. Even though only one family lives within a colony, each yellow jacket queen mates with several males, creating a complex family tree.

"Social insects such as yellow jackets have been described as one of the greatest achievements of evolution because of the incredible cooperative nature of their societies," said Goodisman, an assistant professor in the Georgia Institute of Technology's School of Biology. "I wanted to know why the females would risk this cooperative nature by having multiple partners."

Mating with multiple partners can also lead to disease and wasted time and energy, according to Goodisman. Plus, each new yellow jacket has siblings and half-siblings during the same breeding season, allowing for potential conflict and infighting between the subfamilies.

"Weird things can start happening within families, so we looked to see if there was any evidence of this kind of selfish behavior within the colony," explained Goodisman, whose projects are funded by the National Science Foundation (NSF).

Goodisman wondered if yellow jacket workers would kill new queens that had a different father or if they were more likely to turn their sister larvae into reproducing queens instead of sterile workers. Turning a worker into a queen is easier than it seems - it simply requires a comb nest with larger holes. The larger holes signal to the workers to feed the developing larvae different food, resulting in queens.

"You can actually take developing workers and if they're young enough, put them into queen cells and they will develop into queens," explained Goodisman.

Goodisman, graduate student Jennifer Kovacs and Eric Hoffman, formerly a postdoctoral researcher at Georgia Tech who is now an assistant professor at the University of Central Florida, tested the paternity of each insect to investigate whether any of the males in a colony fathered more queens than workers.

Similar to human paternity tests, comparing DNA sequences of two yellow jackets can show if one is related to another. Goodisman determined the genetic makeup of each of the queen's male mates. He then determined what proportion of workers and new queens each male mate sired.

The results from the DNA fingerprinting showed that males fathered an equal number of queens and workers in a colony, allowing Goodisman to believe there is no conflict within a colony because of multiple mating.

"Instead of intense competition, yellow jackets seem to exhibit extreme cooperative and helping behaviors," noted Goodisman. Results of this study were published in the journal *Molecular Ecology*.

Since Goodisman found no disadvantage to having mixed families in the colony, he believed there must be a benefit to the colony for each queen having multiple partners.

Goodisman, Hoffman and Kovacs compared the number of times a yellow jacket queen mated to how successful her colony was. Success was judged based on the number of worker and queen cells in the nest. The findings of this study were published in the journal *Evolution*.

No correlation was found between the number of mates and the number of worker cells. However, queens that effectively mated four or more times produced significantly more queen cells in the comb than queens that effectively mated fewer than four times. Colonies typically survive only one year, so the number of queens produced at the end of the season represents the entire reproductive output of the colony and, by extension, the original queen. Only inseminated queens survive the Winter and emerge in the Spring. Thus, Goodisman found that the benefit to multiple mating is that the queen's colony is more successful.

Another avenue of Goodisman's research is to in-



Abby Vogel



investigate how yellow jacket development leads to a caste system with queens, males and workers – each with a different role in the colony. The queens mate with males to produce new queens and workers, but don't require a male to produce new males. The female workers maintain and expand the colony, while the new queens and males just hang out and eat until it's time to mate.

"The division of labor has made these animals so incredibly successful in cooperative behaviors, but work-

ers and queens are genetically the same," explained Goodisman.

Goodisman aimed to determine how these insects start with the same DNA but end up as such different insects. With help from Hoffman and graduate student Brendan Hunt, Goodisman learned that yellow jackets of the same developmental age express many genes in common regardless of their caste or gender. They also found that certain genes are turned on or off to create the different castes.

This study was published in the journal *BMC Biology* and Goodisman plans to continue this gene expression research in collaboration with Soojin Yi, also an assistant professor in Georgia Tech's School of Biology.

"We're going to use more sophisticated techniques to look at thousands of genes at once to really make big statements about how different queens are from workers and males," said Goodisman.

Decision-making within a colony also intrigues Goodisman. Different events occur in the colony based on the time of year. For example, the queen constructs a nest and rears the first cohort of workers in the Spring. Once the workers mature, they take over the task of colony maintenance and expand the nest by constructing a worker nest throughout the Spring and Summer. At the end of the Summer, the colony begins to produce males and new reproductive queens.

"We want to know who's telling the workers to stop making more workers and start making queens, so we're studying the life cycle of yellow jacket colonies," explained Goodisman. "Is it an environmental cue or possibly a cue from the queen?"

Even though some people think that yellow jackets are just a backyard nuisance, there are benefits to having yellow jackets around, contends Goodisman. They kill insects, suppress fly populations and eat roadkill, he says.

And he's quick to point out, "Yellow jackets are not here for our pleasure. They're reproducing, surviving and doing a great job at it." **BC**

Abby Vogel is a Communications Officer at the Georgia Institute of Technology in Atlanta, Georgia.

Pendell Apiaries
 Frank & Sheri Pendell • P.O. Box 40 • Stonyford, CA 95979
 Cordovan Stock Selected For:

- Mite Resistance
- Honey Production
- Hygienic Behavior
- Gentleness
- VSH Trait
- Isolated Mating Yards

Call 530-963-3062
 Fumagilin-B fed All Queens marked for free

HONEY SUPER CELL
 Small Cell 4.9 mm
 Fully Drawn, Full Size, Commercial Style
 Brood Frames

- Suppress Varroa Mite without chemicals.
- Reduce Drones.

866-343-7191 www.honeysupercell.com

MASSACHUSETTS/NEW HAMPSHIRE
New England Bkpg Supplies Inc.

5 frame Nuc's We Stock Queens!
 978.512.9222 • www.nebees.com

Oxalic Acid Vaporizer

JB200 Electric

The fastest Vaporizer available powered by a 12 Volt car battery. Contrary to liquid oxalic acid there is no harm to colonies.

For more info please call or visit our website
Heilysen Technology Ltd.
 685 Dalkeith Ave., Sidney, BC, V8L 5G7, Canada
 Phone/Fax: 1 250 656-8727 • Email: orioleln@shaw.ca
<http://www.members.shaw.ca/orioleln>

For Your Queen Needs Call

Queen Cells Available – Shipped By UPS

MIKSA HONEY FARMS
 David & Linda Miksa
 13404 Honeycomb Rd. • Groveland, FL 34736
 Ph. 352-429-3447
 EMail miksahf@aol.com

BREEDER QUEENS
 VSH Russian Carniolan
 Cordovan Minn. Hygienic Italian
Instrumentally Inseminated
 \$100 plus \$45 shipping UPS Next Day

GLENN APIARIES
 P.O. Box 2737
 Fallbrook, CA 92088
 (760) 728-3731
queenb95@aol.com
<http://members.aol.com/queenb95/>

what it is capable of doing. So even if pesticides aren't remotely related to the cause of CCD, this awful event, this industrial accident has let us see a tiny bit of the *Complex* behind the curtain. Perhaps now we can do something about them. It is time someone did.

The Penn State study on chemicals found in beehives is a related criminal event. What beekeepers have been putting in their hives is beyond imagination. That their bees are suffering is tragic but understandable. These chemicals are not alone in harming bees, however and beekeepers can, and must change. Some already have. More must.

On page 12 this month we have the results of a survey we sent our Honey Reporters this month. It has to do with the things that are important to them when it comes to selling their honey. We've done this for a few years now and some interesting trends are beginning to show. Some things change with time, and interestingly, some things don't change at all. Take a look at the data from the survey and soak it in. But keep that page marked because we are going to look at it another way now.

The numbers on the chart rank the importance of each of the items we listed relative to 'very important', 'moderately important' or 'not important' This is quite specific but for a moment consider that both very important and moderately important are still important, so let's look at these rankings two ways instead of three. And then, let's look at each of three years this way It's OK, I'll do the heavy lifting here.

Label design importance trends are interesting to note. Importance has moved from 92 up to 100, but this year all the way down to 76. That's about a 20% drop over three years...what's going on do you suppose? It sort of holds hands with the slow drop in importance in having your name on your label...that's a 10% drop this year These may be just anomalies this year, or perhaps a label change is in the works. What do you do about your labels?

The biggest change is in the popularity of the 12 ounce container. Traditionally this has been the 12 ounce bear but there are cylinders out there too. I don't know if it's because the bear isn't as popular...it used to be KING by a full 20% margin when it came to container popularity...or if there is a gradual change

back to glass...no, the numbers don't support that. .or to just different sizes. You do see, and sellers tell me that smaller bears are doing well, so maybe it is size that counts here. Consider...honey is an impulse sale most times, and the price of honey has increased this year, so maybe, when given a choice "Ms Average shopper" makes a dollar decision rather than a container decision. If you haven't tried smaller containers yet maybe now's the time.

If you look at the popularity of glass you'll notice a drop this year of over 11%. And, you should notice a slight increase in the popularity of the one pound jar (glass or plastic not separated). Perhaps, and this is speculation, the new inverted plastic jar is picking up steam, do you suppose?

Quarts and pints are still popular, certainly in some regions more than others. The barely perceptible trend is that they move better in the south and southeast than anywhere else, and the raw data support that. However, they are also popular with honey sellers who move product out of their homes rather than in a public market, and with those selling in farm markets, which are increasing at lightening speed. So they both are transcending geographical isolation in favor of the 'down home' feel these jars give off. Consider that when selling at either of these places... especially in the farm market arena.

A friend who sells exclusively in farm markets tried an experiment at my request last season. He put the same honey in traditional glass queen line jars, plastic queen line jars, and pint jars and sold them all for the same price per pound. Pints outsold the others three to one over the course of the summer. It got to the point that he'd put out the same regular jars week after week, but had to replenish his pints every week. Does that tell a story or what?

Price is still important...averaging in the mid 90s for all three years. This is coupled with the importance of where honey is sold...which isn't quite as important...averaging in the high 70s all three years, but it is telling that the two are so closely linked. But there is a trend

in both the columns if you look close. It has to do with the "Very Important" only columns. Take a look. The very importance of price is steadily declining...down 20% over three years. And take a look at where honey is sold, in the same column...same decline. So there is a good relationship going on here I think. Though steady, price and place are becoming less important than the quality of the product it seems. Another story for sure.

One good lesson here is that for all three years having Local Honey on your label seems to be important... in the high 90s every year, but some decline in the very important column, interestingly. If you aren't using that you should be it seems. I'll add that though local is the best you can do, most shoppers are looking also for U.S. products, so having both...Local, and Made In The U.S. on a label has to be a good thing, don't you think?

Time of year is declining in importance, too. It must be that the seasonal aspect of New Crop Honey is declining in importance to buyers, who must be spreading out their purchases.

It's National Honey Month. I wonder if the new honey board has their calendar up yet. And I wonder what will happen now that the packers and importers have the lion's share of what gets done. Will they be better, worse? Who knows....

Meanwhile, you better be checking for mites and getting both carbs and protein on those hives. You know the drill...take care of the bees that take care of the bees that go into winter. And while you're at it make sure your hive tool's sharp and your smoker's lit... Winter's just around the corner and it's time to get busy

Kevin Moore

TRANSPORTATION BROKER

D & L Transport

Kevin Moore
Medina, ND

Ph: (701) 486-3523

E-Mail: dkmoore@daktel.com

We run flatbeds,
stepdecks, vans and
reefers coast to coast



LET US HELP YOU HAUL YOUR BEES AND HONEY

GLEANNINGS

SEPTEMBER, 2008 • ALL THE NEWS THAT FITS

OBITUARY



Clifford Owen Still, 66, of Bayport, NY died July 13, 2008. Born in Patchogue, Clifford was a resident of Bayport since 1969. He attended Patchogue schools and was a member of the Patchogue alumni association, participating on the committee for their 50th reunion in 2009. Clifford attended St. John's University, earning a BS in pharmacy and an MS in pharmaceutical chemistry; he then went on to work in pharmacy research for several years. Clifford married Conni Scarangella in 1965; in 1973, they returned to Patchogue to operate Still's Pharmacy for 10

years. Clifford then went to work at St. Charles Hospital and Stonybrook University Student Health Services, from which he retired in 2007.

Clifford was a lifelong active member of St. Paul's Church, serving as a Lay Reader, and bringing his voice and spirit to the vestry and the choir. He was also a long time member of the North Patchogue Fire Department Band, playing the trumpet in its many parades and concerts for over 25 years.

An avid beekeeper, Clifford was a life member of the Eastern Apiculture Society and recording secretary of the Long Island Beekeepers Club. He enjoyed giving talks about bees and would grab your ear at every opportunity to talk about honey bees.

Clifford is survived by his sister Linda and her husband James, wife Constance, daughter Jennifer, her husband Leonard and son Adam, and son Christopher Howard and his wife Amanda, his niece Amanda Leigh and nephew Tod.

PACKER/IMPORTER BOARD MEMBERS APPOINTED BY AG SECRETARY

Handler members – Buddy Ashurst, El Centro, CA; Nancy Gamber-Olcott, Lancaster, PA and Steven Smith, Colton, CA. Alternates are Ilene Miller, Salt Lake City, UT; Jim Phillips, Waxahachie, TX and Brent Barkmen, Hillsboro, KS.

Importer members – Bob Coyle, Bellevue, WA and Charles Kocot, Basking Ridge, NJ. Alternates – Elise Gagnon, Rosemere, Quebec, and Gregory Olsen, Bloomington, MN.

The handler/importer member is Hans Boedeker, Tustin, CA, while Nicholas J. Sargeantson, New Canaan, CT, is the alternate.

The marketing cooperative member is Mark Mammen, Sioux City, IA. Robert Brandi, Los Banos, CA, is the alternate.

Producer members – Zac Brown, Idaho Falls, ID; Clint Walker III, Rogers, TX and George Hansen, Colton, OR. Alternates – David

W. Ellingson, Odessa, MN; Mark Brady, Waxahachie, TX and Bonnie Woodworth, Halliday, ND.

Members and alternates were nominated by the certified national honey organizations representing handlers, importers, packer-importers, honey co-ops and producers.

The Honey Packers and Importers Board authorized by the Commodity Promotion, Research and Information Act of 1996 administers an industry-funded coordinated research, promotion, consumer education and industry information program. In addition, the board conducts a generic program of promotion, research, consumer education and industry information to maintain, develop and expand markets for honey and honey products.

The USDA's Agricultural Marketing Service oversees the operations of the Honey Packers and Importers Board. - *Catch The Buzz*

DAVIS RESEARCHER HIRED TO STUDY CCD

Insect virus researcher Michelle Flenniken, a postdoctoral scholar in the Department of Microbiology and Immunology at the University of California, San Francisco, the newly selected Häagen-Dazs Postdoctoral Fellow at UC Davis, is hot on the trail of the killer of America's honey bee population.

"We're hoping that Michelle Flenniken's expertise in molecular virology will lead to understanding one of the factors contributing to colony collapse disorder and lead to strategies that increase honeybee survival," says Lynn Kimsey, head of the Department of Entomology and director of the Bohart Museum of Entomology.

Colony collapse disorder occurs when bees mysteriously abandon their hives, often leaving behind immature bees and honey. The nation's beekeepers have reported losing from one-third to 100 percent of their bees over the last two years.

Skilled in multidisciplinary research -- molecular biology, microbiology, chemistry and cell biology -- Ms. Flenniken will focus on the biology of honeybee viruses, specifically the role of RNA interference (RNAi) in the honeybee antiviral immune responses, says Ms. Kimsey.

RNA, short for ribonucleic acid, carries genetic information of viruses. RNAi is a mechanism that inhibits gene expression.

"I hypothesize that RNAi can be used as an antiviral strategy in honey bees," says Ms. Flenniken. She will investigate the role of the RNAi machinery in virus infection and attempt to limit virus production in the bees by priming their RNAi machinery with viral specific double-stranded RNA. Ms. Flenniken has been identifying the viruses present in the hives of San Francisco

Hobby Beekeepers and research collaborators.

"Most bees have viruses, particularly common is Kashmir bee virus," says UC Davis apiculturist Eric Mussen. "In fact, we'd be surprised to find a bee not carrying some type of virus."

Mr. Mussen notes that honey bees are responsible for pollinating more than 100 U. S. crops, including fruits, vegetables, nuts and seeds. One-third of the American diet is pollinated by honey bees.

In addition to Kashmir bee virus, Ms. Flenniken hopes to investigate deformed wing virus, sacbrood virus, acute bee paralysis virus, chronic bee paralysis virus, black queen cell virus, and Israeli acute paralysis virus.

For Ms. Flenniken, bees sort of run in the family.

Her parents completed a beekeeping course at Iowa State University and gifted her with the equipment, including a hat and veil, bee brush, hive tool and "a lot of good beekeeping books," she says.

"I think bees are really interesting and look forward to learning more about them. I am really excited about this research topic because it encompasses molecular biology, ecology, environmental science, and global food production and health," she says.

Ms. Flenniken is supported by an A.P. Giannini Foundation Postdoctoral Fellowship for her work in RNAi. Her graduate work was supported by the Ruth L. Kirschstein National Research Service Award from the National Institutes of Health; and the Louis V. and Norma Smith Fellowship, Department of Microbiology, Montana State University.

*taken from
Catch The Buzz*



WALTER T. KELLEY CO.

1-800-233-2899

www.kelleybees.com



SERVING THE BEEKEEPER SINCE 1924

HAS THIS HAPPENED TO YOU?

SURE, IT STARTED OUT INNOCENT ENOUGH. YOUR FRIENDS SAID, JUST TRY ONE HIVE, IT WILL BE FUN!

BEFORE YOU KNEW IT YOU WERE HANGING AROUND THE BEE YARD EVERY CHANCE YOU GOT.

THEN IT WAS ALL THE FANCY EQUIPMENT, SEMINARS, AND SUBSCRIPTIONS TO MAGAZINES!

"MY WIFE WARNED ME"

THIS MIGHT HAPPEN!



THERE IS A CURE !

WE HERE AT KELLEY'S HAVE SUFFERED ALONG WITH YOU FRIEND!

AND WE HAVE FOUND THE ONLY WAY TO DEAL WITH THIS PROBLEM IS TO JUST GIVE IN!

THE GUILT WILL MELT AWAY, YOUR WIFE WILL SEE THAT A BEEKEEPING MEETING REALLY IS A NIGHT OUT, AND JUST REMEMBER ALL THAT SWEET, SWEET HONEY!

Display Advertisers

Bees & Queens

Bee Weaver Apiaries	40
Gardner's Apiaries	39
Glenn Apiaries	56
Hardeman Apiaries	7
Hawaiian Queen	60
Koehnen, C.F & Sons	14
Long Creek Apiaries	8
Miksa Honey Farm	56
New England Farms	13
Norton's Honey Farm	39
Olympic Wilderness	2
Pendell Apiaries	56
Purvis Brothers Apiaries	14
Rossmann Apiaries	20
Spell Bee Company	39
Strachan Apiaries	57
Taber's Queens	2
Weaver, R Apiaries	27
Wilbanks Apiaries	39

Associations/Education

American Beekeeping Federation	27
American Honey Producers	6,16
Apimondia Symposium	46
Back Home Magazine	9
Beekeepers Quarterly	24
Georgia Beekeepers	36

Equipment

A&O Hummer Bee Forklift	11
CC Pollen	23,57
Cowen Mfg.	20
Dakota Guinness	20
Humble Abodes Woodenware	62
MDA Splitter NucS	24
Pierco Frames	62
Rauchboy Smoker	27
Swinger Loader	2
Vented Beehive Cover	24

Related Items

AJSBeetleEater	23
Angel Bottles	27
BBread	9
Beehive Botanicals	13
Beekeeper Microscope	39
Branding Irons	24
Bucko Gloves	13
Busy Bee Candle Supply	39
D&L Transport	58
Feed Bee	13
Global Patties	17
Golden Heritage Foods	2
Medivet	1
Mite-Away, Formic	4
Mother Lode Products	23
Nozevit	36
Oxalic Acid	56
Premier Fencing	9

R. M. Farms	36
Sailor Plastics, Containers	60

Suppliers

B&B Honey Farm	13	
BeezNeez Supplies	39	
BetterBee	4	
Better Way Equipment	57	
Blue Sky Bee Supplies	39	
Brushy Mountain	Ins. Front	
Burch Bottle & Packaging... In Bk	Dadant	28
GloryBee Beekeeping Sup ...	16,20	
Honey Bee Container	14	
Kelley, Walter	63	
Mann Lake Supply	1, Bk Cover	
Maxant Industries	27	
Miller Bee Supply	36	
Millstone Honey Farm & Supply	36	
New England Beekeeping Supplies	56	
Queen Right Colonies	34	
Root Publishing	5,49	
Ross Rounds	27	
Rossmann Apiaries	20	
Ruhl Bee Supply	24	
Sherriff, B.J.	23	
Simpson's Bee Supply	24	
Small Cell 4.9	56	

Faithful readers know that my trucks always break down at the worst possible time.

In July my pickup sprang a mysterious fuel leak just as I was about to load bees in the twilight, and I got delayed getting five hives to the Colorado State University extension Honey bee Workshop in Grand Junction. I had to call the organizer and tell him there would be no 6:00 a.m. rendezvous at the fairgrounds. I needed to borrow a ramp for my backup flatbed, so the bees wouldn't get loaded until morning.

At least I saw some humor in the situation. I said, "Bob, do you realize that the entire success of your workshop depends on someone 80 miles away whom you've never even met?"

"The thought did occur to me," he said.

I'd have rented a U-Haul to deliver those bees, if that's what it took, because, as old Henry Neligan explained when I was a sprout hand-trolling out of Point Baker, Alaska, "If a man's word is no good, the man's no good." Henry didn't mince words. And we all want to be good.

Later, at the workshop, Bob confided, "I put enough money on the table that I knew you'd show."

If you love your bees, I'm not sure I'd recommend taking them to a bee seminar. In my case, first I took them off a really good honey flow. These were relatively weak colonies that had just filled their brood boxes and were finally ready for their first honey super.

Then, after dropping them off the morning before the event, in the afternoon they got moved. So lots of the little darlings became confused about where home was, and some hives lost significant numbers of bees. Theoretically they'd moved to other colonies, but when I got them back home to Peach Valley, I didn't find any overflowing hives. At the workshop, queens got caged, artificial swarms created, packages made, bees got poked and prodded. None of this is conducive to maintaining productive colonies.

I don't mean to complain here. Bob treated me right. I'm just telling you how it was.

At the fairgrounds the bees got on a new honey flow right away, so they were exceptionally gentle. Spectators gathered close for the demonstrations – too close I thought, and nobody wore a veil. Kids tormented bees wandering around in the dirt outside the hives, and I was pretty sure there would be tears at some point, but somehow it never happened. Just a few stings were reported. One poor woman's hand swelled up like a melon.

Marion Ellis from the University of Nebraska, Lincoln, was the main lecturer, along with Cecil Sweeney and Joli Winer of Heartland Apiaries. Marion and Cecil are both southerners, and Marion referred to them as both having been "reared in the briar patch." They do know bees. So does Joli.

She and Cecil run only a couple of hundred colonies, but they turn every hive product into a retail farmers' market sale – from comb honey to beeswax to creamed honey to soaps, polishes, lotions and potions. One gets the impression that they do very well indeed. You have lots of options when your fate isn't tied to the wholesale price of honey.

The crowd of 75 or so was mostly novice or wannabee beekeepers, and Marion occasionally referred to me or asked me a question about how I managed my colonies, so people came to recognize me. Some mistakenly assumed I was a bee expert, so during Marion's queen rearing lecture, the gentleman sitting in front of me turned to ask me to clarify a point. "I'm as in the dark as you are," I whispered.

I did get to help out with the hive tie-down class conducted

on the back of my flatbed Ford. I tie trucker's hitches like I tie my shoes. I don't think much about it. I just do it. But when I slowed down to demonstrate the loops and twists, a couple of times I got it wrong. My good-natured students didn't seem to mind, and most eagerly lined up to learn a new skill. I will state for the record that the women seemed more enthusiastic and less prone to stage fright. They beamed when they got it right. A few of the guys faded into the background when it was their turn, and that's all I'm going to say about that.

I don't care how much you know or how much you think you know. If you have ears to hear, you can't walk away from even a beginner-level bee class without learning something.

I learned that if you freeze or scrape drone comb for mite control – as I do – you'd better stay on top of it, because if you miss a cycle – as I did – you're doing worse than nothing. You're breeding mites. Uh, oh!

I learned that screened bottom boards might be a waste of time. This was good news, because I never made the switch.

I learned that swarm cells make better queens than emergency cells, because the latter can be raised from three-day-old eggs. And that by repeatedly using swarm cells to make new queens, you could genetically select for swarming. This makes sense when you think about it.

I learned that well mated queens of mediocre stock will outperform poorly mated queens with outstanding genetics. How come I never thought of that?

You probably knew all this stuff, but I didn't, and hey, I feel so much smarter now! I made some new friends at the workshop, and even though I lost some bees, Bob really did make it worth my while.

Ed Colby

The Workshop

BOTTOM BOARD