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FEBRUARY 2002 VOLUME 130 NUMBER 2

FEATURES

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Making splits, to expand or for nucs to sell will be important this year. Do it right the first time. See Jim Tew's article on page 32.
photo by Kim Flottum

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KEEP IN TOUCH

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MAILBOX

Thoughts On NHB

It's 5:00 a.m.. I'm on the road, moving bees and putting up bear fences. While mulling things over one last time last night in this cozy motel room, I decided to share a few thoughts in regards to the upcoming NHB referendum.

The one silver lining in the huge disparity between the producer price for honey and the consumer price for honey over the last three or four years has been the influx of small packers, especially producer/packers. During the first 10 years plus of the National Honey Board's existence small and mid-size packers were a disappearing breed, either being bought out or driven out of business by large outfits. With the recent disparity in prices this trend has been reversed. Specialty packers and producer/packers *have always been the best promoters of honey.* Many new producer/packers are finding that it can be very profitable to pack their own honey and promote it as a product of the U.S. The NHB is prohibited by charter from doing this. (Coincidentally, two large packers have also seen the light and are profitably promoting U.S. honey.)

The NHB's recent foray into varietal promotion seems akin to grabbing onto the caboose of the train that's already out of the station. We don't need to pay for their ticket on our train.

On the question of research, the NHB has had the authority to fund production research since its inception. They've chosen not to.

I think our researchers are doing a good job. The Weslaco and Baton Rouge labs are doing well at giving us the tools and knowledge to overcome the challenge to our bees from parasitic mites and other maladies. The Beltsville and Tucson labs are contributing some good findings and there have been a lot of excellent contributions from our universities as well. The national associations have been very successful in lobbying for funding for the USDA labs. State associations have contributed here as well.

The NHB has not funded production research to date; why are they talking about it now? Their promotional efforts have not helped honey producers in the past; why should it in the future?

The sun is up. I'm happy to sign off and get back to work.

Bob Brachmann
Little Valley, NY

•

The past few issues have carried letters giving lengthy detail as to why we should vote to keep the National Honey Board in the upcoming referendum vote. May I present one salient reason to bring it to an end?

In a democracy, it only takes a majority vote for 51% of the voters to force the opposing 49% to join with them in any cause. The key word in the above statement is "force." Why do the supporters of the NHB wish to use the force of governmental coercion to extract money from all of us to support their idea of what is helpful? If certain honey producers or packers feel the image of honey needs promotion, then I freely give them permission to spend all of their own money in such effort, but will they give me and you the freedom to not join with them?

Under the law of the present marketing order, every beekeeper in the U.S. is FORCED to prove they are not subject to the NHB assessment fee on honey sold, by informing the NHB as to how many hives they possess, and any other information necessary to prove they are under the 6,000 lb. annual exemption limit of honey sold. (The NHB is still working on the details to enforce this part of the order, should the NHB not be terminated in the upcoming vote.) In a free land, we should not have to prove our innocence, and small hobbyist beekeepers should not have to prove to any governmental board that they are exempt from control by such board. True freedom allows the individual the right to choose whether or not to support any type of organization.

Most of us do not need or want any of the so-called benefits of the NHB, so will those of you who are fond of the NHB, give the rest of us freedom from your tyranny of the assessment tax on honey by voting to end the NHB?

Leon Moyer
Rogersville, MO

Chemical Strategies

The year 2001 was very challenging for all of us in the beekeeping community. As you know, the fight to control the *Varroa* mite is more complex now that fluvalinate-resistant mite populations are widespread. Fluvalinate is the active ingredient in Apistan®.

In response to the growth of fluvalinate-resistant mite populations, the USDA has published guidelines for rotating *Varroa* control products. Following such a program will help minimize the potential for hive damage. An excellent article outlining the rotational program and advising close monitoring of mite populations (by either the ether roll or sticky board methods) appeared in the June 2001 issue of the *American Bee Journal* (vol. 141, no. 6, p. 412). These monitoring methods should help beekeepers determine the economic thresholds for using any *Varroa* mite control products.

As the business manager for Apistan Anti-*Varroa* Mite Strips, I concur with the USDA guidelines and strongly recommend that beekeepers with questions about the rotational program or monitoring methodology contact the USDA for more information. Please do this prior to using Apistan so that

Continued on Next Page

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resistance does not cause you economic loss. The continued use of Apistan without consideration of these new guidelines may exacerbate the resistance problem, resulting in the continued erosion of Apistan's effectiveness.

Wellmark International, the manufacturer of Apistan, is dedicated to developing and marketing effective products. I appreciate the support of our distributors and beekeeper customers throughout this product stewardship challenge.

Your understanding of this situation and cooperation with product rotation strategies will help keep important products available for many years to come.

Scott E. Boutilier
Business Manager, Apistan

Cream of Tartar

The fondant recipe taken from the Sammataro/Avitabile book *The Beekeeper's Handbook* in your Nov. issue mentioned using cream of tartar. Many recipes, including the one in *The Hive and the Honey Bee*, do call for cream of tartar. Tartaric acid which I think cream of tartar is, has been used, again in my understanding, to aid honey bees in breaking down sucrose into glucose. In the past few years, some concern has been raised about the health effects tartaric acid has on bees. Some of this discussion has taken place over the internet on Bee-L. Richard Bonney made this post in Dec. 1997:

"Many years ago a researcher found if no natural nectar was coming in, feeding syrup containing cream of tartar (or vinegar) caused dysentery, shortening the lives of bees to one third that of bees fed plain sugar syrup. This finding was written of at the time but does not seem to have become part of the common knowledge of beekeepers. Tartaric acid is still occasionally recommended, without any qualification as to the possible ill effects. Use it judiciously if at all."

I believe the researcher was a Britain named Leslie Baily.

Interestingly, the *Beekeeper's Handbook* gives a recipe for sugar syrup, two pages prior to the fondant recipe, listing cream of tartar as an ingredient. It then mentions there is some concern that it may be detrimental to bees and that, lately, its addition has not been recommended.

Dick Allen
Anchorage, AK

Still More Lady Bugs

I was somewhat amused by your Inner Cover of Nov. 2001. I too have been visited by Lady Bugs. Several warm days this fall saw them arriving from the woodland behind our house – literally by the hundreds. I don't know how long they have been overwintering in this house (we moved in a little over a year ago) but this is the third house in the northeast where we have been visited by a number of the 15 or so varieties of *Hippodamia convergens*.

Our visitors have a welcome here. We have between one and two hundred sharing our bedroom with smaller numbers in two bathrooms. Most are content to cluster until time to move back to the woodlands to do their beetle thing. A few more restless types are continually exploring their Winter quarters. (I just retrieved one from the kitchen sink – and by the way, a honey drop is a real feast for them.) When I go online in the evening one comes to check the screen. (It goes away after determining that I am reading the Washington Post Online not the Beetle News.)

I have accepted this annual visit for several years, soon after they appeared in large numbers in the Connecticut Valley a number of years ago. We have been increasingly plagued by the woolly adelgid. This critter is threatening the hemlock stands in our area. The hemlock is not only a useful wood product but also a vital wildlife habitat. The Forest Health folk tell us that the indigenous Lady Bug is a minor player in the battle against the adelgid. The belief is that an imported version is the best "cure" for the problem. Anecdotal evidence suggests that where we have had both a stand of hemlock and a quantity of "domestic" beetles, the adelgid has not been a problem. So, as long as they continue to consume scale, etc., they are welcome to share my house.

Like the honey bee, some of their behavior continues to amaze me. I don't know what the life span of the Lady Bug is but how do they know where to come to over Winter? I can believe that temperature and length of day triggers the need to find a hibernating spot but what prompts them to come to my house year after year? Frankly, when we are constantly reminded of our "war" with terrorism, it is kind of nice to be able to sit back and contemplate the Lady Bug and other of Mother Nature's critters – including the honey bee.

Cheers!

Dick Starkey
Greenfield, MA

Coumaphos Resistance

The U.S. beekeeping industry has limited products to control the parasitic mite *Varroa*. One of these products, CheckMite+, has recently been found to provide ineffective *Varroa* control in a single commercial beekeeping operation in Maine. The appearance of mites resistant to coumaphos, the active ingredient in CheckMite+, in only three years of use is disturbing in light of the limited control alternatives. Additionally, the U.S. currently has *Varroa* populations that are resistant to fluvalinate, the active ingredient in Apistan, and few mite control alternatives are on the horizon.

In the Fall of 2001, a commercial beekeeper in Maine (migratory, Maine to Florida) complained of high *Varroa* populations following treatment of his colonies with CheckMite+. The state bee inspector notified the USDA-ARS Bee Research laboratory in Beltsville, Maryland of the potential problem and an investigation was undertaken. On October 4, 2001 ether roll assays were conducted on 40 colonies that were still under treatment (25 days, 9/9 to 10/4/01) with two CheckMite+ strips in place in the brood area of single standard deep hive bodies. All 40

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colonies had high mite populations of approximately 140 mites per ether roll. Colonies were randomly placed in four groups of 10 colonies each and treated for two days by either retaining the old strips ("old strips"), using two or four new strips of CheckMite+ or two new strips of Apistan. The addition of two or four new CheckMite+ strips did not result in increased mite drop over 24 hours (approximately 400 mites/colony) when compared to mite drop from colonies with "used strips" (approximately 350 mites/colony). In contrast, the addition of two Apistan strips resulted in a 10-fold increase (approximately 3,800 mites/colony/24 hours) in mite numbers when compared to the "used strips" mite drop. Additionally, a field assay under development for coumaphos, similar to that used to test for fluvalinate resistant mites, was conducted. Mites on bees in Maine showed only 13.4% mortality on average in the assay while mites in Beltsville, Maryland exhibited 93% mortality on average using the coumaphos assay under similar conditions. The finding of high mite populations after 25 days of CheckMite+ treatment, the colony level tests with different control compounds and the field assay differences in mite mortality to coumaphos are all indicative of mites being resistant to coumaphos. Defective strips are unlikely to be the cause of high mite levels as four different lot numbers of CheckMite+ strips were used by either the beekeeper or during the trials conducted by the Beltsville Lab. Based on these findings we feel it prudent that beekeepers use some means of assessing their mite populations before, and especially following, treatment with CheckMite+. This same advice is needed when using Apistan. We hope that coumaphos-resistant *Varroa* are not widespread and that we can prolong the use of all control products by using rotation schemes, resistant stocks of bees and alternative control measures.

Jeff Pettis
Beltsville Bee Lab

INNER COVER

Back in November, when we announced the 2001 *Bee Culture* Newsletter Contest, we tried to assure every newsletter publisher that they should enter. Size, budget and frequency were less important than how well their publication did its job.

We weren't disappointed. In fact we were pretty nearly overwhelmed. This is the third year we've done this, and for the last two years the number of entries has doubled each year. We had nearly 50 this year, and it took our judges the better part of a month to get through them all. But they did, and they've come up with what we feel are the best of the bunch.

Some parts of the scoring are pretty straight forward and points awarded are black and white for instance, there's a table of contents or not. But some are a bit less straight forward and tend to be somewhat subjective. General appearance, style and appeal can be interpreted very differently by any number of people. But, as they say, the cream rises to the top and the three winners (no ties this year) were very close. Total points possible were 135. Our winner scored 126 (93.3%), second place 125 (92.6%) and third 123 points (91.1%).

All three winners had articles from at least one of the officers, good information on the next meeting, including directions, time, date and agenda, beekeeping news from other sources (*Bee Culture's* 'Catch The Buzz' was used a lot), a list of the officers and how to contact them, and a few ads.

These aspects are critical to a good newsletter as an information source for members and prospective members, no matter how big the organization, and should be in every newsletter.

The subjective part came in the format, the quality of reproduction, general appearance and the style and appeal. These include how easy it is to read, use of color (not necessary, but if used is it well done), quality of photos (not necessary, but if used how well done), one, two or three columns, use of graphics, fonts, white space, headlines, body copy, layout, predictability, and the most subjective, was it 'fun' to read.

Look again at the scores. All the judges had the same 'feel' for these things, and only a point or two difference was made between the winners relative to each aspect.

And the winners? First place – *Lehigh Valley Beekeepers Association,* Richard Olson, Editor for four years. This is a small group, with 59 members in the Allentown, PA area. Second place – *Mountain Beekeepers Newsletter,* Charles Guatney, Editor. Thirty-five members from the North Carolina/Georgia border area meet in Blairsville, GA. Mr. Guatney started this newsletter in July, 2001. Third place – *The Hive Tool,* Marlene Thomas, Editor (a repeat winner from last year). She's been at this for about a year and a half, for the Tennessee Beekeeper's Association with 475 copies produced.

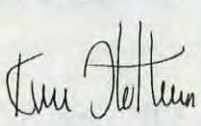
Honorable Mention goes to *The Sting,* Pat Westlake, Editor, with 121 points. Produced by the Ontario Beekeeper's Association, 450 copies are mailed. Also Honorable Mention went to *BeeScene,* produced by the British Columbia Honey Producers Association. Fran Kay-Bach mails 700 copies each issue. And finally, *The Empire State Honey Producers* Newsletter produced by Aaron Morris is the newsletter of the New York State group, with 175 copies sent out each issue.

All entrants in the contest will receive the evaluation sheet from the judges, showing how each score was developed. Unfortunately some entrants didn't make it past the qualifying round because of technical errors – late entries, incorrect or incomplete information attached and the like. We were aggressive in adhering to the rules on these points it's part of being an Editor to do what's right, on time, every time. But we did judge them relative to the other aspects.

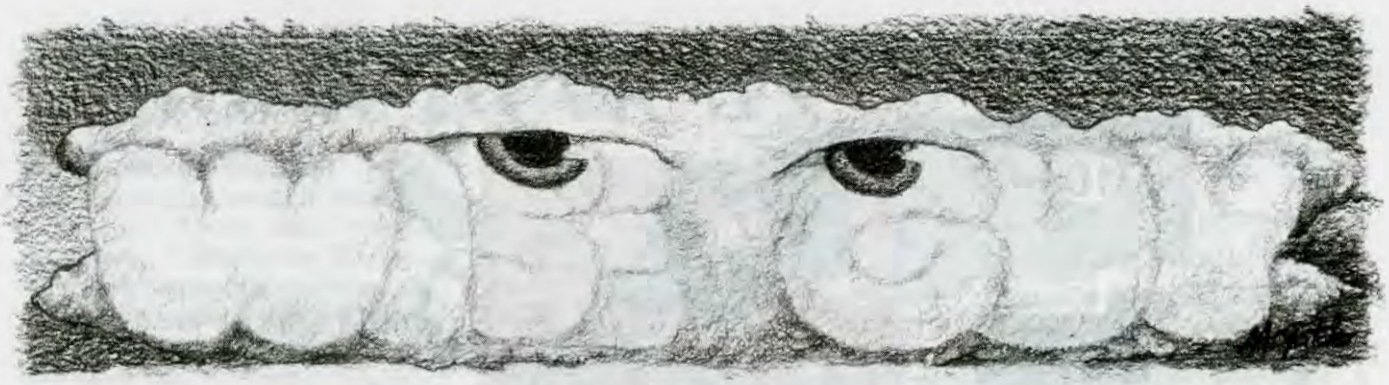
For more than 15 years we have championed better newsletters, and during that time we have taken careful note of the improvement in the quality, the information and the formats of the hundreds of newsletters we receive each year. We hope our urgings have helped in that cause. But time and technology never stand still, and electronic versions of newsletters are becoming common place. And as the quality of these has improved dramatically, the cost of production and delivery has dropped precipitously. A whole new world of information transfer is occurring, and in the next few months we will be exploring the how's and why's of this form of communication. And next year, we'll probably have to have a whole new category of entries for this contest. Stay tuned.

For now, congratulations to our 2001 Newsletter Contest winners, and to everyone of you who took the time and effort to enter – and especially to the 50 or so Editors who do the work and do it on time – every issue.

So, sharpen your pencils and your hive tools, get your smoker tuned up and your duct tape out of storage *this year* will be better!



Newsletter Contest Winners



History is an excellent teacher in all parts of our lives. We all have had opportunities to learn from past events in history. So now it appears with this knowledge we must move our honey production industry ahead. What two events in the past 14 years have helped the honey producer to receive higher prices for his product? Two antidumping actions have brought price increases both times. The first case resulted in a suspension agreement and allowed China to continue to send in product based solely on Argentina's low prices. How that worked was China could continue to send in product at 92% of the price of Argentine honey. So, as the price of Argentine honey was forced lower the footrace to lower and lower prices was on.

The current antidumping is a tariff or duty based agreement that applies a duty to imported honey from China and Argentina. Will this work? Yes, but the agreement needs to be constantly enforced to make sure the parties all comply. Already there are rumors of Argentine honey trying to come through Canada and Chinese honey doing the same. That action goes against the current agreement. If caught these people will face penalties of fines and even jail time. So where does this lead us to? If we are going to be committed to higher prices we must figure out what has helped us in the past. We must become proactive in the legislative arena in such areas as label laws, antiblending laws and further antidumping activities.

Label laws need to be revisited. How can you put U.S. Grade A Fancy when the honey is not U.S. and there is no grading to speak of. This is a holdover from a long gone era. It's a feel good tactic by the seller to mislead the buyer, but the way the label law is written, the seller is not violating any law. We need to change that. We need to establish grades of honey based upon color, floral source, and other characteristics that honey has. And don't you think the country of origin should be written as large as the word HONEY on the label. If all of these sellers are so proud of their non-domestic honey then identify it in print large enough to read. Also, there should only be one country of origin per bottle or container, and U.S. Grade A Fancy should be for domestic honey. If non-domestic honey is sold the label should read Non-domestic Honey Grade X or whatever they come up with but it should not be labeled U.S. as that is a deception.

Blending of honey should stop, period! All that is happening is the marketer is making an average product out of a superior one and an inferior one. So one party's product is a concentrate and one party's product is a filler, but both are paid the same. This is one area that packers should relish the most as this is an idea that would help to raise prices to them and the producer. If you were not able to blend honeys it would make some product in short supply, some years and prices would reflect that and in years of abundant supplies the price would reflect that price also but in both cases you are creating a demand for a certain grade of honey and then supply of that quality of honey would dictate the price.

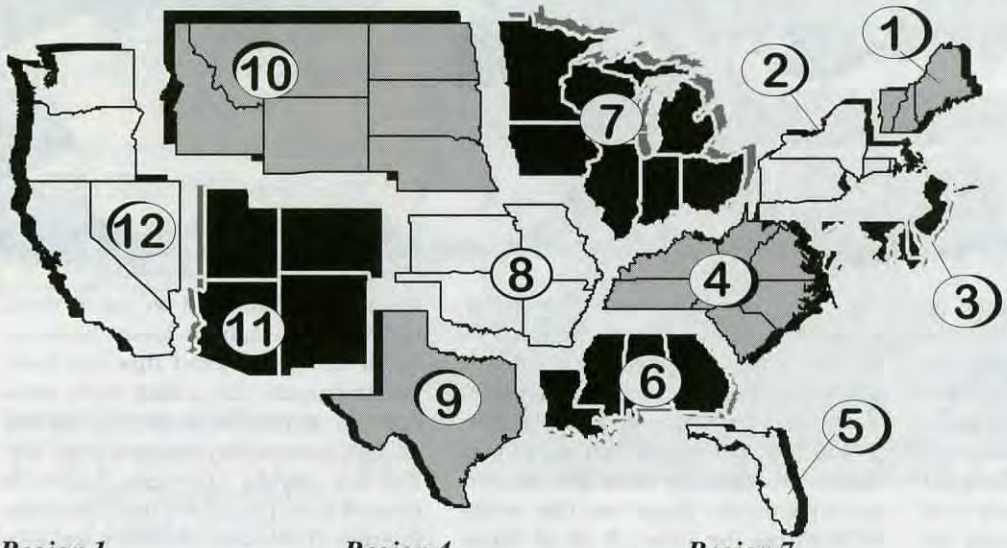
Basically, we need to control our ability to get a price for a product. We need to change the laws or enforce those that exist. To an American Honey Producer non-domestic honey does the same thing as corn syrup. It adulterates U.S. honey!

As honey producers we must fund our future and we must work together to change laws. Now sit down when you read this but farm programs are not a long term remedy! Farm programs funded by tax dollars have a very limited shelf life! The tax paying American public is tired of farm programs that continue to grow. If you don't know, a website listing farm subsidies paid to American Farmers, landowners and corporations was created by The Environmental Working Group (www.ewg.org) using data gained from Freedom Of Information sources. They published the website to the American public and many newspapers published the information listed by county, person and corporation and the yelling has not stopped yet. In fact that website is one of the most popular on the Internet. (Yes, beekeepers are listed.) In five years tax funded farm programs will be a far cry from what they are today. They may disappear altogether, so we need to work on an alternative to them.

What has raised the price of honey the most in 15 years? Not the National Honey Board nor Farm programs. We need to fight this battle and change the laws to work in our favor.

Wise Guy

FEBRUARY – REGIONAL HONEY PRICE REPORT



Region 1
Prices steady across the board since last month. Expansion plans tend toward making splits, increasing honey production, even with flat sales this year, although prices have increased some this year.

Region 2
Prices steady across the board since last month. Expansion plans mostly making splits, increasing honey production somewhat with steady to down sales and steady prices.

Region 3
Prices up for pails, bulk and retail, steady at wholesale. Expansion mostly splits for expanding honey production with steady prices and sales.

Region 4
Prices up for pails, bulk, wholesale and steady at retail since last month. Expansion plans mostly making or buying splits, buying packages, about half will increase operations, most will increase prices.

Region 5
Prices steady mostly, but retail increasing a bit. Steady as she goes for expansion, but most will raise prices this year and increase production some to accommodate.

Region 6
Prices steady for pails, up for bulk, wholesale and retail.Many are looking to buy other operations as a means of expansion this year, expanding production to take advantage of higher prices.

Region 7
Bulk prices up, all the rest steady since last month. Major splits going on this spring, most for sale, but many just to catch up from last year. Sales have been steady to down a bit, but prices have increased.

Region 8
Prices down for pails and wholesale, up for bulk and retail. Not a lot of room for expansion next year, everybody is staying the course, to see what happens next.

Region 9
Prices steady for pails and wholesale. Up for bulk, down at retail. Many making splits and most plan on some expansion next season to accommodate higher prices and increased sales.

Region 10
Wholesale prices down a bit, the rest steady since last month. Buying out other businesses will be big business this year, as consolidation continues, growing just to stay even.

Region 11
Prices steady, but down a bit for bulk. Packages and hunkering down are the only plans for most, while prices and sales stay steady.

Region 12
Prices down for pails, wholesale and retail, up for bulk since last month. Most don't plan major expansion, but just stay steady for steady sales and maybe increased prices.

Overall, 57% will be making splits this year, over 55% have plans for expanding the size of their operations. Nearly 90% have sales this year that are steady or have increased over last year, and prices for 93% have stayed steady or increased.

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12			Last	Last
Extracted honey sold bulk to Packers or Processors													**Range**	**Avg.**	**Month**	**Yr.**
Wholesale Bulk																
60# Light (retail)	75.00	76.40	74.00	72.67	75.00	68.33	64.25	67.00	85.00	62.00	81.17	62.00	62.00-85.00	71.90	72.14	69.29
60# Amber (retail)	70.50	67.75	68.00	72.40	65.00	69.00	63.40	61.67	85.00	62.00	76.17	52.33	52.33-85.00	67.77	68.62	66.07
55 gal. Light	0.71	0.68	0.71	0.62	0.65	0.76	0.72	0.70	0.71	0.71	0.74	0.65	0.62-0.76	0.69	0.69	0.62
55 gal. Amber	0.70	0.63	0.67	0.75	0.62	0.67	0.68	0.67	0.67	0.67	0.57	0.60	0.57-0.75	0.66	0.61	0.57
Wholesale - Case Lots																
1/2# 24's	31.68	28.87	28.66	32.21	28.66	27.43	27.46	28.66	30.00	28.66	25.00	25.00	25.00-32.21	28.52	30.68	30.71
1# 24's	43.20	41.11	48.00	45.11	45.00	53.00	40.73	45.20	43.45	42.00	48.00	46.80	40.73-53.00	45.13	44.58	43.85
2# 12's	38.16	38.82	46.80	43.54	40.00	38.50	36.79	41.00	39.60	31.80	50.00	40.33	31.80-50.00	40.44	45.07	39.39
12 oz. Plas. 24's	39.48	34.99	45.60	36.08	35.00	42.00	33.18	36.96	34.10	35.40	40.00	38.27	33.18-45.60	37.59	36.00	37.26
5# 6's	44.31	43.51	57.00	46.20	47.67	45.00	40.22	33.00	44.10	37.50	50.00	36.00	33.00-57.00	43.71	43.32	42.02
Retail Honey Prices																
1/2#	2.00	1.61	2.12	2.16	1.29	1.60	1.56	1.49	1.73	1.49	2.50	2.05	1.29-2.50	1.80	1.87	1.80
12 oz. Plastic	2.00	2.32	2.95	2.54	2.44	2.47	1.93	2.12	2.42	2.18	3.05	2.23	1.93-3.05	2.39	2.25	2.31
1 lb. Glass	2.75	2.52	3.00	3.12	2.83	3.08	2.37	2.78	3.40	2.52	3.67	2.81	2.37-3.67	2.90	2.83	2.88
2 lb. Glass	5.00	4.26	4.80	5.49	4.17	4.33	4.06	4.81	5.27	3.91	3.49	4.59	3.49-5.49	4.51	4.45	4.39
3 lb. Glass	6.47	7.24	6.80	6.92	6.50	6.85	5.46	6.59	6.78	5.19	5.62	5.66	5.19-7.24	6.34	6.51	6.51
4 lb. Glass	8.75	7.73	8.75	8.82	8.75	7.03	7.88	8.29	7.83	8.75	7.25	8.00	7.03-9.00	8.15	8.30	7.26
5 lb. Glass	10.75	9.94	11.00	10.52	10.00	8.00	9.14	9.99	9.00	7.90	11.45	7.99	7.90-11.45	9.64	9.79	9.46
1# Cream	4.10	3.18	4.10	3.76	4.10	3.93	3.79	2.91	4.10	3.04	4.33	2.85	2.85-4.33	3.68	3.22	3.08
1# Comb	4.00	3.93	3.60	4.57	5.38	4.00	4.27	4.28	5.38	5.38	4.75	4.75	3.60-5.38	4.52	4.46	4.33
Round Plastic	4.00	3.09	3.60	4.03	3.96	3.75	3.46	3.62	4.75	3.96	4.00	3.85	3.09-4.75	3.84	3.88	3.69
Wax (Light)	2.50	3.12	3.00	2.25	2.79	2.95	1.76	1.88	3.50	2.79	2.12	2.50	1.76-3.50	2.60	2.29	2.54
Wax (Dark)	2.50	2.50	2.70	1.95	2.74	2.75	1.57	1.05	3.00	2.74	1.75	2.17	1.05-3.00	2.28	1.99	2.14
Poll. Fee/Col.	50.00	41.17	40.00	36.20	25.00	35.50	39.75	40.00	24.00	37.51	45.00	47.50	24.00-50.00	38.47	38.43	37.52

Book Reviews

Bees And Crop Pollination – Crisis, Crossroads, Conservation. Edited by Constance Stubs and Francis Drummond. Published by The Entomological Society Of America. 156 pages, b&w, soft cover. 6 x 9 inches. $43.75 (nonmembers). 301.731.4535.

This book is a proceedings, a collection of material delivered at a symposia of the Ent. Society. It is a serious book, about what is becoming a serious problem. There are only 5 chapters. Chapter one, by Peter Kevan from Guelph Univ. is on Protecting, Conserving and Promoting Pollination. This is the foundation chapter, dealing with not only alternative insects as pollinators, but honey bees and their recent troubles.

The second chapter, by Heinrich and Chavarria, is all about bumble bees – management, energetics and conservation.

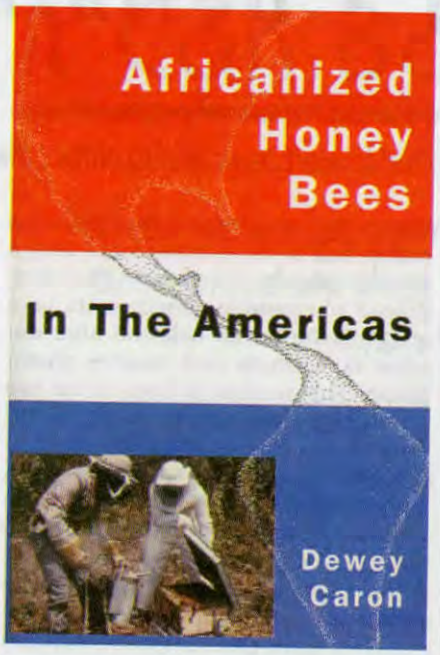
In chapter 3 Susan Batra, from USDA, discusses "Pollen Bees" those bees that do not collect nectar for surplus honey production but are excellent at pollinating the plants they visit.

Conserving Mason bees is the focus of chapter 4, by Stubbs and Drummond. Mason, and other bees, are necessary for pollinating lowbush blueberries in the northeast, and management, honey bees and pesticides are taking their toll.

Finally, Dewey Caron discusses Neotropical Pollination, Crisis, Crossroads and Conservation, looking at the effects of increasing human habitat, displaced native bees, African honey bee effects (a familiar topic for Dewey), and crop management due to all of this.

This book offers a picture of what is in the world of pollination today, and what may be if some things don't change. It is necessary reading for serious beekeepers, and crop producers.

Kim Flottum



Africanized Honey Bees In The Americas. Dr. Dewey Caron. 228 pages, softcover, b&w, 6x9 inches. $15.00 (including U.S. postage) available from Bee Culture's *Book Store.*

Dewey Caron has been dealing with Africanized honey bees for about 20 years. By choice. He has done this in most of the countries in Central America – Panama, Costa Rica, Bolivia, Belize and several others. And he's does it one beekeeper at a time, with small groups, and one beehive at a time. He has a pretty good feel for how there bees operate.

He also has seen what happens when they move into an area – what was before, during and after their assault.

Dewey's book explores the basics of these bees, some history, some biology, a lot of the myths surrounding them and then detailed studies of their movement through several of the countries. Individual beekeepers relate their stories for first hand information.

The two previous books about these bees, one by Mark Winston, and one by Greg Flakus are good background, but this new title is required reading for anybody who will have to learn to live with Africanized honey bees.

Kim Flottum

RESEARCH REVIEWED

Explaining • Defining • Using

Steve Sheppard

"Alarm pheromone is used to alert bees and to attract them to moving objects."

'Is the sting the thing?'

The role of the sting in protecting honey bee colonies is well known to all who would casually invade their societies in search of the proverbial free lunch. The sting apparatus, itself a marvel of functional engineering, is a potent delivery system for honey bee venom. However, associated with the sting is a plethora of volatile compounds that collectively compose what is known as alarm pheromone. The banana-like odor of one of these components, IPA (isopentyl acetate), is quite familiar to beekeepers that have experience with highly aroused honey bees. This compound is dispersed when the bees evert their stingers and fan their wings. Levels of IPA have been shown to be positively correlated with stinging behavior. IPA is just one of more than 20 compounds known to occur in honey bee sting alarm pheromone, although less than half are reported to contribute to defensive behavior.

One question that arises is, does the alarm pheromone left behind by an imbedded sting contribute directional information to alerted nestmates? The fact that a second or third sting can be received almost immediately following and in close proximity to the site of the first appears to be adequate evidence for many beekeepers to make the observation that bees can "home in" on the pheromone-releasing sting remnant. However, not all stings are doled out close to the site of a preceding sting and other factors (such as a black watchband) may complicate the issue of "target acquisition"

A recent paper by Wager and Breed (2000) presents the results of a series of experiments designed to test the hypothesis that honey bee alarm pheromone provides orientation information to defensive bees. Their experiments tested both entire stings and 10 different constituents of alarm pheromone for three distinct aspects of defensive behavior: recruitment, flight and localization.

To test recruitment (the number of bees that came to the vicinity of the entrance in response to alarm pheromone), the researchers first placed a cotton ball in the entrance and took a photograph after 60 seconds. They then placed pheromone constituents or a sting on the cotton ball and after another 60 seconds took another photograph. The number of bees in the two photographs were compared and the difference was measured as recruitment. Five colonies were tested twice for each compound at least 48 hours apart. The results showed that seven of the 10 tested components of alarm pheromone caused significant recruitment to the entrance.

To test the effect of the components on flight activity, the researchers placed an isolated honey bee in a large glass chamber with a line drawn across the top. A clean cotton ball (control) or one with one of the ten compounds was placed in the center of the container and the number of times the flying bee crossed the line was recorded over a 60 second period. Each compound plus controls was tested with ten bees. Three compounds caused significantly different levels of flight activity compared to the controls although, of these, only IPA caused an increase in flight activity. They reported no obvious orientation to the odor source in the chamber, i.e. bees did not land on or near the odor source.

To directly test for localization (orientation to the odor source) the researchers used a glass T-tube with the odor source droplet at the end of one arm of the "T" and a water droplet control on the other. An individual worker bee was introduced and closed into the tube. The worker had no option but to move down the tube and "choose" one arm or the other. Thirty bees were tested for each compound. The results indicated that one component of the sting pheromone significantly repelled the bees (they chose the opposite glass arm), but none of the compounds nor even an isolated sting produced significant attraction. An additional localization test involved a stationary and a swinging cotton ball placed nearby the hive entrance. The 10 alarm pheromone compounds and a fresh sting were tested individually on either the swinging or stationary cotton ball (with the other ball used as the control in each case). The number of times a bee either landed on or came within 2.5 cm of a ball was counted over a five minute trial. Three trials were conducted per compound. When placed on the stationary target, one compound (octyl acetate) significantly attracted bees, while some others caused more bees to localize on the moving target. When placed on the moving target, five of the ten sting pheromone components and the fresh sting caused a significant increase in honey bee localization to the moving target.

The authors concluded that the major functions of honey bee alarm pheromone are to increase recruitment, increase flight activity and to increase honey bee response to moving objects. One compound (octyl acetate) was attractive to bees when not combined with motion, but even an entire sting did not provide localization information in the t-tube or field test assay. They present here a strong case for the view that alarm pheromone is used to alert bees and to attract them to moving objects, rather than to mark the "target site" for further stings.

For the beekeeper this research suggests that, while removing the sting is still a good idea, it is perhaps even more important that it be done with deliberate and unhurried movements. Otherwise, the full defensive function of the alarm pheromone can be realized as new defenders are both recruited and able to find their moving target. BC

Reference

Wager, Brook R. and Michael D. Breed. 2000. Does honey bee sting alarm pheromone give orientation information to defensive bees? Annals of the Entomological Society of America 93:1329-1332.

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

Mark Winston

It Can Be Done

"What works for us may work for you, but I am confident that most of you can do even better."

Yes, it can be done. No, we can't produce 600 pound average honey crops, genetically engineer our favorite queen to live for decades, or manage bees without lifting heavy hives. What we can do is reduce synthetic chemical pesticide use in our colonies, and implement the holy grail of contemporary beekeeping, integrated pest management.

There have been innumerable articles published in this and other magazines about integrated pest management in the last few years, extolling the various cultural, genetic, and soft-chemical approaches that we could be using to reduce the use of more conventional pesticides such as Apistan or Coumaphos.

These two miticides currently are registered in the United States and are deemed safe enough by U.S. regulatory authorities, although Coumaphos has not been approved for use in Canada. Both formulations have the disadvantage of inducing mite resistance and thereby rendering themselves ineffective when over-used or applied improperly. Further, residues of these compounds can be found in honey and accumulate in wax, an undesirable side-effect in an industry that thrives or fails on the purity of its product.

Integrated Pest Management (IPM) involves the use of diverse control measures to keep pests below economically damaging thresholds while reducing chemical use. For bees, IPM could involve rotating chemicals, monitoring for mite levels and only applying chemicals when mite populations exceed minimal thresholds, using queens selected for mite resistance, applying cultural methods such as screened bottom boards with sticky traps to prevent mites that fall from climbing back up onto bees, and using food-grade substances such as thymol that are easily registered and are viewed by the public as more environmentally benign than synthetic chemical pesticides.

Many of these methods have been investigated individually, but our research efforts have lagged behind our rhetoric about the advantages of actually implementing IPM. For example, researchers have tested thymol numerous times and analyzed how many mites it will kill, examined mite populations and honey production with the use of hygienic queens, and tested screened bottom boards for mite kill efficacy.

What we have not done is apply these methods simultaneously over a long term to answer the bottom-line question: can IPM be an economically feasible and biologically effective alternative to current practices, and if so what are the optimal combinations of methods that will protect bees and keep the beekeepers' profit/loss statements in the black? There has been a surprising lack of economically focussed research examining whether various IPM systems will indeed control mites for extended periods, and the costs and benefits of IPM relative to the straight use of Apistan or Coumaphos.

My laboratory has made a stab at IPM research over the last few years, and the work of one of my graduate students, Nathan Rice, has now demonstrated that various IPM systems can indeed operate effectively over at least a two-year period. Nathan's research is now complete, and provides the first long-term analysis of IPM as a model system for mite control. Other studies in other laboratories are ongoing, and within the next year or two we should have a much better idea about IPM as a paradigm for mite management.

Nathan's work was designed to test control treatments using single chemicals applied in the spring and fall, with various IPM treatments that either rotated chemicals or mixed cultural practices, genetic resistance, and the use of "soft" substances such as thymol. He conducted his work in British Columbia, beginning with 10 colonies per treatment, and followed those colonies for two years under different mite control regimes.

His control treatments included colonies in which he applied Apistan alone in the spring and fall, as well as another group of colonies in which thymol alone was applied in the spring and fall. Rotational treatments ("rotational IPM") involved either using Apistan in the spring and thymol in the fall, or thymol in the spring and Apistan in the fall. Finally, he studied a mixed IPM system that included three methods applied to the same colonies for the

Continued on Next Page

DONE ... Cont. From Pg. 15

year: 1) thymol treatments in the spring and fall, 2) the continuous use of screened bottom boards, and 3) queens selected for hygienic behaviour.

The mixed IPM system was particularly interesting to us, because each of those treatments alone had not been deemed effective enough in earlier research conducted at our and other laboratories. Thymol alone was too variable, providing 30-70% control in various studies, while screened bottom boards and hygienic queens each provided somewhere around 30% control in previous studies when each method was used alone.

The results after two years were exciting because we found no statistically significant differences in colony survival, brood or adult populations, and honey production between *any* of our treatments. We did find slightly higher mite populations at one of six measurement dates midway through the experiment in treatments rotating Apistan and thymol, but there were no differences in mite populations at any other time throughout the experiment, including the end date after two years of study. However, Nathan observed higher although not statistically significant mortality in treatments in which thymol was applied in the fall, suggesting that a spring thymol and fall Apistan rotation would be a better system than using Apistan in the spring and thymol in the fall or thymol alone in the spring and fall.

These results are biologically exciting because they are the first demonstration that IPM can be used to manage bees effectively over a long term while reducing synthetic chemical use. Both a rotational system in which Apistan is alternated with the softer thymol product, and a mixed IPM system that relies on thymol, screened bottom boards, and hygienic queens, were as successful as the spring/fall use of Apistan alone. These results provide some confidence that we can back away from the heavy over-use of Apistan that has induced mite resistance and eliminated the efficacy of this otherwise-useful product for many beekeepers.

What about the economics? Were any of these systems too ex-

"This research has demonstrated the potential for IPM systems to replace our current over-use of chemical products alone, but it is only a beginning."

What Beekeepers Want

by Maryann Frazier and Nancy Ostiguy

In today's climate of tight budgets and increasing challenges to successful beekeeping, communication and cooperation between all parties interested in or dependent on the beekeeping industry is essential. One approach to increasing communication and cooperation between these parties has been the establishment of The Mid-Atlantic Apiculture Research and Extension Consortium (MAAREC). MAAREC, was established in 1997 as a regional collaborative effort to focus on the pest management crisis facing the beekeeping industry in the Mid-Atlantic Region. To accomplish this goal a working group was created consisting of representatives from the departments of agriculture, state beekeeping organizations, and land-grant universities from New Jersey, Maryland, Delaware, Pennsylvania and West Virginia, plus a representative of the USDA/ARS (Beltsville Bee Lab, MD).

A survey taken in 2000 was designed to further help MAAREC understand how the organization could better serve beekeepers and the beekeeping industry. Of the beekeepers that responded, 40% had been keeping bees for five years or less, while 48% for more than 10 years; 51% had five colonies or fewer, 41% kept between 6 and 50 colonies, and 6% kept more than 50 colonies. Only 3% considered themselves migratory beekeepers.

To receive a detailed copy of our survey results please visit our web site MAAREC.cas.psu.edu or contact Maryann Frazier (Dept. of Entomology, 501 ASI Building, University Park, PA 16802).

	# of individuals ranking this item in the top three	# of individuals ranking this item as number one
Research Priorities		
IPM control methods for mites	417	73
Honey bee pollination	114	35
Alternative pollinators	19	9
New miticides (chemical) for mites	349	70
Non-chemical control methods for mites	445	65
Pesticide residues in wax and honey	128	56
Honey bee viruses	267	101
Other bee diseases	195	121
Extension Priorites		
Produce computer software with information on disease diagnosis/control, and honey bee mgt.	17	7
Provide web-based information on disease and mite diagnosis/control, and on bee management	48	10
Produce the BeeAware newsletter	53	7
Produce printed material on disease diagnosis/control, and bee mgt.	65	20
Develop teaching material suitable for teaching beekeeping	34	11
Produce videos on disease diagnosis/control, and bee management	40	12
Provide short courses on disease diagnosis/control and bee mgt.	33	12
Giving talks at local, state and regional bee meetings	62	17
Write articles for ABJ, Bee Culture, etc.	36	11
Write articles for local, state, and regional newsletters	40	21
Produce free extension pamphlets	41	23

pensive in spite of their equivalence in biological efficacy? Nathan also examined the costs involved with all five systems, including product cost, the slightly higher cost of selected hygienic queens, costs for modifying bottom boards, and the relative labor costs of applying each system. His results suggested that rotating Apistan and thymol would be slightly less expensive than using Apistan alone, about $13.40 a year per colony for two Apistan treatments and $12.80 per year for a thymol/Apistan rotation. Thymol used in the spring and fall was even cheaper, $12.20 per colony annually, but is not recommended because of the trend towards higher colony mortality.

Finally, the mixed IPM system clocked in at $15.02 per colony per year, a bit higher than the other systems but still viable economically. Beekeepers who want to reduce the use of synthetic chemicals in their hives, or those who might wish to explore the production of organic honey, might be willing to accept the higher cost of this treatment.

This research has demonstrated the potential for IPM systems to replace our current over-use of chemical products alone, but it is only a beginning. Other IPM systems might be even more effective, especially those using formic acid in combination with cultural and genetic controls or a formic acid-Apistan rotation. The possibilities are endless, and only our imagination prevents us from devising diverse, effective IPM systems.

But don't take my word for it. Our study, after all, was limited to a few systems under our climatic conditions and within our Simon Fraser University apiaries at which we, like all beekeepers, have developed our own idiosyncratic methods of managing our bees. What works for us may work for you, but I am confident that most of you can do even better.

How might you go about testing your own IPM system? Whether you are a hobby, sideline, or commercial beekeeper, the strategy I suggest is the same. Take an apiary, split it in half, and apply your current management methods to one half of your colonies and whatever IPM system you want to explore to the other half. Keep track of how many colonies in each treatment survive, weigh the honey coming off of each colony at the end of every season, and use natural mite drop onto sticky boards for 24 hours each Fall to assess the effectiveness of *Varroa* control.

I also encourage the American beekeeping community to reconsider the justification for emergency registrations of substances that may not be necessary to substitute for Apistan. Our experience suggests that if you use rotational or mixed IPM systems, including the occasional use of Apistan, other synthetic chemical pesticides will not be necessary to control *Varroa* effectively and economically.

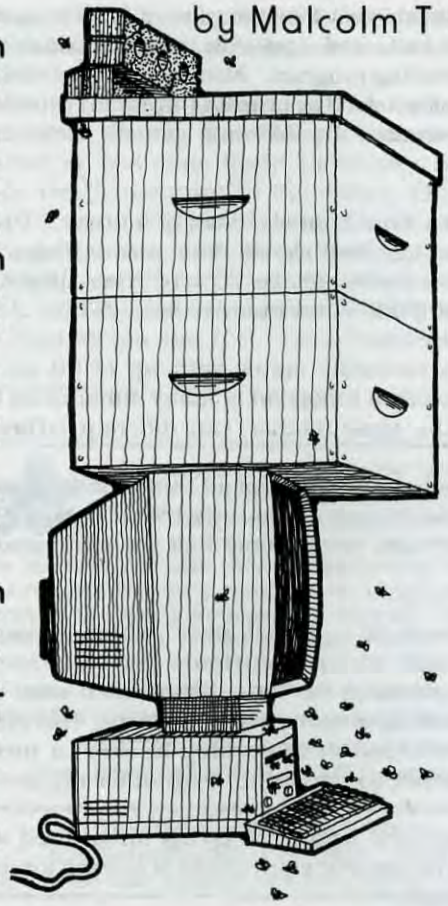
World-wide beekeeping practices have induced *Varroa* resistance, and similarly the over-use of terramycin has led to resistant American Foulbrood. Perhaps it's time for beekeepers to move forward and join the rest of our agricultural community in adopting safer IPM methods that reduce chemical use, sustain the permanent availability of chemicals that are useful tools when used prudently, and renew the bragging rights of our industry that in recent years has talked the environmental talk but not walked the environmental walk.

We now know that the rhetoric about IPM is do-able and sustainable. What's keeping you from implementing your own IPM system this Spring? BC

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

Beekeeping In The Digital Age

by Malcolm T Sanford



Queen Rearing: The Devil Is In The Details

I have often been asked to recommend a queen producer or certain line of queens. Although this is a valid question, I have never found a satisfactory answer. Clearly the devil is in the details when it comes to queen rearing. Thus, the finished product is often difficult to judge and its gets even trickier when one brings into the picture the attitude and experience of the operation or beekeeper receiving the finished product. This came to light in a piece I published in the **April 2001** *APIS* newsletter. A telling statement in that article is from **Dr. Marla Spivak** at the University of Minnesota who quoted the late Dr. C.L. Farrar, "Poorly reared queens of productive stock will be inferior to well reared queens of less productive stock." Other considerations in the article had to do with innovations in queen rearing equipment and the stress put on colonies by both producers and consumers as they attempt to make the bees conform to their particular management techniques. The root question of all, of course, is to determine how all these factors affect and might be detected in the final product.

A conceptual way I have found that helps one think about this issue is to examine queen rearing under the same lens as wine-making. Anyone can make a suitable wine, but a really great product comes from a mixture of superb ingredients concocted using the creativity and experience of a master vintner. Thus, when approached with the question about which queen or queen-rearing program is superior, I have invariably stated that the best approach to finding out is to ask the producer for as much detail as possible about methods and materials used to yield the final product. In the past this was difficult. It might take a phone call or even a visit to see specifically how queens are produced at a certain location, and even then information might be misinterpreted or not fully understood. Fortunately, the digital age is producing more and more electronic resources available to help beekeepers unravel the complex equation that is queen rearing. They range from do-it-yourself to complex sites put up by producers themselves.

For starters, an excellent resource package has been published by Dr. Spivak. According to the **Web site** promoting these products, "This copyrighted, 13-minute-long, VHS-format video demonstrates the Doolittle method of queen rearing. It takes the viewer step-by-step through the entire process, from selecting breeder stock to ensuring successful mating. A companion 'Successful Queen Rearing Manual' (item MI-6346-SAN), which goes into more detail, is also available. For hobby and commercial beekeepers and professionals who work with apiarists." Costs include $40/video, $36/video for 5-9 copies, $32/video for 10-24 copies, $28/video for 25 or more copies. For more information on these one can e-mail: **order@dc.mes.umn.edu** or MES Distribution Center, University of Minnesota, St. Paul, MN 55108, Phone: 612-625-8173. Dr. Spivak is well known for developing a line of hygienic queens, which is now being made available to the public (see below).

A **full-text** electronic Web resource is available from the **Maarec web** site: **Breeding and Genetics of Honey Bees** By: John R. Harbo and Thomas E. Rinderer. This is taken from the classic beekeeping volume published by the United States Department of Agriculture, *Beekeeping in the United States*, Agriculture Handbook 335 (1980), now out of print. There are in-depth explanations of the following topics: Genetics of the Honey Bee, Communicating Pedigrees, Stock Propagation and Maintenance, Mutations, Gene Pool, Stock Improvement, Selection Methods, and Breeding Methods, along with a list of references.

Another way to explore queen rearing is to look at numerous commercial resources on the World Wide Web. A simple **search** using any of the excellent search engines on the Web will suffice. Entering "queen rearing" returns a long list of possible choices. Several producers have detailed Web sites. For example, "**Ohio Queen Breeders** is one of the larger breeding programs in the United States that specializes in the production of instrumentally inseminated breeder queens. For the past several years we have been very fortunate to work with Adee Honey Farms, Inc., a commercial honey producer, and C. F. Koehnen & Sons, Inc., a commercial queen producer."

A producer name that has been around a long time (since 1888) is Weaver apiaries. Two families have spun off as separate companies: **R. Weaver** and **B. Weaver**. It is intriguing to visit both sites as each has a totally different style. Both are jam packed with information on queen rearing as well as that touting their specific

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DIGITAL ... Cont. From Pg. 19

products.

The most comprehensive and impressive queen rearing Web site to my knowledge is established by **Glenn Apiaries** in Fallbrook, California. This company recently announced that it would no longer sell open-mated queens as the Africanized bee has now taken up residence nearby. Instead it now uses instrumental insemination almost exclusively. This is the company chosen by Dr. Spivak to distribute her "hygienic" stock: "After careful thought, I have decided to have Tom and Suki Glenn, of Glenn Apiaries maintain and sell breeder queens from the hygienic line of bees that I have bred here at the University of Minnesota. They currently sell inseminated breeder queens, and I am confident they will do an excellent job at maintaining the line. Over the past two Summers, I have found that the time that I spend on evaluating, propagating and inseminating the line cuts into time I should be spending on new research projects. Tom and Suki will provide me with the queens that I need for experiments, and I will continue to evaluate the performance of the queens for disease and mite resistance, honey production, and Winter hardiness." Glenn Apiaries also distributes both **Russian** and the newest **SMR** stock as well.

Although the end products (queens of certain lines) are the focus of this commercial site, the other resources found there will also be of great interest to many. For example, there is an excellent discussion on the **basics** of queen rearing, complete with graphics showing the life cycle of the honey bee. Topics include: selecting breeder queens and the ins and outs of grafting (transferring) larvae, the basis of the commercial system used by most producers, originally developed by **G.M. Doolittle**. In addition, there is a good discussion of the mating process and importance of drones.

Most impressive is the discussion of **principles of honey bee genetics**, complete with full-color graphics. Specific topics here include: Mating behavior multiple mates make for a complex family, Chromosome number - key in understanding bee genetics, Cordovan color- a useful genetic marker controlled by a recessive gene, Hygienic behavior- two recessive genes for uncapping and removing diseased brood, Tracheal mite resistance - thought to be controlled by dominant gene(s), Sex alleles determines solid or scattered brood pattern, and Mitochondrial DNA used to trace the maternal lineage of bees.

The above principles can be used to improve bees in a number of ways through **breeding programs**. Most urgent these days is finding bees that are tolerant to *Varroa*. According to the site, "Given enough time and in the absence of chemical treatment, European bees would probably become adapted to *Varroa* by natural selection, as the Asian honey bee has. The goal of the bee breeder is to accelerate this process through artificial selection, this is done by identifying the bees with the desired characteristics and controlling their mating to accumulate these traits in a small 'closed population.' Closed population breeding programs have long been used with great success in the breeding of dogs, cattle, and other livestock. It has only been relatively recently that the mating biology, genetics, and techniques in artificial (instrumental) insemination of bees have been worked out so as to make possible, a sustainable closed population breeding program." Also according to this site, "The design of a selective breeding program must take into careful account the following genetic peculiarities of honey bees:

1. Unlike most other animals, each of a drone's 10 million sperm are identical clones. This means sister bees with the same father share 75% of their genes, far more than the 50% found in other species.

2. The queen naturally mates with up to 20 drones, making the colony a collection of many subfamilies (half sisters with the same mother, but different fathers).

3. Honey bees have a haplodiploid reproductive system. This means males come from unfertilized eggs, so they have no father and receive only half the chromosomes of a female.

4. The existence of a "lethal gene" which shows up when father and mother contribute the same version (allele), this results in the larva being eaten soon after hatching, resulting in spotty brood patterns. This greatly limits the usefulness of inbreeding in bees, a method which has proved so successful with other organisms.

5. Worker bees are capable of laying unfertilized eggs, making them the genetic equivalents of queens for drone rearing purposes."

The above conditions and others can make **honey bee breeding** fraught with difficulty. It is also important to determine the correct selection tests to see if desired traits are found in certain bees. These **include** hygienic behavior, brood viability, mite tolerance, temperament, comb building and honey production. A discussion also ensues concerning instrumental insemination and the concept of "super mating," which conserves genetic diversity. The latter is a real concern in many mating regimes, especially given the ravages of the *Varroa* mite on **feral bee** populations.

Finally, there is a photo gallery of unusual, **oddball** bees available at the Glenn Apiaries site: "Visible mutations are most often seen in drones. Since drones develop from unfertilized eggs, they have only one set of chromosomes. All recessive genes are expressed in drones, none are hidden by a second, dominant gene." Thus, there is discussion of "white-eyed" drones and workers/queens and "gynandromorphs," bees which have of both male (drone) and female (worker) anatomy. All of this makes fascinating reading and also shows potential customers the challenges involved in developing and maintaining certain lines of stock.

Those with more than a passing interest in queen rearing may be interested in taking a course. Showing how small the world can be in the digital age, a correspondence course is offered in **New Zealand** through the Telford Polytechnic School: "The Telford Certificate in Queen Bee Rearing is made up of four knowledge modules including: 1) Entomology & Behaviour, 2) Beekeeping Equipment & Hive Manipulations, 3) Queen Rearing and 4) Queen Breeding." These are studied by

correspondence over a three- to six-month period and there is a one-month practical option to be taken at the Telford itself.

A little closer to home one can find an advertisement on the Web for **Sue Cobey's courses** taught every summer at The Ohio State University, Rothenbuhler Honey Bee Laboratory in Columbus, Ohio. These include: The Art Of Queen Rearing (**May 9 and 10, 2002**), Instrumental Insemination & Breeding (**June 12, 13 & 14, 2002**), and Advanced Insemination Instruction (**June 20-21, 2002**). An insemination Training **Video** ($59.95 Post Paid within the U.S.; Ohio Residents please add 5.75% sales tax) is also available. For further information contact Ms. Cobey by e-mail: **cobey.1@osu.edu** or Dept. of Entomology, 1735 Neil Ave., Columbus, OH 43210, Ph. (614) 292-7928, Fax (614) 292-5237

The above resources only scratch the surface of what is now present on the World Wide Web about queen rearing. We can only expect more as the technology matures. BC

Dr. Sanford is former Extension Specialist is Apiculture, University of Florida. He published the APIS *Newsletter:* ***http://apis.ifas.ufl.edu***

James E. Tew

Bee Culture's Beeyard

Hey, You Want Some Old Bee Equipment?

It's a beekeeping fact of life – everyone who starts keeping bees does not necessarily stay at it. Reasons are always similar. People die. Jobs or interests change. Someone experiences health changes. So when the question comes to you, "Hey, do you want some old bee equipment?" the sky is the limit with variables.

The used equipment

The donation may be a lot of equipment but more often there is only a small amount. The equipment may be in great shape or it may be rotted with weeds growing through it. The equipment may be complete or there may be missing parts. The equipment may be old or it could be reasonably recent. Very possibly, the owner may want payment for the equipment. Essentially, any option is possible. You won't know until you get an opportunity to check it out.

This is not about buying used equipment

I don't intend for this to be an article on how to buy used equipment – though that is a great topic. You might want to review past *Bee Culture* articles on that subject.

Rather I would just like to tell a real-life story that I just experienced that has a happy ending. I hope that some of my experiences will be helpful to you when you get future calls for "free equipment"

The call came

Ironically, I was in the entomology department talking with the department chairman when the call came. He spun around in his desk chair and said, "I've got a guy on the phone who has some bee equipment he is considering giving to the university. Do you want it?" Well, what was I to say? All the questions I listed above flitted through my mind – how much, what kind, why is he giving it, etcetera. I swallowed all those immediate responses and told my boss that I was interested. He told the caller that we could come right out and have a look. I was apprehensive. This could be a complete waste of my boss's time and could leave my beekeeping program in less than a good light.

The equipment

The trip was brief and in short order we were there. Handshakes were had by all and a few reminiscences were called up. As we strolled to the garage where the equipment was stored, the donor told us he had taken the bee course at the university 20-25 years earlier and had immediately become intense about beekeeping. He casually used the names of several of the old professors – most of whom have now passed on. In the middle of our walk down memory lane, we were abruptly at the equipment. I was speechless. After all my years at looking at old bee equipment, this was nothing like what I expected. Rather than a few pieces of dejected equipment, there were literally tons

My brother loading the truck.

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BEEYARD ... Cont. From Pg. 23

of it. I estimate about 2 ½ 3 tons of equipment. Oddly, it was all the old-styled Kelley plastic equipment. It was 99% plastic components with only a very few wooden frames.

The donor's story was that he had enough equipment for 80 complete hives with each having five deeps. He had planned to use deeps for supers. Many years ago, he actually got about 40 hives into production before he experienced a job change that moved him out of the country. He was away for several years before returning home. He reinitiated his bee project, but found some American foulbrood. He struggled with that disease for a while before finally giving up. The remaining equipment was new having never been taken from the box.

He knocked down all the equipment (you can do that with this type of plastic equipment), boiled it and stored it for future use. The few remaining live colonies were destroyed and all the frames were burned. Then he was again called out of the country for another 5-year job stint. Having now retired, he had just returned home a few years ago and had decided that the bee phase of his life had passed. He was "...either going to give it to the university or throw it away." He wanted the equipment out of his garage. For all of this time, I was still practically speechless. What in the world would I do with all this out-dated, but fully functional equipment? "It's yours if you want it." Then both he and my chairman looked at me, waiting for an answer. Though I had no idea how I would get it or where I would store it, I heard myself say that I certainly wanted it. With my heart in my throat, I asked how much time I could have to move it. He responded that he would like to have it gone in a week but a month would not be unacceptable.

The problems and excuses start

Due to contorted administrative reasons into which I won't go, suffice it to say that the donor and the equipment were not in my home state. I would have to arrange a flight back, rent a truck and haul this equipment mass about 150 miles to a storage site I had. Thanksgiving was in the middle of all of this so I had to work around that. I would not be able to get back to the job for more than five weeks. I phoned back and got permission to go that long. I arranged for a truck, storage space, and some human help. All was set.

Literally, on the eve of my departure, I developed a minor problem with my right shoulder that required outpatient surgery. Though he wanted the equipment moved in a week, I had to phone him back and ask for yet another week (seven weeks now). He was gracious and understanding and agreed. I had to change plane tickets and truck reservations but everything was reset. Honestly, I dreaded the trip.

Jason, working on one of the four stacks of equipment.

The caper

The flight went well and we arrived at the location on time. Of course, it was pouring rain and had been raining for several days. I rented a 17′ enclosed truck having either 130,000 or 230,000 miles on it – I couldn't tell which. While backing the truck into position, reverse went out leaving it in a terrible position for a wrecker to get to it. I phoned the truck rental facility and they were no help. I won't even tire you with their suggestions. After a bit, I tried the truck again and it feebly functioned in reverse. I was frantic to get the truck out of the bind in which I had it and in my eagerness, I ran over a water facet and broke it off – not to mention the flowerbed, but the truck was headed out now and I drove it straight back to the rental company. The truck company was skeptical abut my complaint, but they gave me another. I had lost nearly two hours of loading time. The second truck was much nicer. It only had 120,000 miles on it (or 220,000 – I couldn't tell which.) I drove straight back to the site where my help had been standing around for all that time.

The load

Due to our first experience, we decided to load the truck using hand trucks rather than all the reverse maneuvers I tried the first time. It was still raining.

The rain and the dirty equipment required us to get filthy dirty, but we worked steadily. We had the truck loaded in about three hours.

Other equipment

The donation also included a drum truck, pollen traps, and a large wax press.[1] The wax press is a heavy old classic. I didn't really get a chance to look at it closely, but I hope that it will be useful in doing what it was designed to do, melt wax under the pressure of a large metal hand screw. There were also several different types of feeders and innumerable queen excluders. It was a lot of equipment.

The road trip

The 150-mile trip to the new

[1] There was also quite a bit of extracting equipment, but it was inaccessible and I didn't have room for it on the truck. I am to get that sometime next Spring.

The loaded truck at the new storage site.

A bit dirty, but good usable donated equipment. I need lots of frames.

storage facility was uneventful, but not boring in the rambling truck I was driving. The old truck was overloaded, underpowered and slow. I was continually surprised at what other drivers would do just to get around me, but the world is in a hurry. We got to the new location without incident. For this, I was extremely thankful.

Unloading and sorting

Unloading the equipment and sorting it was easier than the loading phase. We unloaded the following morning. It was only then that we fully realized how much equipment and how much weight we had encountered. It rained as we unloaded but by now we were accustomed to it.

The Equipment

Kelley no longer sells most of this equipment. I think that plastic tops and bottoms are still available. The equipment snaps together and is then nailed if desired. It is a bit heavier than wood and requires no painting (though I suspect painting might help slow the degradation of the plastic. The equipment needs to sit dead level as it will flex and bend to the extent that bee space is violated. While tops and bottoms seemed to have worked out well, the inner cover is notorious for warping and allowing bees to glue it to the top bars. It was sold for many years and much of it is still on the used equipment market.

Yes, there was a problem with AFB, but the drastic measures the owner took and the 15-20 years that have passed while the equipment was sitting outside assuaged my fears to an acceptable degree. I have decided to take the chance that the equipment is not contaminated.

Ironically, we have a complete set of this equipment in our beekeeping equipment museum and now we have tons of this equipment.

All in all

When everything is considered, the event went reasonably well. It was hard, dirty work and the rain was persistent, however; the university acquired a significant amount of usable equipment. My sincere thanks to the un-named donor.

Specifically the following decisions had to be made:

1. Did I even want the equipment? (Yes.)
2. When could I pick it up? (Not soon enough.)
3. What size truck would I need and would it be worth the expense? (Unknown but I guessed correctly.)
4. Where would I store the equipment once I got it? (In a barn 150 miles away.)
5. Would the equipment ever be worth the effort? (Still unknown. More later.)

Now if I only had about 4000 frames, 240 pounds of bees and 80 queens, I could put this equipment into operation. BC

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NECTAR MANAGEMENT 101

Walt Wright

STOP SWARMS • MAKE MONEY

If there is anything on which most beekeepers agree, it is that stronger colonies produce more honey. If honey production is your goal, your management system should be directed at generating the maximum strength possible.

Dr. C.R. Farrar demonstrated, some 50 years ago, techniques for building colony population to what he called production strength. His objective was about three deep brood chambers of brood. He accomplished this level of colony strength by shuffling brood chambers on a regular basis. He also noted that his approach reduced the incidence of swarming.

Unfortunately, the theory that congestion causes swarming has induced a beekeeper reservation about early colony strength. We have been led to believe that too strong, too early leads to swarming. And we know that the swarmed parent colony produces little, if any, surplus honey. Most swarm prevention techniques take away potential strength or weaken the colony. Simply, potential population is reduced by removal of brood or disruption of colony development, honey production potential is adversely affected.

My dictionary defines congestion in two ways. Overcrowding is one sense of the word as in the downtown traffic jam. A second meaning is when normal operation is impaired as in nasal congestion. The beehive has both types of congestion associated with the swarming season. The crowding of adult bees is required to staff two viable colonies. The impairing of normal operation is the appearance of nectar accumulation in brood rearing comb. The literature is somewhat obscure on nectar congestion of the brood nest, but we believe it is a necessary element of the colony swarm preparation process. Before generating swarm cells, the colony reduces the size of the brood nest by storing nectar at the top as brood emerges. There are several advantages for both the parent colony and impending swarm to generate a reservoir of open-cell feed prior to committing to swarm.

The intent of swarm prevention by nectar management is to prevent nectar clogging of the brood nest. We won't bore you with the details of why we believe that nectar congestion is a preliminary requirement for swarming. But preventing its starting is more reliable and less labor intensive than periodic reversal to compensate for it. We set out to stop it before it starts. By adding empty cells for nectar storage immediately above the brood nest, nectar congestion is avoided. The colony prefers to store nectar overhead if empty cells are encountered within the cluster prior to full brood nest expansion. The colony that doesn't reduce the brood nest to a level that can be managed by half the population, (what's left after swarm departure), does not start swarm cells.

The basic objectives of nectar management are quite simple. They are listed and discussed below:

a. Induce the colony to store nectar overhead very early in the build-up.
b. Maintain empty comb at the top for continued nectar storage throughout the entire build-up.
c. Monitor for continued brood nest expansion into the accumulated overhead nectar up through the swarming season.

The results of meeting these objectives are dramatic. The colony that is expanding the brood nest and storing nectar overhead through the swarming season does not consider swarming. The colony goal for that period is changed from generating a swarm to filling the ever-increasing empty space. In my part of Tennessee the typical colony arrives at the start of the main flow with the equivalent of three deep brood chambers of brood and two shallow supers of nectar *above* the brood nest. The huge population is poised to exploit the main flow.

Variations in the overwintered hive configuration, cluster location in the stack, and area seasonal forage availability require some adaptation of these recommendations. The primary tool for inducing overhead nectar storage where solid capped honey exists is the thinning of that honey with empty brood comb. This serves more than one purpose. Not only does it encourage storing nectar above the brood nest, but it also improves the colony awareness of additional empty comb above the solid capped honey. Often the colony will ignore empty comb added above the overhead solid capped honey barrier. They seem to perceive the top of the capped honey as the top of the residence cavity. But if they store nectar through the honey barrier on empty comb inserted between frames of honey, it improves their perception of the available space above. When the colony consensus is aware that empty space is available above, they delay swarm ambition and continue to increase the size of the brood nest. If they are successful in filling the space with nectar, the colony can revert to swarm ambition. The deliberate maintenance of empty comb *above* the cluster top prevents the colony from filling the upper reaches throughout the swarming season. We recommend maintaining two supers of empty drawn comb of brood-rearing cell depth above the cluster through the entire build up period. Note that in the sketches of

the manipulations, at least the equivalent of two empty supers is the starting point. Honey storage supers can be used above the desired brood level, but deeper cells will accumulate more build-up nectar. They will fill empty cells within the cluster boundaries with nectar on a priority basis.

A third advantage of thinning the overhead solid honey is faster growth rate of the brood nest. If the colony is increasing brood nest size into capped honey, they consume that honey as feed and free up cells for additional brood.

When the overwintered colony has a box of empty brood comb in the stack, thinning honey may not be required. In the case of a colony wintered in a double deep, where the cluster is in the top chamber and the lower deep is empty, just reverse *and* add empty brood comb at the top.

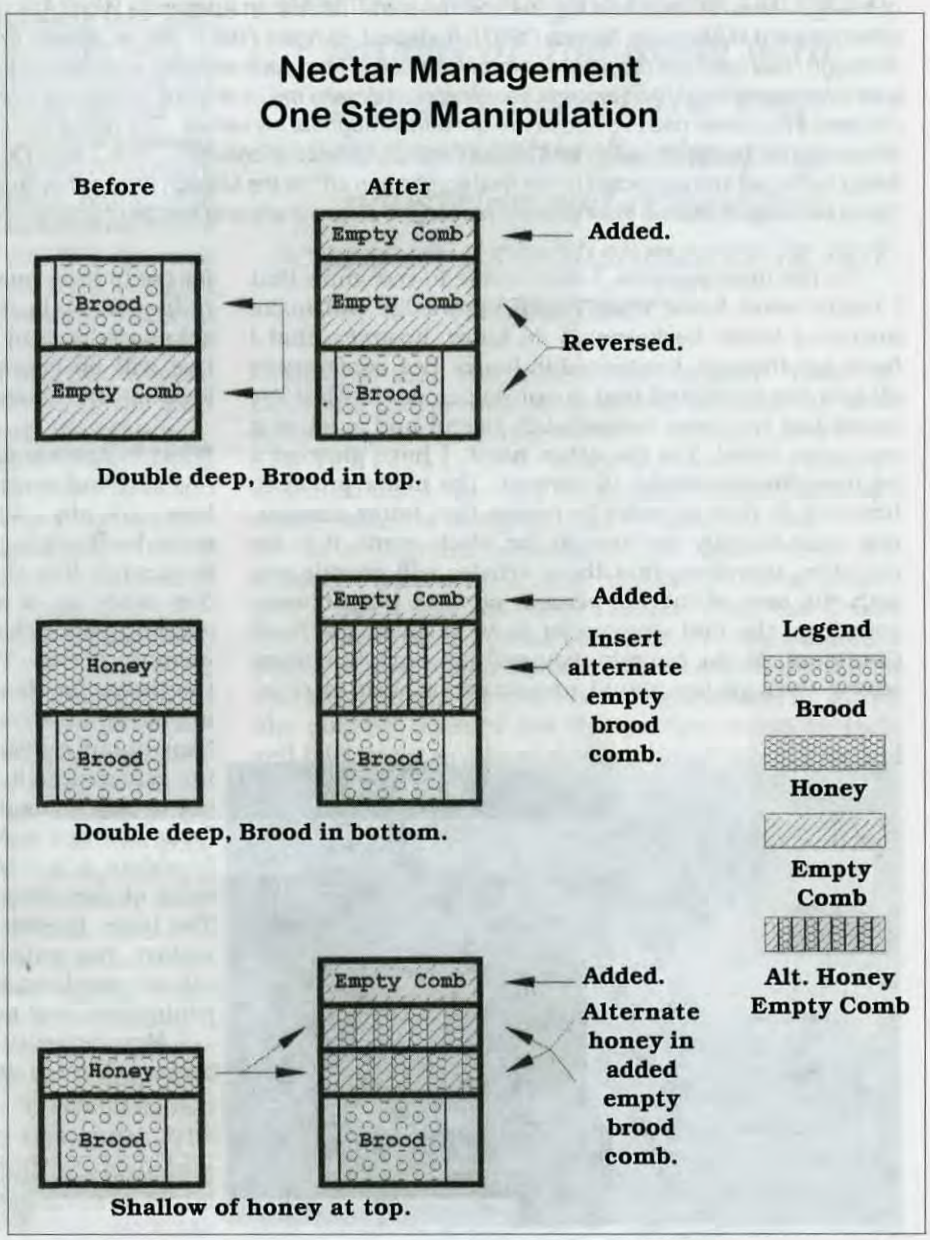
Providing nectar storage space very early in the season is a key ingredient to success of this system. In my part of Tennessee the swarm issue season is early April and the prime swarm preparation period is late March. To precede the bee's schedule, we often perform the manipulation in late February on stronger colonies. The appearance of new, white wax at the beginning of the main flow is the timing reference for the bees' schedule at your location. The manipulation should be performed *two full months* before white wax. Our white wax date is typically May 1.

Some examples of the one-step manipulation are provided in the sketch. All three examples induce early overhead nectar storage. If your overwintered colony differs from the examples provided, you can apply the basic objectives to your specific hive configuration.

To monitor for continued broodnest expansion through the swarming season, the beekeeper only has to penetrate the hive to the top of the brood nest. The colony expands the brood nest in small discrete steps at the top. Lift off accumulated nectar down to the nest expansion dome. If you lift out a frame with the arc of the expansion dome defined, the expansion band is obvious. Capped brood is below the expansion band and full cells of nectar above. The expansion band can range through reduced nectar, dry, eggs laid, or open larval brood, depending on the stage when inspected. At any of the stages of expansion, the band is obvious at a glance. We call this "drying cells for expansion." The expansion band at the top of the brood nest is evidence that the colony has no intention to swarm. Drying cells above the brood is exactly the opposite of nectar congestion in the top of the brood nest.

Dr. Farrar achieved swarm prevention by his labor-intensive quest for greater hive populations. Nectar management achieves greater populations with less effort in the quest for swarm prevention. It would seem that population of the colony and swarm prevention are not necessarily at cross purposes. We've had 50 years to unlearn the concept that bee crowding induces swarming. We believe both types of congestion are effects of the colony swarm game plan, and not the "cause." But most beekeepers persist in weakening the colony in the interest of swarm prevention. You can continue to "shoot yourself in the foot" regarding honey production, or try building greater populations by applying an effective swarm prevention technique. BC

Walt Wright is a sideline beekeeper who has been studying swarm management and honey production for several years. He lives in Elkton, TN.



Objective: *Induce nectar storage above the brood nest.* ***Timing:*** *Prior to the swarm season.* ***Follow-up:*** *Maintain empty brood comb at the top. Do not let colony fill comb to the top.*

Apimondia In Africa

Malcolm T Sanford

"Lesson learned. Keeping the Cape Bee OUT of the U.S. is the smartest thing we can do."

The editor's charge: "Should you accept this assignment Dr. Sanford, I would like your articles from Apimonda in Africa to show readers how to become a better beekeeper." The theme song from "Mission Impossible" began playing in my brain <http://www.soundingrocket.com/mi/index.shtml#music>. Then I remembered the other admonition of the television series, "Your mission, should you decide to accept it, is to..... This recording will self-destruct in five seconds" <http://www.soundingrocket.com/mi/taped_message.html>. Like the erstwhile Mr. Jim Phelps (the hero of the original series for the uninitiated), I couldn't pass up the challenge. I knew it would be a big one from the start. The African Apimondia World Apiculture Congress would be my fifth. Others I'd attended were in Acapulco, Mexico (1981), Budapest, Hungary (1983), Rio de Janeiro, Brazil (1989) and Vancouver, Canada (1999). Although I had been the recipient of a lot of information from each and they enriched my knowledge of the craft in many ways, I wasn't sure what specifically I had brought back that would make me, or anyone asking me questions, a better beekeeper. This concern is not new; it has been one I've had to wrestle with throughout my career. This time it followed me all the way to the Republic of South Africa and will be continuously with me as I write this series of columns. Thus, I found myself awakened in a sweat one night afraid being found out and subjected to the final admonition on the the Mission Impossible tape: "As always, should you or any of your IM Force be caught or killed, the secretary (editor) will disavow any knowledge of your actions."

In the final analysis, I have come to recognize that I really never know what bit of knowledge will make anyone a better beekeeper. I do know, however, that I have sat through innumerable honey bee conferences all over the world and that about 90 percent of what I've heard has not been immediately useful and a lot of it was pure drivel. On the other hand, I have gleaned a lot from the remaining 10 percent. The major problem, however, is that in order to realize that latter amount, one must literally sit through the whole event. It is my objective, therefore, that these articles will provide you with the best of the ten-percent of what I came away with from the first Apimondia to be held on the Dark Continent. In the bargain, you will not have to endure sitting through the actual presentations. But in order for me to have met my objective, you will have to be the judge. So it is my fervent hope that some form of acknowledgement that I have accomplished my objective will be communicated to the secretary (editor), keeping the Mission Impossible demons at bay.

Outside the International Congress Centre in Durban, KwaZulu-Natal province.

What is Apimondia?

Part and parcel of the conundrum I expressed above has to do with Apimondia itself <http://www.beekeeping.com/apimondia/index_us.htm>. Somewhat like the United Nations, it is a confederation made up of member beekeeping associations. Every two years the Association holds a congress in a member nation. The goals of each vary, but generally the theme for those attending is to get an understanding of the host country's beekeeping challenges and to hear about current honey bee research and beekeeping experiences in that country, as well as from around the world. Apimondia has traditionally had a European focus and met more times in that part of the world. The President and General Secretary are European as are most of the chairpersons of the standing committees. The latter number seven and include apitherapy, bee biology, bee pathology, beekeeping economy, beekeeping for rural development, beekeeping technology and equipment, and pollination and bee flora.

Member countries in Apimondia number 51 at present. Most dues are paid by governments of the mem-

ber countries, though there may be exceptions I am not aware of. Like its relationship with the United Nations, where the United States has been chronically behind in its dues payment and often not supportive of key issues, this country has a tenuous connection with Apimondia. At the moment, the U.S. being one of the largest and richest nations of the world with arguably one of the most recognizable beekeeping industries and honey bee research establishments is not a member. In the past, the Eastern Apicultural Society and the American Beekeeping Federation shared in paying Apimondia dues, but no longer. Many in these organizations have not been convinced that membership has contributed to the success of their members. Nevertheless, Apimondia has unfailingly welcomed and encouraged attendance of both U.S. researchers and beekeepers at its meetings. Tellingly, Canada, which hosted the last event dropped its membership after the Vancouver congress, which most agreed was the most comprehensive and best organized ever held.

South African Beekeeping

As customary, South African beekeeping took center stage at the International Congress Centre (ICC) in Durban, KZN (KwaZulu-Natal) province October 28 through November, 1 2001. According to Adriaan Du Toit, writing in the *South African Bee Journal's* special Apimondia issue (Vol. 71, No. 3, Septmber 2001), there are more than 3,000 beekeepers in South Africa, with only a third belonging to organized associations. Some 75,000 colonies are managed in the country. Colonies produce on the average around 23 Kgs (2.2 lbs = 1Kg) in the year 2000. The total honey crop approaches 1,400,000 tons. South Africa exports from forty to sixty thousand pounds of honey each year, although this has dropped dramatically in the last two years (6,000 in the year 2,000!). The country traditionally imports from five hundred to seven hundred thousand pounds of honey; this also dropped significantly in the year 2000 to 2,800 pounds. Domestic consumption is stable at 1,700 to 2,000 tons. South African beekeeping generates some 10,000 direct jobs each year and has an indirect multiplier of 3.2. It is a significant industry and the Apimondia event was the largest international agricultural exposition in the country this year.

As in the Americas, Europeans have been the driving force behind modern apiculture in South Africa. Most of the rest of continent has an aboriginal bee hunting tradition. Unlike the Americas, however, the Europeans rely on the honey bees that are native to the Dark Continent and have generally left the European honey bees in their native land. The first apicultural census in the country in 1911 revealed a colony average honey yield just a little over six pounds. Yield languished at just over twice that amount until the 1960s ended. Since then, yield per colony has tripled, correlating to 1) results of the first beekeeping congress held in 1968, 2) beekeepers traveling outside the country to learn new management techniques (especially Apimondia in Australia in 1977) and 3) establishment of the Ministry Apicultural Advisory Committee. The 1970s were the "golden years" of South African beekeeping with averages of over 66 pounds per colony.

A dramatic shift in modern South African beekeeping came in the 1980s, when it changed focus from honey production to commercial pollination. More than 40 crops are dependent on managed pollination. Hybrid sunflower seed alone uses some 20,000 colonies, while 18,000 are employed in apple and pear pollination in the Cape of Good Hope region. Honey bee pollination contributes to about 2.5 billion SA Rand (about $250,000) to the economy, whereas bee products are only responsible for $61,000 of GDP. Beyond the first world incarnation, South Africa also has a third-world apicultural industry allied to that found elsewhere in the subsahara, which has a great deal of potential.

Two huge beekeeping challenges have appeared in South Africa in the 1990s. The first was recognition of the so-called cape bee problem," and right on the heels the introduction of the *Varroa* mite (*Varroa destructor*). Though not on the Apimondia agenda, those attending the conference could not ignore the significant human

"At the moment, the U.S., being one of the largest and richest nations of the world with arguably one of the most recognizable beekeeping industries and honey bee research establishments is not a member."

challenges that also exist in the country. These include the transformation of society through the abolishment of Apartheid <http://www-cs-students.stanford.edu/~cale/cs201/apartheid.hist.html> and the effect of the HIV/AIDs epidemic, which is ravaging most of the continent.

As a poignant reminder of the latter, there is a memorial park with a large metalic red bow located just a block from the International Congress Centre (ICC) where the congress was held. A commemorative plaque states: "Gugu Dlamini was a community worker who strived tirelessly to educate people about HIV/AIDS. She publicly revealed her HIV positive states on radio and television, as part of a campaign of acceptance and disclosure. Her statement was resented and she was brutally assaulted by a mob, resulting in her death on 14 December 1998. This park was named on World Aids Day, 1 December 2000 to honour Gugu's courage in breaking the silence of her affliction." The controversy concerning AIDs continues to this date with words by the current President, which many claim reveal his denial about the current situation in the country.

The ICC is a thoroughly modern facility close to the center of the city of Durban. The registration desk featured a public video display welcoming participants and showing a schedule of events. It is the same venue that saw the collapse of the International Human Rights Convention a months earlier.

A continuing reminder of the legacy of apartheid that produced a large "have" and "have-not" society

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APIMONDIA ... Cont. From Pg. 29

cheek by jowl were abundant reports of criminal activity in the newspaper and also by some of those attending the Apimondia meeting. One person was reported to be robbed at knife point; another the victim of a beach ripoff. Most hotel patrons were cautioned not to venture out alone at night.

Change is seen in South Africa in many other ways. This was perhaps nowhere more apparent than in the entertainment the organizers arranged. Called "African Frenzy," it began with a video production showing the much varied geography and human and wildlife population of the country. At the conclusion, a group of black dancers burst through the paper screen in traditional garb and began a frenetic Zulu dance. To the surprise of the audience, one of the warriors was obviously a bear-breasted female. It was confirmed to me later that this was just one expression of female liberation being explored in the country, as women take on more roles traditionally thought of as male. The set and dances were also divided into two worlds; traditional Zulu huts in the bush contrasted with typical plank housing of township or urban dwellers. The dances also showed both sides, ranging from Zulu impe or warrior dances to a rhythmic drumming of hands on rubber boots.

The Cape Bee Problem

The Cape bee problem was discussed under the Apimondia Bee Biology Standing Commission. Traditionally, two races of honey bees have co-existed in South Africa, a northern one (*Apis mellifera scutellata*) and a southern one (*Apis mellifera capensis*), separated by a fairly wide geographic boundary consisting of large tracts of arid climate, extensions of the Khalahari and Karoo deserts. Both subspecies are good pollinators and honey producers in their own regions. *Capensis*, however, has a trait scientists call thelytoky. This means that *capensis* worker bees can lay eggs that also develop into workers, in effect cloning themselves. These so-called pseudoqueens may be an adaptation to the winds that blow near the Cape of Good Hope, which severely affect the mating ability of virgin cape bee queens. By contrast, eggs of laying workers in honey bees found everywhere else in the world more often than not result in drones, known as arrhenotoky. It is important to realize that a small amount of thelytoky is probably present in most races or ecotypes of honey bees.

An inside look at the International Congress Centre.

In the early 1990s, *capensis* bees were moved as part of migratory beekeeping into *scutellata* areas. The result was that worker cape bees began to enter *scutellata* colonies. This precipitated in quick order, queen supercedure by *scutellata* colonies, followed by a decline in population and colony demise. This phenomena is called "social parasitism," and has been responsible for tens of thousands of colony losses in *scutellata* country. The social organization of *scutellata* colonies appears to be pheromonally disrupted by *capensis* workers; they simply self-destruct. There is no immediate answer to the problem it seems, although research reported at Apimondia is continuing both at universities and through South Africa's Plant Protection Research Institute <http://www arc.agric.za/institutes/ppri/pprimain.htm>.

The *capensis* problem brings identification of honey bees to the fore. H.E. Hepburn and S.E. Radloff of the Apiculture Group, Rhodes University, Grahamstown, South Africa reported that standard taxonomic convention in honey bee classification, the trinomial *Apis mellifera* (*capensis*, *scutellata*, etc.) cannot adequately accommodate the groups they have found in the country. "Incongruities between morphometric, biological and DNA groups preclude clearly defined boundaries for southern African bees. A compromise of all characters suggests the following groups: (1) thelytokous *A.m.capensis*; (2) thelytokous hybrids; (3) thelytokous *A.m.scutellata*; (4) arrhenotokous *A.m.scutellata*; and 5) arrhentokous mountain bees. "The only way that '*A.m.capensis*' can be meaningful is to precisely qualify its point of origin in the Cape Provinces." The use of the term "hybrid" is unfortunate, according to Dr. Hepburn, who said in his presentation that it was more informative to call such bees "intermediate" instead.

At first blush, the South Africa situation may not hold much meaning for honey bees elsewhere, but the identification issue can be applied to the present "Africanized" bee situation in the Americas. The so-called "hybrid zone" in Argentina, which includes both European or African subspecies or mixtures may be the same kind of phenomenon as found between *capensis* and *scutellata*. With reference to the "Africanized" bee in the Americas, Dr. Hepburn said in his judgement they were simply nasty, little bees from Pretoria in most of their tropical range, when queried for his opinion at the meeting. How the Africanized honey bee will play out in temperate North America is still in question and is one of the quintessential beekeeping conundrums that must be faced in the future. It is of more than passing interest that Africanized honey bees in Arizona have in fact been determined to have a higher degree of thelytoky than their European sisters <Di Grandi Hoffman-Erickson, Bee Science >. This suggests a biological reason for requeening failures sometimes reported by beekeepers trying to introduce European stock into tropical America.

The behavioral basis of social parasitism was discussed by Peter Neumann of Martin-Luther-Universität Halle-Wittenberg, Institut für Zoologie. Beyond thelytoky, the social parasitism evoked by *capensis*

pseudoqueens requres a high ovarial and pheromonal development, a long reproductive period (3-5 months) and the capacity to lay up to 200 eggs per day. The development of pseudoqueens is particularly well expressed in colonies of other honey bee subspecies (i.e. *scutellata*), so that they are able to develop retinue behavior in host workers and can suppress the rearing of replacement queens. This social parasitism is expressed as so-called "dwindling colony" syndrome. The resulting "*capensis*" calamity for South African beekeepers suggests that these invasive parasitic workers are highly virulent.

A. m. capensis workers require several behavioral traits related to both transmission and virulence according to Dr. Neumann.. Transmission means that these pseudoqueens must actively move to get into nearby colonies, perhaps by drifting. However, they also are able to find colonies up to a kilometer (.6 miles) away. Pseudoqueens must somehow avoid guard bees. In some cases, they may join swarms. Long range transmission is important as the wild *A. m. scutellata* host population appears to be highly infested. The author says the relative proportions of the different pathways actually leading to new infestations remains unclear.

Virulence is also an important part of the equation Dr. Neumann says. Pseudoqueens appear to avoid the queen in colonies they invade and establish dominance by getting workers to preferentially feed them while developing their pheromonal communication abilities. Whether workers show specific appeasement tactics or simply rely on a fast-track pheromonal development is not known. In addition, eggs laid by pseudoqueens must also avoid being "policed," that is eaten, by other workers, the fate of most worker-laid eggs in colonies with a high degree of arrhenotoky. To do this, they apparently lay eggs in out-of-the-way locations and also like a regular queen, one to a cell, instead of many to a cell as do most laying workers.

Other research reported in South Africa shows that larvae resulting from capensis eggs are also preferentially fed by host scutellata workers. Eventually, high numbers of *A. m. capensis* workers are reared by *A. m. scutellata* host colonies during later stages of infestation. This offspring can infest new host colonies via the individual or the colonial pathway, thereby completing the social parasitic life cycle of laying *A. m. capensis* workers. Although some of the behavioral traits of laying *A. m. capensis* workers have been described in detail, the researchers say that the basic frame work for the social parasitic life cycle appears to be still poorly understood.

Annelize Lubbe of Agricultural Research Council, Plant Protection Research Institute reported on efforts to identify pseudoqueens. Color, spermatheca size, ovarial development all point to black workers as *capensis* with a 98 percent probability. Unfortunately no single factor can be used to make the determination. All the black bees tested which had a large spermatheca and high ovariole counts, were shown to be genetically identical, confirming that when workers of the *capensis* subspecies reproduce parthenogenetically for several generations, autoselection occurs directed towards a homozygous genome – a blacker bee with a bigger spermatheca. Other studies reported at the meeting confirm this size differential when looking at other characteristics such as wing measurements. This state of affairs is actually a hopeful sign, however, according to P. Kruger who said that since the *capensis* pseudoclone does not mix its genes readily with *scutellata*, it is still possible to find populations of the latter in areas remote from commercial beekeeping.

A take away message from those studying the *capensis* problem is that it arose from purposeful movement of colonies through migratory beekeeping and this practice perpetuates it. One way to control the phenomenon, therefore, is simply to stop transhumance in honey bees, a virtual impossibility in the modern agricultural setting. Given this situation, questions remain concerning how the *capensis* situation will affect beekeeping in other parts of Africa. By extension, the rest of the world may also be at risk as well. *Theoretically, it would take only one capensis laying worker introduced into any local honey bee population found on this globe to change it forever.* BC

Dr. Sanford is former Extension Specialist is Apiculture, University of Florida and a regular contributor to these pages. He published the APIS *Newsletter:* ***http://apis.ifas.ufl.edu***

THE ART & SCIENCE OF SPLITTING HIVES

Get ready to get more bees this year.

James E. Tew

Everything is variable

Generally, if you have bees, you can make more bees; however, there are many variables. Your beekeeping expertise, the number and strength of your hive(s) that you plan to split, the numbers of splits you want to make, the season of the year, and the equipment you have available. All are factors that are important when making splits.

Colony strength

Don't waste your time splitting anything but strong colonies. So, what is a strong colony? Generally, a strong colony is one full, heavy deep in early Spring and two full, heavy deeps in Summer and Fall. Three full deeps is a gift.

Queens for splits

Unless you are advanced in beekeeping procedures, plan to buy queens for your splits. Producing your own queens is another topic for another article. It's common knowledge that a colony can produce a queen from eggs or very young larvae, but it will take weeks for a new queen to begin to produce young bees. During those ensuing weeks, the colony's strength will decline noticeably. If you are serious about the split's future, buy a queen for it. If you are playing at beekeeping for biological enjoyment, letting a colony produce it's own queen is okay but your failure rate will be higher.

Split characteristics

The larger the split, the better the chances of its survival, but the effects on the parent colony are more drastic. Generally, the larger the split is, that is, the more you 'take' from the parent colony, the greater the likelihood that the parent colony won't make a honey crop.

You can make smaller splits, but they will require more care and luck to develop into overwinterable colonies. And, splitting a hive will help prevent swarming.

Hive equipment

Ideally, a small split (say a 3-frame split) will fare better in a smaller hive (a nucleus box), but not having that, simply use a common deep hive body. Partitions, called follower boards, are solid boards having the outline of a frame. They are used to partition a full deep in sections giving a small colony the sense of being in a smaller hive. You may very well have to build these yourself from plywood.

Feeding splits

Be prepared to feed splits sugar syrup liberally. These small colonies will need help even if natural nectar and pollen sources are available. Note that some splits will take the syrup more freely than others. When to stop feeding? When you are sick of it or when the colony appears to be functional and appears to have a good chance of surviving the upcoming Winter (probably a full, heavy deep).

Feeding pollen substitute is a good idea, but is not as necessary as feeding sugar.

Control diseases and pests

Assiduously control all common diseases and pests (mites). These small colonies don't have the reserves of a full-sized colony and will proportionally suffer more than a larger colony. Controlling bee diseases and pests is important in all beekeeping operations, but is particularly important in smaller colonies.

Estimate is all you can do

There is no surefire way to divide bees, brood, and stores. All you can do is give it your best guess. Invariably, some components will get more or less than their share. Equalize the colonies a day or so later or alternatively equalize colonies as soon as the new queens are laying and the colony is stabilized. Don't tinker with a new split having a recently released queen.

Moving bees and brood

Adult Bees Nurse bees will readily cling to the comb as you move it hither and yon while older bees will readily fly. The scene at the hive split will be a confusing area of scattered frames, open hives, and flying bees. Bear in mind that most of the flying bees will return to the parent location. You can exploit that behavior by placing a split at the previous location of the parent colony thereby accumulating all the flying bees. Again, you can only guess as to the future population. If your estimations are off, you can make adjustments

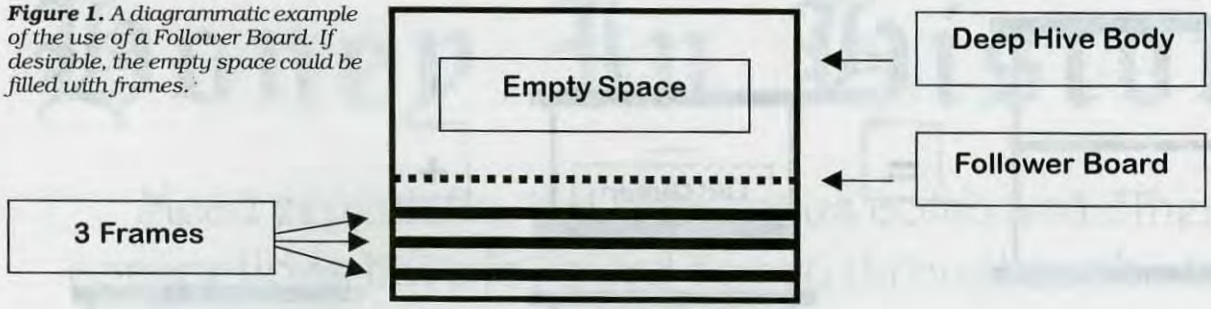

Figure 1. *A diagrammatic example of the use of a Follower Board. If desirable, the empty space could be filled with frames.*

within the next few days by adding adult bees or brood or by changing the location of various units with other over-populated units. For this to work best, the new queens should still be caged. My point is that you can make later population adjustments.

Brood Moving brood is obvious. Make your best guess and move brood as needed. So much as possible, don't give the adult population too much of either open or sealed brood. Open brood is more expensive for an adult population to nurture.

The season of the year

The season of the year has a pronounced effect on the type and size of a split to make. I have forced all types of splits to fit into the following three categories.

Seasons of the Year for Making Splits

1. *It is Springtime and your major nectar flow has not started.*
2. *It is Summer or early Fall.*
3. *You are in a warm climate and it is late Fall or early Winter.*

It's the spring season

I am assuming that Spring is advanced enough that you can buy queens or queen cells and that the possibility of late-season frosts have pretty much passed.

Strong Colony in Two Deeps If the parent colony is strong and is in two deeps, by far the easiest divide to make is to simply half the colony and give the queenless half a queen. Expect little to no surplus honey this season, but they may surprise you.

If you wish, you could take two 5-frame splits from the strong 2-story colony leaving the bottom deep as the parent and splitting the top deep into halves.

You may very well have to mix and match frames and bees from the lower deep and the upper deep to give the splits the bees, food stores and brood they need. Essentially, the lower deep gets half the bees, brood and stores while the each of the two 5-frame splits get one quarter of the stores, brood, and bees. To avoid drifting, the splits will fare better if you move them a mile or so away from the parent colony and don't position the splits near each other.

Strong Colony in a Single Deep Your common options are to split the single deep in half or thirds. Obviously, half splits have a greater chance of survival.

Strong Colony with three deeps

The sky is the limit. You can make any number or combination of splits in any of the ways discussed above. A strong 3-deep colony is a luxury.

Variations on Spring splits

One 3-frame split You could make one 3-frame split from the parent colony, either a single deep or a double deep, and replace the empty space in the parent colony with new frames. The parent colony will have a greater likelihood of producing a honey crop.

Three 3-frame splits As discussed above, you could make three 3-frame splits and temporarily discard one frame. Again, equally proportion the bees, brood and stores amongst the parent colony (now a single deep) and the three splits. Don't expect a honey crop from any of these units.

It's Summer or early Fall

Broadly speaking, beekeepers having limited experience should not make anything less than a full-deep split in Summer or early Fall. The upcoming Winter will be the primary challenge to the new unit. While it is true that a 5-frame nuc could survive the average Winter, the failure rate is much higher and the demands on the beekeeper are much greater. For those beekeepers who have more experience, there are procedures for placing splits above screened inner covers on the parent colony in order for the split to profit from the heat of the larger lower unit, this procedure re-

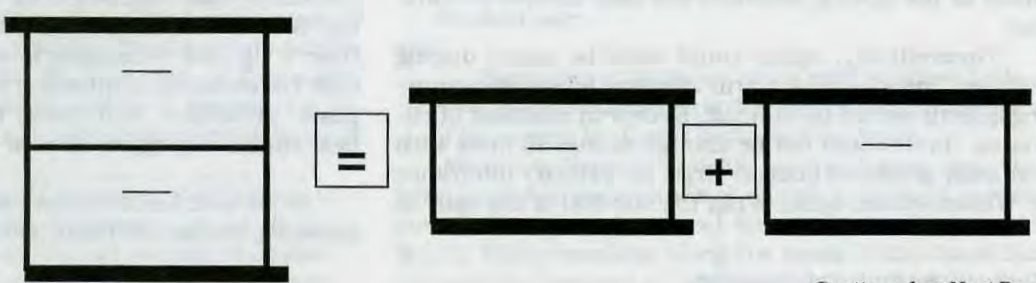

Figure 2. *Equally splitting a 2-deep colony in half.*

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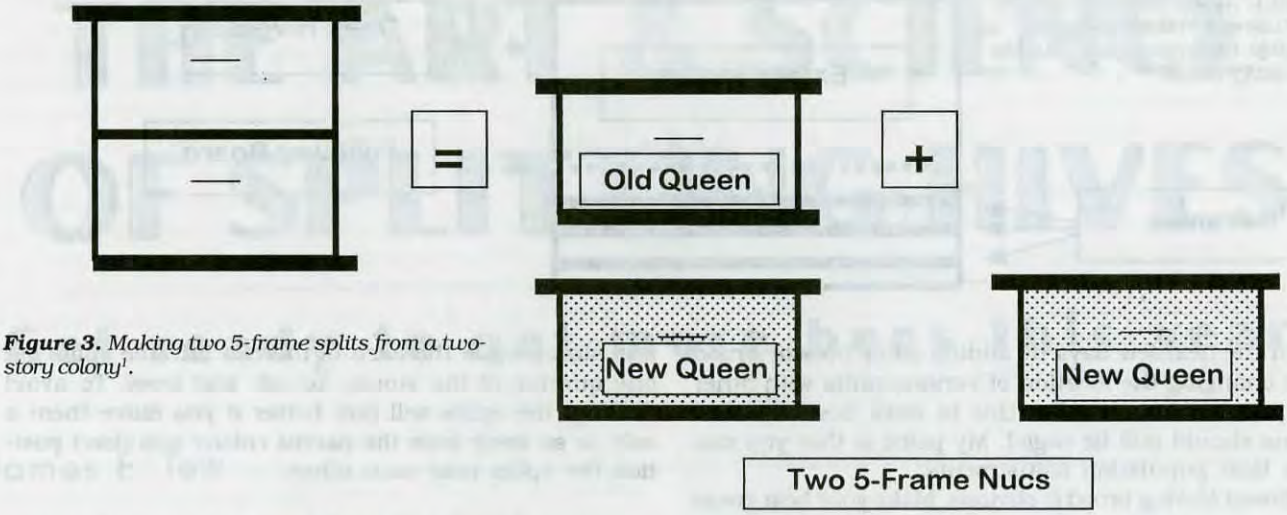
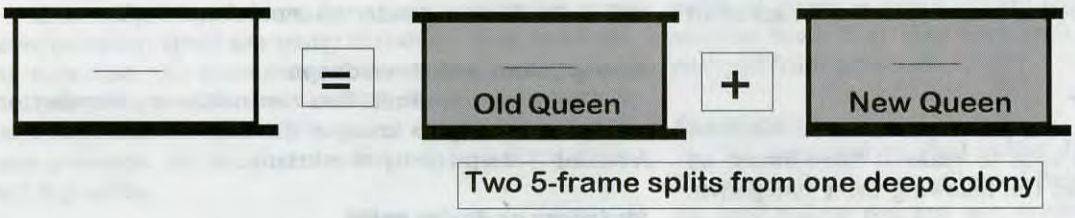


Figure 3. *Making two 5-frame splits from a two-story colony[1].*



Alternatively, make three 3-frame splits

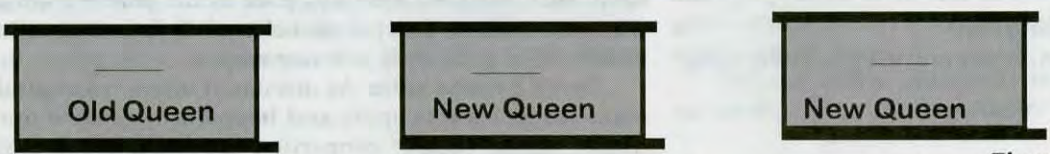


Figure 4. *Making either two 5-frame splits or three 3-frame splits from a strong single deep colony. Either way, the parent colony is essentially obliterated.*

quires building special screened inner covers and still has a high probability of failure.

The split diagram for a Summer/early Fall divide would be the same as the one presented in Figure 2.

Your bees are in a warm climate – year round

If your bees live in a warm climate, they have a distinct advantage over colonies in colder climates. If it rarely gets below freezing, you can essentially make splits anytime of the year that you want. However, splits made in the Spring still have the best chance of thriving.

Theoretically, splits could even be made during "Winter" months in a warm climate; however, acquiring queens would be difficult. Except in warmest of climates, there would not be enough drones to mate with naturally produced queens. Ergo, the primary hindrance to Winter season splits is not the survival of the split so much as the acquisition of queens.

In exceptionally warm climates, even two frame splits could be made, but as with small splits everywhere, they would require frequent feeding and the occasional addition of bees and brood as needed.

If you've made it this far

If you have made it this far in this article, you are a tough beekeeper. While making splits appears to be complicated, it is remarkably easy procedure – but a procedure that requires a lot of guessing and predicting. Sometimes you lose and the split does not prosper. Give it up and recombine it with another colony. You didn't necessarily do anything wrong. Weather, diseases, pests, pesticides, and queen failure can torpedo your best efforts. Try again as your conditions allow. BC

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[1]Shading indicates the use of a nucleus hive box.

Honey In History

Mead especially, but poisonous comb and other concoctions have followed honey throughout history.

Dan McFeeley

Little known to the average wine connoisseur, mead is a golden hued winelike beverage made from honey since earliest antiquity. For the initiate mead lover and mead maker, a first encounter with humanity's oldest fermented beverage can indeed take on a euphoria that, at first blush, may be akin to madness. But such madness, alas, passes quickly as the relationship moves on to everyday matters such as stuck or balky fermentations, continuous adjustments of pH and acid, debates over whether to boil or pasteurize, and so on. But the ongoing beauty in mead – especially as age mellows the warring factions of residual sugar and acid, tannic astringency and honey's sweetness – lies in its ability to renew its madness through repeated bouts. Mead in its rough and natural state has always existed in one form or another, and hence was there at the dawn of humankind, when our unnamed ancestors, perhaps, first came upon a chance finding of long abandoned honey combs in a rain filled tree hollow. Surely those neolithic peoples who were responsible for the joint crafting of the stately upright Dolmens of the open air and the cthonic carvings of earth-mother Venus could only have been inspired by mead.

Mead's madness has been known throughout its recorded history as a subtle trap for the unwary, coming on them like a thief in the night. Many a couple has had a hopeful evening ruined after consuming a bottle of mead whose alcohol content was masked by the sweetness of its honey. In Poland, where mead seems to have been as popular in its day as it was in the British Isles, old country mead makers warned that mead made one drunk from the waist downwards, surprising those who attempted to rise from their seat too quickly. During Anglo-Saxon times the respect held for the beverage of kings and nobles was also counterbalanced by a respect for its inebriating madness. An old Anglo-Saxon riddle puts it this way:

.. I am a binder and a scourger; straightway I cast a young to the earth, sometimes an old churl. Straightway he who grapples with me and struggles against my strength discovers that he needs seek the earth with his back, if he forsakes not his folly ere that. Deprived of strength, doughty in speech, robbed of might, he has no rule over his mind, feet, nor hands. Ask what is my name, who thus on the earth bind youths, rash after blows.

The unconquerable grappler, of course, is mead, a relentless foe who binds and scourges the rash youth and old churl singled out in the riddle as examples of poor constraint of alcoholic impulse. Anglo-Saxons who frequented the meadhalls of their day were familiar, no doubt, with the spectacle of the poor fellow who could no longer command mind, feet, and hands to back up his doughty but hasty words to an angered audience. Riddle 55 of the Anglo-Saxon Exeter Book also expresses this theme as it metaphorically parallels the wood used for the mead vessels with the wood of the gallows-tree. Four woods (holly, oak, yew, and maple) associated with mead production, storage, and dispersal are raised to the heights of the Heavenly Kingdom in their rich decoration and embossment with gold, but dropped to the depths of Hades as the wood of the "wolf's-head gallow tree" awaited those who had seriously erred in their mead folly. Other warnings compared the indiscriminate mead drinker with the madness of a suicide, such as these warnings from the Anglo-Saxon poem, The Fortunes of Men:

> "Mead's madness has been known throughout its recorded history as a subtle trap for the unwary, coming on them like a thief in the night."

through the hand of the cup bearer become drunk; then he finds that he cannot check his temper with his mouth, but has to pitifully give up his life, must suffer great misfortune, deprived of joys, and men call him a suicide and caution against the drink of the drunken man.

and

Some angry ale-tipper, some man satiated with wine on the mead-bench is deprived of life by the edge of the sword; his words before are too hasty.

Mead's wellspring and life source, honey, has also been known to be a source of danger to unwary partakers, with its first historical footnote occurring in 401 B.C.E. While traveling along the coast of the Black Sea through the territory of Colchis, within a two day march

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of Trebizond, General Xenophon and his Greek mercenaries stopped briefly to raid the numerous honey nests they found in the area. As though a spell had been cast over the army, they were all overcome with fits of vomiting, became delirious, acted like intoxicated madmen, and collapsed as a body. After a few days they arose from their stupor but still felt weak and dizzy as though, in Xenophon's words, they were recovering from a strong potion. Much chastened after their encounter with the honey from the Black Sea coast which Pliny the Elder would later call meli maenomenon ("mad" or "raving" honey), they left to continue westward toward less hostile territory.

The area of the Black Sea where Xenophon came so close to military disaster was, unbeknownst to him, famed in ancient times for its resources of poisonous plants and minerals. A local species of flowering rhododendron, now classified under the name *Rhododendron Ponticum*, was probably the toxic source for the honey that had felled his troops. Others were not so lucky. Three Roman squadrons headed by Pompei fell for a ruse of toxic honeycombs placed by the Heptakometes along their route and were massacred. So also did Russian enemies of Olga of Kieve fare in 946 A.D. Russians later wiped out 10,000 Tatar soldiers who had stopped to partake of a number of casks of mead they found in an abandoned camp – again, in the same region. The Black Sea coastal area was known in ancient times for legendary figures such as Medea of Colchis and King Mithridates VI of Pontus – skillful men with the arts of their times, including the subtleties of alchemy and its uses of poison. It was also home to the god Dionysus, who with his bee-prophetesses (melissae) known as the Maenads, presided over the madness of religious ecstatic experience.

Certainly the people of the Classical era were aware of the dangers of toxic honey. The Roman naturalist Pliny the Elder and the Greek physician and pharmacologist Doscorides both write of the toxic and poisonous qualities of the honey of the Pontic area. Honey poisonings were scoffed at as the centuries passed and the writings of the classical authors were no longer taken as authoritative. Pliny was correct in noting that certain types of honey could be toxic and dangerous, however, also interspersed through his Natural History was material that was obviously anecdotal and suspect. If Aristotle, the great scientist of the Greek era, could assume from observation that moving objects could not move without an internal or external force acting upon them (contrary to Newton's laws of inertia), or that men differ from women in the number of teeth (a mistake that William Durant, author of The Story of Philosophy, attributes to poor relations with the fairer gender), then it would certainly seem reasonable to our modern enlightened minds to view these writers with caution. The Renaissance may have resurrected the writings of the classical Greek and Roman intellectuals, but scientific skepticism of the modern era laid them to rest again.

With the discovery of digitalis from Foxglove plants, nineteenth century scientists turned their attention to other potential botanical sources for drugs, including the rhododendron. P. C. Plugge in Germany was able to isolate the toxic compound in the flower and named it andromedotoxin. Konstantin Achangelsky conducted further research in identifying and describing the properties of andromedotoxins, and found that when given to a control group of dogs, vomiting, paralysis, dyspnea, and even convulsions and death would result. In the 1950's and 60's, further research interest was generated in the toxin's usefulness as a hypotensive agent for lowering blood pressure. Articles in past issues of the *Journal of the American Medical Association* have documented cases of honey poisonings and give recommendations for treatment. Fortunately, these cases are rare and the victim generally recovers within 24 hours.

Toxic honey seems to be a danger in the springtime, when the early blooming species of toxic rhododendrons emerge before the bee's preferred nectar flowers. The uncapped cells of unripened or "green" honey seems to offer an explanation for the reports from antiquity of mad honey having a watery consistency, or that only parts of the honeycomb were dangerous. The curing that honey undergoes seems to neutralize many toxins and may help to reduce the risk of honey which bees have produced from toxic sources. Experienced beekeepers are generally aware of any toxic floral sources in their area and take the necessary steps to prevent their honey from becoming an opportunity for customers to re-experience the woes of General Xenophon. Kenneth Lampe, writing in the *Journal of the American Medical Association*, warns that the most likely sources for honey poisonings are small operation apiaries or farms. The good news for home brewers and mead makers is that they need not worry about the honey they use in their beers or meads so long as they purchase their supplies from recognized commercial distributors, or from private beekeepers who properly monitor their bees and blend honey from varying nectar sources in sufficient quantities to eliminate any danger from toxicity from the local flora.

Benjamin Barton describes a group of beekeepers in the 1700's who had the misfortune of setting up their hives in an area of New Jersey where the dwarf-laurel was common. The honey the bees produced was intoxicating, facing them with a total loss. The would-be beekeepers attempted making the honey into a mead, hoping to regain some of their loss by selling it to the Jersey Colonialists. The toxic effects of the honey, however, lingered in their mead. The apiary collapsed and the beekeepers moved back to Pennsylvania where they had come from. Perhaps if they had known of Pliny's observations of the virtues of well-aged mead made from meli maenomenon, i.e., "mad honey," they may have fared better.

In spite of the dangers, the toxic honey of the Caucasus region was sometimes added in small amounts to alcoholic beverages with the idea of intensifying their effects. *Deli bal*, as it was known in Turkey, became a major Black Sea export during the eighteenth century to Westerners who called it miel fou, i.e., "mad honey." European taverns at that time imported approximately 25 tons of it yearly. Perhaps the intention of its patrons was an attempt at a vicarious participation in the exotic and mysterious Far East.

As Hilda Ransome has shown in her work *The Sacred Bee*, wherever the honey bee flourished in human societal settings, a reverence for its craft and product would develop that influenced the mythology, religion, and social culture of the peoples of that place and era. Similarly, the mytho-poeic imagination of the ancients seems equally inspired by mead's myth and madness. Mead, along with ales and honey ales, was the beverage of choice among Northern European countries where the mediterrean culture of the grape was not able to take hold due to either climate or lack of a developed trade. It seems that the Indo-European peoples – the hypothetical linguistic parental groups who were the forbearers of the Norse tribes, Hindus, European groups, and so on — entertained beliefs such as honey raining down from the heavens at night as a dew to be gathered by bees, that mead inspired gifts of prophecy and song, or that the doors to health, longevity, fertility, and virility were opened through honey and mead. Many have speculated that the mead making traditions and beliefs of the Indo-Europeans were an an important factor in the later use of mead in early European cultures. Indo-European scholar Jarich Oosten proposes in his book, *The War of the Gods: The Social Code in Indo-European Mythology*, that the mythic cycles centering around mead indicated its importance as a central cultural myth to the Indo-Europeans.

Archaeological findings from sites such as the 550 B.C.E. Hochdorf tomb in Germany show the importance of mead to the every day life of the Celtic peoples. Cauldrons and drinking horns left in tombs attest to the use of mead in ceremonial rites for the dead. Roman commentators of the day, noted for an elitist, if not an outright xenophobic bias toward their adversaries on the outer reaches of their empire, had much to say about the love for fermented brews amongst the Celts. To read their accounts today, it seems incredulous that a people given over to the constant drunkenness they described were such serious adversaries to the Roman Empire. Celtic people such as the ancient Irish left behind records of traditions that tell a more balanced story. Mead flavored with the juice of the hazelnut carried a special symbolism for the Irish. The hazel tree was one of many sacred woods and represented wisdom in Irish mythological cycles. Groves of nine hazel trees would be found growing about a sacred well or tributary source in these tales, so that partakers of the nuts, or of the salmon who had been feeding on the nuts that had fallen into the waters, would gain the gifts of seer or poet. Irish saints such as St. Finian were known to reserve a glass of clear mead for Sundays, after a week of fasting, meditation, and prayer. Legend has it that St. Brigit often performed the miracle of turning vats of water into vats of mead.

Mead held an important symbolic value for the early Scandinavians, and appears throughout Norse and Viking mythology. A fallen Viking warrior was greeted at the halls of Valhalla with a drink of mead offered by one of the Valkyries. Once there, continuous feasting was shared by all, with an endless supply of mead provided by Odin's goat. Mead was made during the fall harvest and was the responsibility of the women on the farms. It was made in large wooden vats and consumed at various phases of its fermentation, served from drinking horns taken from the now extinct European auroch and often still frothing with active yeast. An important feast was the Sumbel (Old Norse), or "ale-gathering." Rounds of toasts accompanied vows, story telling, and song. It was the ritual feast where participants placed themselves in the flow of Wyrd, linking word and deed, and binding the memories of the past with the tales of the present. Sumbel feasts could last all day and through the night, yet drunkenness was frowned upon. From Ha'vama'l (Sayings of the High One): "*A bird of Unmindfullness flutters over ale-feasts, wiling away men's wits.*" Mead was prominent in Sumbel and other feasts and rituals, symbolizing Odin's mead Othrorir, which imparted the gift of poetry and song on the participant.

To the Greeks of the Classical era and before, mead was a gift to mankind bestowed on them by the nymph Melissa. The name "Melissa" itself, derived from the Greek word meli for honey, could be used to indicate either a nymph or priestess. "Nymph" seems to be the older usage since the mythic figure of an unfettered

"Toxic honey seems to be a danger in the Springtime, when the early blooming species of toxic rhododendrons emerge before the bee's preferred nectar flowers."

daimonic spirit inhabiting hill and hollow tree is closely akin in the religious imagination to the concrete and familiar reality of the honey bee. Later, as the nature myths of the Greeks became foundational to the more structured system of clerical representatives, liturgy, and votive offering, melissa as "Bee-nymph" and melissa as "Bee-priestess" would become roughly synonymous in usage where the one would tend to blend into the other.

In the literature of the ancient Greek and Roman eras, it was the fresh honey of the spring time that was most often recognized as toxic or maddening. For example, the "madness of new honey" was a metaphor for the kiss of a lover in the 2nd century A.D. poetry of Longus. Adrienne Mayor speculates that toxic honey, or mead with added toxic honey, may have been used by the ancient Greek oracles as an ecstatic impetus for their prophetic frenzies. *The Homeric Hymn to Hermes*, an eighth to sixth century B.C.E. composition, describes how the bee-prophetesses who lived by Mount Parnassos become prophetically inspired after partaking of the "di-

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HISTORY ... Cont. From Pg. 37

vine honeycomb," without which they were unable to tap the divine winds. The prophetesses were also compared in the hymn with the Maenads, the priestesses of the Dionysus who were wont to wave "wands flowing with honey" (according to fifth century playwright Euripedes) and drank a maddening combination of honey and alcohol. Mayor notes that the meli chloron in the hymn can be translated as either "golden honey" or "new honey."

Sadly, mead's popularity as a beverage comparable with quality wines and beers has waned with the passing of time. Some might blame the spreading of the Protestant reformation and the subsequent decline of the use of beeswax candles in the church, reducing the importance of the beekeeping trade. The introduction of sugar in place of honey as a sweetener also played a role in mead's decline, along with the growing popularity of wine made from grapes. Today, it is extremely difficult to find mead distributed and sold on the commercial market, unless one is acquainted with any of the twenty or so commercial meaderies operating in the U.S. Mead has recently enjoyed a small renaissance of its own among those who have picked up the home hobby of craft beer brewing, and mead makers have enjoyed a private reputation as able to create fine beverages at home equal to the best efforts of commercial meaderies.

The three "Rs" of mead making, as every mead maker knows, are Romance, Revelry, and Repast. In this brief and admittedly myopic foray into a little of the history of mead, it can be seen that along with the praises sung to the beauty present in an offered goblet of golden mead, the ancients were wont to drop a hint of warning. But to those whose paths steered a steady course between romance and revelry, learning to use them as life enhancements and thus foiling their dangers as a lurking Scylla and Charybidis, mead was both gift and reward. As the Anglo-Saxon poem The Fortunes of Men puts it, the man of virtue who had "lived well by the strength of God" through life, entered his elder years to become happy, enjoying days of gladness, and received "wealth, treasures and the mead-goblet (of honor) among his kinsmen." BC

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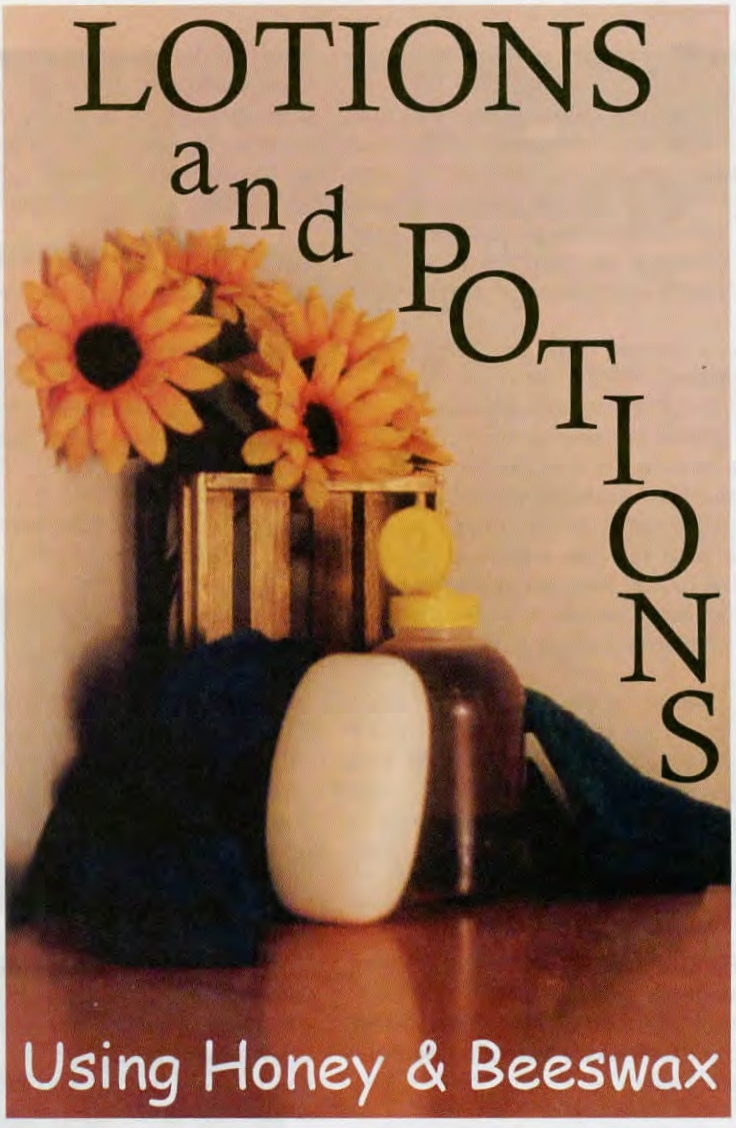
LOTIONS and POTIONS



by
Christina Spence

Recipes Included:
- *Honey Cream Bars*
- *Honey and Almond Lotion*
- *Honey Facials Gift Card for Customers – An easy way to increase sales!*

If you asked someone what first comes to mind when they think of honey, what do you think would be their response? Generally, the first thing that comes to mind is the sweet, delectable tasting food that they've known and loved for years. My first memory of honey is a comforting one – my mother would give me a spoonful of it to soothe my throat when I had a cold or cough. Most likely, beauty products wouldn't even be on their list. But besides being a delicious food, honey has a very long history of use as a beauty product – Queen Anne of England used honey on her famously beautiful hair, and her secret was well guarded until after her death. For centuries, women have used honey on their faces to keep their skin smooth and soft.

Perhaps you're ready to break into this booming market, and expand your business to include a few items – or a whole line – of natural honey beauty products. Just a few tried-and-true recipes can help you create some wonderful products, and extra profits.

Honey has been used for thousands of years as a natural facial mask, agent in soap, hair conditioner, and much more. In this series of articles we'll share ideas on how to use honey and honey products to create a wide range of beauty and bath products that your customers will love. In the last article of the series, we'll discuss a variety of new ways that you can market your new creations, and other helpful tips to get you on your way.

Honey is known to soothe sore throats, but it is also incredibly soothing to sensitive or dry skin. For that reason, it makes a perfect ingredient in moisturizers, creams and lotions, which are featured in this first article. The recipes are designed to be simple to make and easy to sell.

Suppliers:

No matter where you live, you can access the supplies you need for these recipes. All of the following resources are companies that have a website that you can order from.

Mountain Rose Herbs – http://www.mountainroseherbs.com/ This online company is an invaluable resource for products needed in making beauty products. They carry lanolin in bulk. *Lanolin*, a rich natural emolient that comes from sheep's

Continued on Next Page

LOTIONS ... Cont. From Pg. 39

wool, makes very moisturizing creams. You can also find *sweet almond oil* with this company – a light oil perfect for use in many beauty products. They also carry a wide range of bottles, jars, plastic containers and even lip balm tubes to hold your products in. Best of all, the service is very good and the prices are excellent. You'll find nearly everything you need right in this one location.

- For more containers to choose from, try out http://www.creationsbyrades.com/tins.html.

The only things I *couldn't* find at Mountain Rose Herbs are soap molds and labels for your containers. Find beautiful soap molds at Fine Art Soap molds: http://www.fineartsoapmolds.com/. Another spot to try online is Martin Creative at http://www.soapymolds.com. Or, try doing a search at your favorite search engine for 'soap molds' I was able to find dozens of other companies in that way. The soap molds will be used for soaps, but also for the Honey Cream bars in this article.

Labels are easy to create on your own computer, or try a local printer to make up some special labels for your products, even using a specially designed logo for your company. Remember to include a list of ingredients and instructions for use, and most importantly – contact information on how they can purchase from you again.

Honey Cream Bars

This product is truly unique, and a bestseller! It's a moisturizing lotion in a convenient bar format that customers really love. It's very rich and soothing, and helps ease the pain of even the driest skin. May also be marketed as a massage lotion bar.

2 tablespoons beeswax
2 tablespoons cocoa butter
1 tablespoon thick honey
5 - 10 drops of any essential oil, optional

Melt the beeswax over a double boiler (or use a glass bowl fitted over a pot of water). Allow the water in the bottom to come to a simmer and keep simmering while melting the ingredients. Using a whisk, add the honey to the melted beeswax, and combine well. Add essential oil and mix once again.

Pour into a mold and let set overnight in the refrigerator. The next day, pop the cream bar out of the mold, and wrap well in plastic wrap and seal with your own label.

To use – rub the bar over your skin. The bar will melt as it comes into contact with your body-temperature skin. Makes one bar.

Honey and Almond Cream

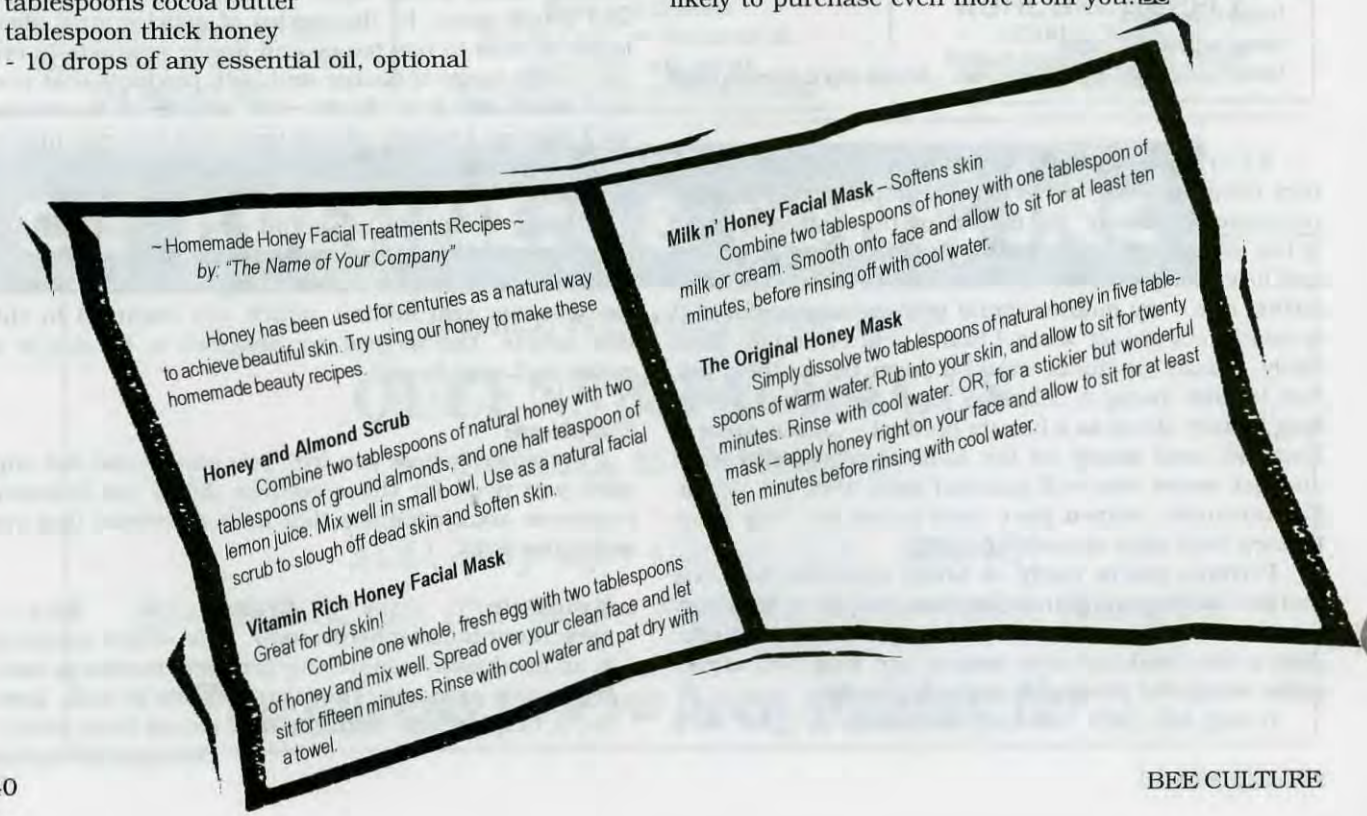
2 oz. Natural honey
4 oz. Lanolin
2 oz. Almond oil

Over a double boiler, melt the honey until smooth. Add the lanolin and mix thoroughly. Remove from heat, and let cool. When cooled, add the almond oil, stirring well. Add fragrance or essential oil to scent the cream, if desired, or leave natural.

Spoon finished cream out into plastic or glass containers, and seal with a lid. Add a label.

Honey Facials Gift Card for Customers

If you're not quite ready to expand your business into beauty products, you may want to try this easy giveaway gift card that will increase your sales no matter where you sell. Provide a pile of these right next to your jars of honey, and give them away to anyone who comes by. When customers realize the other interesting things they can make with honey, they'll be more likely to purchase even more from you. BC



Betty Mencucci

A Tale Of Two Queens

My two-year-old Buckfast queen is laying eggs but the laying pattern is very irregular – mostly all drones. I know I should replace her with a new young queen.

A week before EAS this past Summer I went out to the beeyard to inspect my colonies to make sure they would have enough honey supers during my absence. One of the colonies had no honey in the supers and upon inspecting the brood combs, I found all drone comb in a spotty pattern. I also found the queen, a two year old buckfast queen with a worn yellow marker. I thought to myself, "I should kill her now and order a new one, but for some reason I didn't and decided to look at the rest of the colony. To my surprise, I discovered a second queen, a new young queen. I've been keeping bees

But wait! Upon further inspection, I discover another queen – her daughter. It appears that she has just returned from her mating.

Continued on Next Page

As the old queen lays eggs, the new queen crawls around on the comb. For a brief moment, the two queens meet, then go about business as usual.

for 14 years and it was the first time I saw mother and daughter queens in the same hive. I knew this was fairly unique and if I could take some pictures of two queens in a hive, it would make a good photo essay to enter in the EAS annual show. It was getting late so I closed up the hive hoping I would be able to find both queens again tomorrow.

When I went out to the hive the following day, I thought what are the chances that I'll find both queens again? I started by pulling the second frame from the end and to my amazement both queens were on that frame! How lucky could I be! I propped the frame against a neighboring hive and sat on the ground and began to take pictures of the old queen who was busy laying eggs. Then I focused on taking pictures of the new queen.

Several minutes later they meet again. This time the young queen acts aggressive. With her back arched, she tackles the old queen, and keeps her pinned down. The worker bees nearby gather around the queens to witness the event. We all wait in suspense wondering if the old queen will die. After about a minute, the battle ends, the old queen is released from the clutches of death and she walks away.

Two days later the new heir to the throne is busy laying eggs. The old queen is still alive and continues to lay eggs but now she seems to move more slowly as her reign in the colony is nearing its end. Mother and daughter coexisting in the same colony is a special event not too often witnessed by the beekeeper.

She moved briskly around the comb and was not laying eggs. I believe she had just returned from a mating flight. Then I concentrated on trying to take pictures of both queens together. The first time the two queens passed each other, they continued on about their business. A few minutes later, they passed again. This time the young queen attacked the old queen. She arched her back in an apparent hostile manner and pinned down the old queen. I thought for sure I would witness her death. A retinue of workers faced the queens while I tried to take the perfect picture. On the second shot my camera locked up! I was furious. By the time I got the camera unjammed, the old queen was released unharmed and the two had separated. I had spent a good two hours taking pictures and wondered if any of them would be exposed properly. I rushed off to have the film developed and was terribly disappointed to discover that most of my photos were blank! The camera had malfunctioned for most of the pictures, but I did have one good shot of the two queens fighting.

That evening my husband inspected our 21-year-old camera and discovered that the shutter was getting stuck and the foam padding for the reflex mirror was rotted. He cleaned it and I was determined to try again but the next day it rained and I had to wait a day. Then I thought, what were the odds that I would even find both queens again? Many times when I want to find one queen I can't. I needed to find both queens to tell my story and time was running out. I was leaving for the EAS meeting on Cape Cod in two days.

The following day I opened the hive determined to succeed. There was no queen on the second frame in so I removed the third. To my delight, there was the young queen. After pulling out three more frames I found the old queen. I couldn't believe it. I had been into the hive three times within a week and had found both queens all three times. I put both queens on one frame to photograph them and observed both of them laying eggs. This time when the queens met they seemed to acknowledge each other and then go about their business. There were no signs of hostility. I was sitting on the ground with my camera pressed up close to the frame for about two hours when I heard a rustling noise in the bushes disturb the quiet of the apiary. Two deer were trying to pass through the beeyard when they were alerted to my presence. One of them bounded past me to the right and the other skirted around to my left. It was a magical moment in the beeyard. I finished the roll of film, closed up the hive and rushed off to have the film developed. This time most of the pictures were good, but the camera had still malfunctioned a number of times. I did have enough good pictures to tell my story so my efforts had not been in vain. BC

Betty Mencucci is a hobby beekeeper from Glendale, RI. Her photo entry won a ribbon in the 2001 EAS Annual Show.

Be A Budding Genius, Not A Blooming Idiot

James Fischer

The bloom. The nectar flow. The honey flow. Whatever you call it, you and your bees wait all year for it. But *when is it?* Many vague statements are made about blooming in beekeeping and gardening books, leaving the new beekeeper with no more than the advice to "super early"

Experienced beekeepers may be interested in varietal honeys, which requires knowing the blooming period for a number of different plants. While this is extra work, varietal honey can sell for double the price of generic honey.

But how does one predict blooms with any accuracy? Ouija board? Supercomputer? Maybe a call to Ms. Cleo, the telephone psychic? It is much easier than that. If you can do some simple math, you can track growing degree-days to predict the blooming of any number of local nectar sources with accuracy that is within a day or two.

The best part is that less effort is required each year. Once you have your figures from this year, you need only get the daily temperatures, add numbers, and do a few spot-checks to verify that blooming is "on schedule" in following years.

What's A Growing Degree-Day?

A growing degree-day is a measure of warmth on a particular day in terms of how it affects plant growth. The approach is well-known to sophisticated farmers, and has been verified many times by horiculturalists and the USDA.

How Does It Work?

Starting at the last frost, plants grow at very predictable rates, but still, the major limiting growth factor is temperature. Days that are warmer result in more growth. Cooler days produce less growth. By counting degree-days from last frost, you are measuring plant growth in terms of the total impact of temperature on plant growth.

Once you have measured a local plant species' growth in terms of degree-days from frost to bloom, you can then keep track of daily temperatures in the Spring of subsequent years, and know, from each year's actual daily highs and low temperatures, when your plants of interest will bloom that year.

Why Should A Beekeeper Care?

The calendar date on which a plant blooms is sure to vary widely from year to year, since weather conditions will certainly vary. By counting up degree-days, you are tracking the temperatures that influence plant growth, in units that will not vary from year to year. Doing so makes supering a consistent exercise, rather than a guessing game. It can also help you to plan hive deployments for pollination, and better-satisfy pollination clients who do not use these techniques themselves.

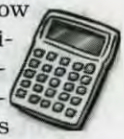
Tracking the Elusive Last Frost

The last frost is easy to find, but will come on a different day every year. Your TV meteorologist will announce it. Your local master gardeners and gardening clubs will celebrate it. For your purposes, you want to "start a running total" at the last frost, but to do so, you need to start tracking degree-days well before the last frost.

The last frost is important because it can kill developing buds. The buds that survive last frost will make fairly even progress towards blooming, so the last frost can be considered the "starting gun" for the blooming cycle.

Calculating Degree-Days

A growing degree-day is the average of the daily high and low temperatures, using a maximum high of 86, and a minimum low of 50, then subtracting 50 degrees. Let's walk through an example - If the high for the day was 60, and the low was 45, then the "average" is:



(High + Low) / 2 = Average
(60 + 50) / 2 = 55 degrees

Note that we replaced "45" with "50" before we did any math. Any "low" lower than 50 is replaced by 50 degrees. When you then subtract 50 from the average, you end up with 5.

55 – 50 = 5 (A 5 Degree-Day)

So, for that day, you had 5 growing degrees to jot down.

If the high for the day was 88, and the low was 45, then the degree-day average is:

(86 + 50) / 2 = 68 degrees

Note that we replaced "88" with "86" before we did any math. Any "high" higher than 86 is replaced by 86 degrees. We also replaced "45" with 50, as in the first example.

When we then subtract 50, we end up with 18 growing degrees that day.

Continued on Next Page

Date	Low	High	Degree Days	Total D-Ds
4/1	40	66	8	
4/2	40	67	7	-
4/3	41	66	6	
4/4	41	67	7	7
4/5	41	68	8	15
4/6	41	67	7	22

68 – 50 = 18 (An 18 Degree-Day)

Why do you throw out highs above 86, and lows below 50? The USDA found that plants do not do much growing when it is below 50, and days hotter than 86 do not make plants grow any faster than plants at 86 degrees.

Why do you subtract 50 at the end? Again, it is the number of degrees above 50 that matter to plants, so the "average" must be above 50 for any progress toward blooming to be made.

Getting The Temperatures

You can watch the weather reports and get the predicted highs and lows, sometimes for an entire week. For your purposes, the predicted temperatures are accurate enough, but you can also get exact data from any of the sources discussed in the January *Bee Culture* article "Whither Weather"

If your temperatures are generally different from those reported in the weather reports, you can buy a "high-low" thermometer, which uses tiny metal bars in a U-shaped thermometer tube to record each day's high and low. There are also electronic thermometers that will record highs and lows, and save you the trouble of remembering to look at a thermometer every evening.

Running Totals

Keeping a "running total" is easy. Once you calculate the degree-days for any one day, you simply add it to your "total to date" Where I live, the last frost tends to be around April 15th, so I would be wise to start writing down degree-days at the start of April. One wants to start tracking the degree-days a few weeks before the "typical" last frost, since it can come early.

My worksheet format is above. If the last frost happens on 4/3, I can add up degree-days starting with the next day, and keep a running total as the season progresses.

Watching For the Bloom

Now that you are adding up degree-days from the last frost, you need to know exactly when your local nectar plants of interest bloom. This is a good excuse to take the dogs for a walk, and get that exercise everyone has been suggesting. The good news is that if you do a good job this year, you will have much less walking to do next year. You will *know* when the blooms will appear within a day or two.

You may have no idea what to look for, so let's break this down:

First, you want to know what nectar plants are significant in your area. If you aren't sure, ask local experienced beekeepers. This is a good reason to attend the meetings of your local beekeeping association.

Second, you need to be able to identify the plants, which means a trip to the library to borrow a field guide book, or a visit to the eNature online field guides at www.enature.com I like the *Audubon Society Field Guides*, as they are small, sturdily bound with waterproof bindings, and have color photos. Get both the "*North American Trees*" and the "*Wildflowers*" and you are set.

Still can't tell a Tulip Poplar from a Maple? Identifying a plant or tree before it blooms is hard. Find someone who knows plants, like a master gardener or your agricultural extension agent, and ask them to show you. It is amazing how much expert help you can get for a few quarts of honey.

Third, you want to find plants that are near your home or apiary, and remember where they are. Consider tying some colored string to the plants once they are found, drawing a map, whatever it takes to jog your memory.

Once you have located a few examples of the plants you want to watch, you need to visit them on a regular basis, and examine the buds. If you have no idea how "budding" works, you may want to ask a gardener, or read a few gardening books. In general, the buds start out hard, become softer to the touch, and tend to "break open" just a bit before they bloom.

When you see the first blooms appear, you can look at the running total of degree-days from last frost, and write down a highly accurate number – the number of growing degree days from last frost until bloom. You can continue to track degree-days and find the number of degree-days from start of bloom to end of bloom.

In following years, you can simply "do the math", and predict your local bloom with high accuracy.

This knowledge is how growers of tulips for Easter and roses for Valentine's Day supply truckloads of cut flowers on tight schedules.

Except for an unexpected freeze (which would mean that you would start over, counting degree-days from the actual last frost) or a severe drought, which might slow the bloom more than usual, blooms are highly predictable in terms of growing degree-days.

It should be noted that no plant produces all of its blooms at once. For honey supering, one wants to track the earliest blooms, but growers of pollinated crops are more interested in predicting the "majority" of the bloom, rather than the start of bloom, since they would not want hives to be deployed until there were enough blooms for the bees to take an active and near-exclusive interest in the grower's crop. Plants are really nothing more than wind-up toys. If other conditions are "normal" temperature and sunlight is what winds them up. Growing degree-days are a very effective model for tracking progress towards bloom. BC

A wealth of information on important crops and growing degree days exists on the web. Simply type in "Growing Degree Days," using the quote marks and over a 1,000 sites will appear. To isolate this a bit, try "Growing Degree Days" and "Your state," or "crop" (i.e. apples), thus "Growing Degree Days" and "Apples" and "Washington," will narrow your choices considerably.

James Fischer tracks growing degree days, and supers on time, most of the time, near his home in the Blue Ridge Mountains of VA.

?DO YOU KNOW?

Anatomy

Clarence Collison
Mississippi State University

The anatomy of the honey bee is the assemblage of structural parts that enables the organism to do the things necessary to maintain its own existence, and to perpetuate its kind. In its general form, the honey bee resembles any other insect, however, since the bee leads a highly specialized kind of life within a society, it has numerous modified structures that allows it to live this life style. Individual honey bees cannot survive by themselves due to a high degree of specialization found within a colony. Understanding basic bee anatomy and physiology will help the beekeeper better understand the factors that affect colony development and the devastating effects of the various bee diseases, parasites and pesticides that may be encountered in beekeeping.

Please take a few minutes and answer the following questions on this important topic.

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

1. ____ Honey bee workers have both sucking and chewing mouthparts.
2. ____ Ecdysone is known as the molting hormone and is produced by the corpus cardiaca.
3. ____ Each ganglion of the nervous system is capable of coordinating functions for the segment in which it is located, as well as sending information to other ganglia and to the brain to unify the behavior of the whole individual.
4. ____ Wax glands are examples of exocrine glands.
5. ____ Honey bees are able to detect magnetic and electric fields.
6. ____ The spaces within the body of the honey bee not occupied by organs or other tissues are filled with blood.
7. ____ Juvenile hormone is produced by the corpora allata.
8. ____ The crop or honey stomach of the worker honey bee is located in the thorax.
9. ____ The long, densely hairy tongue is associated with the ingestion of liquid food and the sense of taste.

(Multiple Choice Questions, 1 point each)

10. ____ Internally within the worker, pollen is filtered from the nectar by the _____ and passed as a bolus into the midgut:
    A. Malpighian Tubules
    B. Sucking Pump
    C. Pharynx
    D. Oesophagus
    E. Proventriculus
11. ____ Enzymes involved in the digestion of pollen are produced by the:
    A. Salivary Glands
    B. Ventricular Wall
    C. Mandibular Glands
    D. Intestional Wall
    E. Peritrophic Membrane
12. Name two types of sense organs found on the antennae. (2 points)
13. Name three types of glands associated with the abdomen. (3 points)
14. Name two ways that saliva, the secretion of the labial or salivary glands is used by the bee. (2 points)

Describe the function of the following organs/structures (1 point each)

15. Spiracles
16. Hamuli
17. Ocellus
18. Proventriculus
19. Corbiculum
20. Arolium
21. Valve Fold

ANSWERS ON PAGE 54

OPPORTUNISTIC QUEEN REARING

Steve Burt

In my 26 years with the bees, I have purchased a modest number of queens, either with or without packages. The majority of the queens in my suburban Detroit apiary, however, have been home grown. A few times the queens grew from grafted cell bars, but most of the queens arose from the intentions of the bees themselves or from a little facilitation on the part of the beekeeper. This practice has worked well in my rather small apiary, having as few as four honey producing colonies most years and a nucleus colony or two.

This paper will discuss several ideas wherein the beekeeper can get a few new queens without undue disruption of honey producing colonies.

A useful definition of opportunistic queens might be those queens that the beekeeper succeeds in rearing during the course of more routine activities without removing a colony from honey production.

Deliberate Demaree Queens

It has been long established that moving brood to the upper reaches of a queen-right hive may lead to production of queen cells by the nurse bees attending this removed brood. Dr. C.C. Miller discusses several methods in his classic work *Fifty Years Among the Bees*, under "Rearing Queens in a Hive with Laying Queen." Miller found that even a single comb placed many stories above the brood nest succeeded in producing a laying queen.

In my beekeeping practices, it is vital to prevent swarming in my populated suburb to avoid uproar among my neighbors. As a producer of extracted honey, and limited to the number of colonies feasible in my back yard, the Demaree approach to swarm control has been indispensable. The Demaree method involves decongesting the spring brood nest by removing most of the brood and placing it several supers upward and giving the laying queen lots of empty combs to work in. To my surprise in my early beekeeping days, I would sometimes end up with a two-queen colony, and the new queen above the original nest was almost always a very good queen. While inspecting the Demaree-managed colonies a week or so after setting the brood on top, I also noticed a number of copiously fed queen cells which were commonly destroyed by the usual manipulations.

It became clear that with a few modifications, the Demaree manipulation could be enhanced to encourage queen cell production at the top of producing colonies without the damage to the cells.

Several ways of enhancing the cell production were attempted. Placing the super of brood above a queen excluder with a 5/8^{ths} inch auger hole in the super for an entrance increased the isolation and prevented the virgin queens from wandering down. Placing an inner cover between the raised brood and the colony below virtually insured queen cell development. Adding a rectangle of 2 x 2 cut to perfectly fit the inner dimensions of the super further increased isolation and gave room for queen cells to be developed from the bottom bar and not be destroyed during manipulations. The true dimensions of a 2 x 2 are actually about 1½ x 1½, and this distance seems to be ideal. This spacer bar is helpful, but not necessary. However you isolate the brood, an adequate population of bees will respond with cell building.

The final process now has the queen excluder, followed by the inner cover, followed by the 1½ inch spacer, and then the super of brood and food. Placing three or four combs full of bees and young brood along with the balance of combs of honey and pollen will insure production of queen cells. Plugging up the entrance for a day or two will retain most of the bees in the super. Shaking more nurse bees is helpful to the point that the bees can densely cover the cell building combs. Using the hive tool, I try to give the combs with eggs and larvae a little extra space for the cells to protrude. If the parent colony already has some swarm cells with larvae and jelly, removing these "hot" combs intact and placing them up above may get an emerged queen several days sooner. The combs going into this cell builder can come from more than one colony as long as the laying queens are not accidentally included.

If several combs containing eggs and emerging larvae are inserted, then queen cells may be found on more than one comb. This facilitates placing some of the cells in mating nuclei without cutting the cells out with a knife. By using the above technique I am dependably rearing a few good cells without seriously undermining honey output from the colony.

One must make 100% certain the laying queen remains

below in any Demaree manipulation or the new queens will be built in the wrong part of the hive.

Swarm Box Method

If a colony enters the swarming period in my apiary with a huge population of bees, more drastic measures may be in order. Because I winter the bees in three deeps, my colonies can get to be very powerful by fruit bloom. This is advantageous as apple blossoms (both fruit and ornamental) are one of my best flows and I want as much surplus as possible in the supers, even though it will not be extracted until July or August. This situation can call for removing some bees completely if a colony is really serious about cell building.

The combs from one or more colonies can be placed in a deep super arranging food combs on the outside and one to three brood combs with eggs and emerging larvae in the center. More bees can be shaken into the swarm box, ideally nurse bees actively feeding brood. Removing those "hot" combs with queen cells already started will lead to production of laying queens several days sooner and may lessen the swarm fever in the parent colony. Again, plugging up the entrance for a day or two will retain most of the bees in the super.

One must make 100% certain the laying queen remains in the parent colony or cells will not be built in the swarm box and the parent colony will produce much less honey while it tries to replace its queen and ongoing brood production is severely interrupted.

The swarm box method can also be used to produce queens for Fall requeening if your producing colonies collectively can spare enough brood and bees to fill the box.

Finders, Keepers

If a colony does swarm, there may be enough ripe queen cells to set out a number of nuclei and requeen the whole lot. The queens will be well fed and should be excellent in size. The only problem is that such queens may harbor a heightened willingness to swarm. Capped swarm cells quickly produce emerged queens.

Later in the season a colony may begin to rear individual queen cells. These cells are often on the edge of the brood nest and are well provisioned. One with an apiary as small as mine can make a mental or written note that the colony is superceding its queen and leave well enough alone. I like to take a good look at the overall appearance of the parent queen and confirm the supercedure later that season or the following Spring.

Breeding Notes

It is said in breeding anything that one can rapidly select for any single trait (such as sweetness, largeness, or color in fruit) if willing to forgo all the other possible traits. Real improvement, however, is very difficult. Burbank's standard in fruit improvement was: "As good as each parent in every way and superior to both parents in at least one way." Such a standard in backyard bee breeding is almost impossible due to lack of control of the drone population. Good colonies can usually be reproduced, if not improved.

Even a hobbiest can breed for certain characters in the honey bee. Gentleness is a critical issue in my suburban apiary. Any hive with a hot temper will be requeened very quickly. The bees simply must not sting the neighbors without provocation. No one would tolerate for long being attacked by the bees next door. Within beekeeping temperament is the ability of some strains of bees to remain calm on the combs during manipulation while other bees run about frantically. My one absolute selection is a significant measure of gentleness.

Honey production is a good trait, obviously. Freedom from disease or pests is a desirable character, too. A low swarming urge makes beekeeping easier. An absence of burr comb and propolis are traits that make it much easier to handle bees. The color of the bees may matter to some beekeepers, but is not too critical. Yellow queens are easier to find than black or hybrid queens. On a larger scale, if one bred from the best statistical honey producers, most of the good traits would be selected for simultaneously.

I breed my best colonies and select against my worst overall performers while trying to maintain (or purchase) some diversity. It works for me. BC

Steve Burt is a long time hobby beekeeper raising a few queens each year from his home in Roseville, MI.

WHAT PRICE HONEY?

How do you decide how much to sell your honey for?

Ann Harman

It is interesting to attend a meeting of hobby beekeepers and listen to both boasts and complaints of the price they ask for their honey. It is difficult to make much sense out of the conversations because each – the low price beekeeper and the high price one – is convinced that the chosen price is right. How do beekeepers arrive at a retail price for a one pound queenline jar full of honey?

Sometimes the price is chosen because "that is the price I have had for years." This beekeeper is convinced that any rise in price will cause his customers to stop buying honey. Yet customers continue to buy postage stamps and bread even though those prices have risen over the years. Now if this beekeeper decides to raise the price of his honey, will a big jump in price be called for? What if the price had risen gradually over a period of years? A gradual price increase would have been scarcely noticed, and then only by someone who likes to keep track of such things.

On the other hand, in the same area, you can find the beekeeper selling honey for a high price. This beekeeper's approach is that honey is special, not something easily obtained. This beekeeper's customers have been educated into the intricacies of bees and honey and realize that honey is indeed a special product.

What are some guidelines that a beekeeper can use to determine a realistic price for honey? Obviously the type of retail outlet will make a difference. But there are ways of determining if your asking price is reasonable.

The media – radio, TV and newspapers – actually have information that can help you determine what your community spends for various things compared to other areas of the country.

One index of costs that is reported on frequently is the price of gasoline. The actual price of a gallon has a wide range, partly depending on the area of the US. Would this make a good benchmark for helping you determine a price for your honey? Possibly. But so many factors enter into the price of gasoline—for example, state taxes that vary enormously and may not truly reflect purchasing ability of the customer. Sometimes even local taxes are tacked on to the price. And don't forget the "price wars" but these are usually short-lived. So perhaps beekeepers should not use gasoline prices as a guideline.

The government publishes a "cost of living" index which makes some areas of the country seem appealing and other areas seem expensive. It is difficult to say what to do with this index. One part of a state may have a high cost of living. Does that mean your honey should be priced high if sold in that area? Or does it mean that because it is expensive to live there nobody has any money to spend? Only firsthand experience with such an area will give a good idea of what to charge.

One benchmark does hold promise for helping you determine the price of your honey. The real estate market. Yes, it has ups and downs just like gasoline but is actually much more stable and consistent than gas prices. You are not looking at local taxes either. You are looking at an amount of money people are willing to spend. With the use of the Internet today you can select a "basic house" and see what it would cost in your area as compared to other areas of the country. Then you can determine whether your general area has the ability to spend more money or less money.

Perhaps you have a friend in real estate with a national company. See what that person has to say about comparing housing costs and see if that friend can help you compare the price of a "basic house" in different areas. Then take a good look at your honey prices and see if you think they reflect the purchasing ability of your area.

Some beekeepers visit supermarkets to see what honey sells for there and then set their price according to that. Think for a minute. Are you comparing your special varietal honey with a house brand blend? That would really be comparing apples and oranges. Here is an opportunity to educate potential customers with information on the value of your locally-produced honey. Certainly your honey should not sell for less than megamart or supermarket honey.

In spite of television, movies are still popular. What is the cost of attending a movie? What do the popcorn and soft drink cost? Add all that up. Now you have some information you can use for determining your price as well as for educating potential customers. A couple of hour's worth of entertainment complete with snack is going to cost

Continued on Next Page

WHAT PRICE ... Cont. From Pg. 51

much more than your jar of honey. And that jar of honey will give more hours of satisfaction than the popcorn and soft drink.

Don't underestimate the people who live in your area. You may feel that they shop for price only and would rather buy their honey at some price discount megamart. Perhaps you have not educated those potential customers into the taste and value of your local honey. Do those who look for cheap honey realize they are usually buying a blend from different countries? Maybe they care, maybe they don't care. But if you haven't pointed out the small print on those labels – that tells the countries of origin – then you are not promoting your local honey.

Winter is a good time to start promoting your excellent local honey. Don't be afraid to call your local newspaper to see if they would like to do an article about local honey. At the same time see if the local radio station would like to interview you as a beekeeper with delicious local honey.

For such interviews you need to do some homework. Are you familiar with the local honey sources? Think of good descriptive words for its flavor. Words like "mild" or "strong" are useful but more information needs to be conveyed. Be certain you are familiar with uses for honey. This is the time to "read" a honey cookbook so that you are familiar with the many types of foods that can be made with honey. Select a few recipes for the local newspaper. And remember, if someone comes to you for an interview, they must go away with their hands full of jars of your honey, all sizes including bears.

Think about expanding your market through those radio stations and newspapers. Many counties have their own newspaper. This means you should contact not only your own county paper but all the surrounding ones.

Ask friends if any local cookbooks are being compiled. Churches and various organizations sometimes collect recipes and print a small cookbook as a fundraising venture. Beekeepers should always be contributing at least one recipe to these local cookbooks. Ask the people who will be compiling the cookbook if you can put a little introductory paragraph about local honey along with your recipe. Always ask if more than one recipe will be accepted. If so, put in an assortment, not just cakes and cookies.

What do the media and the cookbooks have to do with pricing? Nothing directly. But by making people aware that local honey is special and that honey has more uses than to put in tea or to soothe a sore throat you are promoting the value of honey.

During this past Christmas season I was bombarded with radio commercials for diamond jewelry. As I listened to them I thought that beekeepers could use some of those techniques for promoting honey. Listeners were not told simply to go out and buy a piece of diamond jewelry. You were educated in the world of diamonds. You were made to feel that each diamond was a very special jewel, selected, cut and polished by experts to create a one-of-a-kind item.

We should be promoting honey with the same sort of feeling: honey is special – your local honey – gathered by your well-cared-for bees and extracted with care and bottled for your customer's enjoyment. Honey is your equivalent of the diamond.

I have visited craft fairs and found more than one person selling honey and at different prices. There is nothing wrong with that, and the person with the best display and the best approach will probably sell more even with a higher price. Don't let a competitor influence your selected price.

Keep track of events in your locality. The closing of a manufacturer thus putting people out of work may indeed mean money will not be spent for nonessentials. Perhaps this is the time to bottle in smaller quantities – 8 ounce jars and bears or half-pints in reusable jars. You need to keep your excellent honey image visible while the community sorts itself out.

Honey is such an important sweetener that it deserves to be sold at a fair price for your locality. Don't let it be cheapened by thinking that price does not matter. BC

Ann Harman is a sideline beekeeper and international marketing consultant.

WHAT PRICE ... Cont. From Pg. 51

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?Do You Know? Anwers

1. **True** The mouthparts of the bee are complex structures located on the bottom margin of the head. Bees have both chewing and sucking mouthparts. The mandibles are the "jaws" and they move back and forth in a lateral direction. They are mainly used for the manipulation of wax. The maxillae and labium together form the proboscis, an organ for feeding on liquids.
2. **False** Ecdysome is known as the molting hormone and is produced by the prothoracic glands found within the thorax. This hormone travels in the blood to the epidermis cells of the exoskeleton and serves as the chemical message to begin the process of molting
3. **True** The nervous system of the honey bee consists of a brain located in the head and a series of ventral ganglia in the three thoracic segments and seven abdominal segments. Nerves from each ganglion go to the major organs of the respective body segment to regulate their activities. Each ganglion is capable of coordinating functions for the segment in which it is located, as well as sending information to other ganglia and to the brain to unify the behavior of the whole individual.
4. **True** An exocrine gland is any gland whose products can be excreted to the exterior surface of the bee. Exocrine glands can be either pheromone or non-pheromone producing glands. Wax glands are examples of exocrine glands.
5. **True** Research has shown that honey bees are able to detect both magnetic and electric fields. They have special iron deposits in their fat bodies that perceive magnetic force fields and pass this information on to the nervous system. How they detect and use electrical field information is poorly understood at this time.
6. **True** Honey bees have an open circulatory system. Blood fills the body cavity of the bee; it is not confined in a closed system of arteries, veins and capillaries like that of man.
7 **True** Juvenile hormone is produced in the corpora allata and is released into the hemolymph (blood).
8. **False** The crop or honey stomach is located in the abdomen of the worker honey bee. The thorax is the bee's locomotor center and is filled with muscles associated with crawling and flight.
9. **True** The proboscis which includes the tongue has the primary function of ingestion of liquid materials. Tastes are detected by the sensilla (sensory structures) which are situated on the structures which come together to form the sucking tube or proboscis.
10. E) Proventriculus
11. B) Ventricular Wall
12. Plate Organs, Pit Organs, Hairs, Pegs
13. Dorsal abdominal tergite glands, wax glands, Nassanoff or scent gland, poison gland, Dufour gland
14. Saliva is used to:
    A) dissolve or dilute sugary foods (dry sugar or granulated honey)
    B) clean surfaces (brood cells or the body of the queen)
    C) moisten substances being chewed
15. Spiracles are the external openings to the internal breathing tubes, the tracheae. They regulate the flow of oxygen into the respiratory system.
16. Hamuli are a series of upturned hooks on the front margin of each hind wing and serve as a coupling apparatus to insure the unity of action of the front and hind wings during flight.
17. An ocellus is a simple eye of honey bees with a single lens. They act as light-intensity detectors which makes the compound eyes more quickly responsive.
18. The proventriculus is a regulatory apparatus that controls the entrance of food into the stomach. By its action, nectar or honey can be retained in the honey stomach while pollen and other particulate matter is taken out and delivered to the stomach.
19. The corbiculum is the pollen basket on the hind leg of worker honey bees that is adapted for carrying pollen pellets and propolis back to the hive.
20. An arolium is a pad-like structure between the claws of the foot of the bee, used in walking on smooth surfaces.
21. The valve fold is a tongue-like structure which can close the passage between the vagina and the medium oviduct of the queen. During mating the spermatozoa discharged by the drone are first stored in the distended lateral oviducts. By muscular contractions the spermatozoa are forced from the lateral oviducts into the vagina. The spermatozoa are stopped by the valve fold of the vaginal wall, which causes them to be directed into the spermathecal duct and finally into the spermatheca for storage.

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

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

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

GLEANINGS

FEBRUARY, 2002 • ALL THE NEWS THAT FITS

NHB REFERENDUM THIS MONTH

The USDA announced on January 7 that honey producers and importers will vote Feb 4 – March 1 on whether to continue their national research and promotion program.

The program is authorized by the Honey Research, Promotion, and Consumer Information Act, which requires USDA to hold a continuance referendum every five years. To be eligible to vote, producers and importers must have produced or imported honey or honey products during the period Oct 1, 1999 - Sept 30, 2001, and be producers or importers at the time of the referendum. For the order to continue, it must be supported by a majority of the voters in the referendum who represent 50% or more of the honey or honey products represented by the voters in the referendum.

Notice of the referendum appeared in the January 8, 2002 Federal Register. AMS will mail ballots and voting instruction to all known producers and importers. Eligible producers and importers not receiving ballots may request them from Kathie M. Birdsell, AMS Fruit and Vegetable Programs, USDA Stop 0244, 1400 Independence Ave. SW, Washington DC 20250-0244; tel. 888.720.9917; fax 202.205.2800.

Obituary

ELOISE H. CUTTS

Eloise H. Cutts died Wednesday, December 19, 2001 due to complications from recent surgery. She was 63 years old. Ms. Cutts was a native of Florala, Alabama, and married to Mr. Laurence Cutts, Florida's Chief Apiarist of the Florida Department of Agriculture and Consumer Services.

Ms. Cutts was a long-time executive secretary for J.M. Cutts and Sons, one of Florida's pioneer queen producing companies in Chipley, Florida. She moved to Gainesville, Florida in 1985, when her husband took on the job as Chief Apiarist. At that time, she also assumed the role of executive secretary of the Florida State Beekeepers Association, serving until 1995.

During those 10 years, she was instrumental in keeping the association on track by publishing the newsletter and helping to arrange its annual convention.

Ms. Cutts is survived by three sons, Bobby Cutts of Tallahassee, Larry Cutts of Chipley and Stephen Earl Cutts of Bell. She also is survived by three daughters, Rhenea Yonts of Oklahoma City, Leanne Diehl of Melrose and Jan Page of Chipley.

APITHERAPY GROUP HAS NEW CONTACT

The American Apitherapy Society has a new contact person. The AAS office is now at 1209 Post Rd., Scarsdale, NY 10583, 914.725.7944. The new editor of the newsletter is Marlene Wood, 9 Hickory Drive, Huntington, WV 25704, 304.453.3112, FAX 304.453.6700.

AAS is in the process of updating and correcting their membership lists. If your membership has expired please renew in order to continue receiving the Journal.

The Charles Mraz Apitherapy Course will be July 25-28 at the Drawbridge Inn in Ft. Mitchell, KY (Cincinnati). For more information contact the new office.

AHB IN SC?

Officials with the USDA in December confirmed that an Africanized Honey Bee colony was discovered and destroyed in the wing of an airplane (DC-10) which is located at the Donaldson Center in Greenville, South Carolina. The airplane was flown to Greenville from Arizona where AHBs are common. Apparently, a swarm of Africanized Honey Bees entered the wing of the aircraft and established a nest while the aircraft was inactive for several months in Arizona. Workers (Lockheed Martin Aircraft Center) at the Donaldson Center noticed bees flying around the airplane especially on warm days. Employees of local pest control company exterminated the colony and dead bee samples were sent to the USDA/ARS Beltsville, Maryland Bee Lab for analysis.

Plans are now being made to place bee swarm traps in the vicinity of the Donaldson Center to catch other possible AHBs. The chance of additional colonies being present in the area is remote.

Tucson Bee Lab

ERICKSON RETIRES

Dr. Eric H. Erickson Jr., Director of the Carl Hayden Bee Research Center, Tucson, AZ., retired January 3rd, 2002 after nearly 34 years of Federal service. Eric grew up on a poultry farm in Lakewood CO., where he developed a lifelong interest in agriculture and biology. These interests grew after he began working at a local farm supply and feed store in 1955. This employment permitted him to earn a B.S. degree in Entomology at Colorado State University in 1963. He remained enrolled there and received a M.S. degree in Entomology in 1965. Thereafter, Eric served for two years as a commissioned officer in The United States Army, first as an instructor at the Army Medical Field Service School, Fort Sam Houston, Texas, and then as a Medical Entomologist in Vietnam where he directed the first military fixed wing aerial spray program for malaria control. Following his discharge from the Army in 1967 he obtained his PhD. from the University of Arizona in 1970. Dr. Erickson joined ARS in April, 1970 as a Research Entomologist at the North Central States Bee Research Unit, Madison, WI. He served as the Research Leader at Madison from 1978 until the program was terminated in 1986. He has served as Research Leader and Laboratory Director at Tucson since his reassignment in 1986. During his career, Dr. Erickson has conducted research on honey bee biology/ecology, crop pollination, aspects of floral development and anatomy, the production and quality of floral aroma and floral nectar, honey bee foraging, the effects of pesticides and parasitic mites on honey bees, and Africanized honey bees. Dr. Erickson also held positions as Adjunct Professor in the Departments of Entomology at The University of Wisconsin and The University of Arizona, where he taught the

1980

Continued on Next Page

Obituary

JOHN F. COWEN

John F. Cowen, November 24, 1920 to December 6, 2001. John was the founder of Cowen Mfg. and has been closely associated with the bee industry for 50 years. As a young man, he began working for a local beekeeper in the early 1950s, in Imperial Valley, CA. Eventually, he acquired 3,500 hives of his own. In 1966, he moved his operation to Parowan, UT. Realizing the need for automation in the honey extracting process, he invented his first simple uncapping machine in 1967. Through the years and until the end of his productive life, he has been instrumental in the development of a large line of honey extracting equipment that is widely known today as Cowen Mfg. The simplistic style of his designs has made the business of extracting honey much easier for today's beekeeper. For these and other accomplishments, his quick wit, and sense of humor, he will be missed by many.

Erickson ... Cont. From Pg. 57

Honey Bee Biology and Pollination Course.

Dr. Erickson is the recipient of the U.S. Army Commendation Medal for Outstanding Service in the Republic of Viet Nam (1967), the James I. Hambleton Award for Outstanding Research presented by the Eastern Apicultural Society of North America (1986), the Western Apicultural Society Award for Outstanding Service to Beekeeping (1995), the USDA Award for Public Service (1996), The Pacific West Area EEO award, and 9 USDA Certificates of Merit. He was named Outstanding Senior Scientist of the Year for 1998 by the USDA's Agricultural Research Service. He is a member of the International Bee Research Association, International Commission for Bee Botany Pollination Section, and Gamma Sigma Delta and Sigma Xi honorary societies. He is cited in Who's Who in Frontier Science and Technology, First Edition, 1984; Biography International,1988; American Men and Women of Science,1995; and Who's Who,1999 - present.

1999

Dr. Erickson's research career has resulted in authorship/co-authorship of over 170 technical publications including one book, 3 invited book chapters, 14 review articles, 2 videos, 2 patents and 7 abstracts. He served as co-editor of The Proceedings of the Second International Conference on Africanized Bees and Bee Mites (2000), presented 26 papers at scientific meetings, given more than 200 invited presentations to industry and community groups, presented 12 university seminars and participated in 11 symposia. He has served as major professor/research advisor for eight M.S./Ph.D. candidates and 3 Post Doctoral appointees in the University of Wisconsin, Department of Entomology from 1979 to 1986 and University of Arizona. He has also participated in numerous programs for young scholars.

Following retirement Eric plans to spend long hours creating in his wood woodworking shop, restoring his 1924 Model T truck, fishing, and being Mr. Fixit for his family and extended family. Because of his life long fascination with insects (as a child he thought bugs were toys for kids) he will likely continue studying insects and publishing his observations.

FOREIGN NEWS

FUNNY HONEY Western Australia is seeking approval to ship honey to New Zealand.

The New Zealand Ministry of Agriculture said it was seeking public submissions on biosecurity issues but warned non-technical points will not be considered.

New Zealand beekeepers said the move could hurt as supermarkets use the imports to force local prices down.

"The only reason anyone would bring it in was that it was cheaper than buying New Zealand honey," one said. "So basically it would be bad for beekeepers and the only people that would make money out of it would be supermarket chains.

"Most New Zealand people wouldn't particularly like the taste of West Australian honey. It's got quite a lot different taste from New Zealand honey."

A ministry spokesman said it was expected a decision on the imports would be made about the end of March.

•

LABEL LAWS NEEDED The National Beekeepers Association began work on national rules for the labeling of honey.

Major honey producers, packers and marketers have their own standards but there are no nationally recognized set of rules.

The need for national rules became apparent after incidents of false labeling saw honey sold as Manuka rejected in Japan when tests showed it contained little Manuka honey.

The association said the lack of national rules made it difficult to identify incidents of mislabeled honey products.

The association and industry advisers are meeting to look at the introduction of standards to define the different types of honey.

Beekeepers said these were needed because mislabeling was fraud that could ruin the reputation of the New Zealand bee industry and its unique honey.

•

RAINY SEASON? Outback apiarist Keith Brooke said his bees are telling him that central Australia is likely to have one of its wettest summers on record.

"They're sealing off down round the entrances, which they only do as an indicator that it's going to get pretty wet," he said. "They're really getting into the work.

"They're full of honey and they're gathering extra pollen and bringing that in as well. And when they start sealing it down, you know she's going to get wet."

Brooke says the bees are showing the same signs as 1988 when the usually bone-dry Todd River overflowed and flooded central Alice Springs.

He said because of the bees' activity he expects three times the average summer rains, or more than 500 millimetres (19.68 inches).

•

CHALKBROOD SPREADS Chalkbrood disease has reached the world's purest population of Ligurian honey Bees located on Kangaroo Island off South Australia.

The bees were imported from Italy over a century ago.

The state Department of Primary Industries department believes chalkbrood has spread across the island.

"It's disappointing – Kangaroo Island was probably the last bastion that was free of it until now." a spokesman said. "For the majority of beekeepers, what it means is a possible increase in labor in having to put in practice or in place, disease control strategies that may previously not have been there."

WI HONORS ITS OWN

Liz Vaenoski

Walter Diehnelt

Paul & Dorothy Hess

The Wisconsin Honey Producers presented several awards at their annual convention held in Oshkosh. **Walter Diehnelt** was presented with the Pioneer Award for 2001. Walter is a fourth generation beekeeper, who learned from his father, who learned from his father, who began keeping bees in WI not far from their present location when he immigrated from Germany. Walt was chairman of the Southeastern district for 35 years and on the legislative committee for many years.

WHPA Pioneer award was also presented to **Liz Vaenoski** of Clinton, WI. Liz spends many hours as a spokesperson for, not only the WHPA, but our industry. She has worked at many state conventions, state fairs and served on many committees. Most of all she enjoys helping others learn about beekeeping and beeswax.

Paul and Dorothy Hess were presented with the Beekeeper of the Year award. They have been beekeepers for about 30 years. Paul did an outstanding job as auditor for the WHPA for 10 years.

TUCSON LAB NEWS

Bee Scientist Branches Out Colorful poinsettias are favorites because they rank as the nation's top-selling potted flowering plant. But poinsettias, *Euphorbia pulcherrima*, are also a favorite of the silverleaf whitefly.

This greenhouse pest, known to scientists *as Bemesia argentifolii*, is no bigger than a ballpoint pen tip. It sucks juices from the poinsettia leaves and stems and weakens the plant, according to Agricultural Research Service entomologist Gloria DeGrandi-Hoffman, based at the agency's Carl Hayden Bee Research Center in Tucson, AZ (http://gears.tucson.ars.ag.gov)

To clobber the tiny whiteflies, DeGrandi-Hoffman and colleagues have developed user-friendly software called BIOCONTROL-POINSETTIA. It will help growers determine how best to use a wasp, *Eretmocerus eremicus*, a natural enemy of whiteflies. Female wasps lay their eggs in whitefly young. The wasp eggs then develop inside the whiteflies, eventually killing them.

The new computer model helps growers determine how many wasps to turn loose in greenhouses to attack whiteflies. It also indicates when and how often they might use the wasps for whitefly control. The software augments growers' expertise and experience, giving a resource for an objective analysis.

De-Grandi-Hoffman developed the software at the urging of colleagues John P. Sanderson at Cornell University, Ithaca, NY, and Roy G. Van Driesche at the University of MA, Amherst. Mark Hoddle, University of CA, Riverside, along with Sanderson and Van Driesche, first discovered *E. eremicus*' impressive capabilities as a biocontrol agent for whitefly.

To build the program, DeGrandi-Hoffman entered whitefly and wasp information, gleaned from years of work by Sanderson and others, into a mathematical form for the computer to analyze. The result sits on a single floppy disk and runs on any personal computer equipped with Windows 98 or later.

ARS is the U.S. Department of Agriculture's chief scientific research agency.

CA NAMES SPECIAL MEMBERS

Brock Ashurst

Dion Ashurst

Dion and Brock Ashurst, Young Beekeepers of the year. Fourth generation beekeepers, run their own operations and continue to work with their father, Buddy Ashurst. They pollinate, raise queens and share the same interests outside beekeeping.

Carl Powers, Honorary Lifetime Award.

Pat Heitkam

Pat Heitkam, Beekeeper Of The Year. Trading a bicycle of a beehive, Pat started in business and never looked back. Making it through the "old truck, bad luck, no buck" stage he hook up with Leonard Pankratz of CanAm Apiaries and Clarence Wenner or Wenner Honey Farms learning queen rearing on a large scale. Pat has been President of The CA Beekeepers, President of CA Bee Breeders, CSBA Young Beekeeper of the year, and in 2000-2001 VP of the American Beekeeping Federation.

But Still Answers Questions Got a question about honey bees? Now you can send your questions by computer to honey bee experts at the Agricultural Research Service's Carl Hayden Bee Research Center in Tucson, AZ. The center's researchers, who are international authorities on honey bees, will reply via Internet in about 24 hours, according to Gloria DeGrandi-Hoffman.

This new Internet service, free to the public, is called, "Expert Forum on Honey Bees." It lists a wide range of frequently asked questions, along with answers from scientists. Examples include: "What should I do if I find Africanized honey bees nesting on my property?" "How do I keep honey bees out of my swimming pool?" and "How can I get started keeping bees?" In addition, the Forum also has answers to questions about beekeeping as a hobby or profession, crop pollination, honey bee biology and research conducted at the center.

A special category called "Student Forum on Honey Bees" gives kindergarten through 12th-grade students the opportunity to use pre-existing questions as a template to help develop new questions on their own.

Users will play a key role in expanding this state-of-the-art, user-friendly, electronic question-and-answer service, according to DeGrandi-Hoffman. Each question answered by center experts will be kept in a database. That way, answers to subsequent similar inquiries will be available to anyone, anytime day or night, seven days a week. What's more, when new information becomes available, the laboratory staff will review and update old answers on the Forum.

"Expert Forum on Honey Bees" is part of the Hayden Center's award-winning web site. It can be found at: http://gears.tucson.ars.ag.gov

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It's Not Just For Women

Peter Sieling

Beekeepers who sell their own products should always be trying new ideas, expanding their product line and searching for new customers. The smart, aggressive marketer must also create and maintain an image that makes people want to buy from him or her. I work hard not only to keep up with modern cultural trends, but to stay ahead. I was one of the first to buy a closet full of bell bottoms when they came back into style, and I still wear my leisure suits from the seventies. They'll be back any day now. But I was caught off guard by a recent newspaper article in Foster's Sunday Citizen from New Hampshire. Someone sent me a clipping about a New England beekeeper, but the back side of the article really caught my attention. It was titled: "Makeup: It's not Just for Women." Apparently men are starting to use cosmetics. I had no idea! If I could only get in on this Movement before it really takes off. The cosmetic industry is about to double its customer base. I could become the next Mary Kay. I imagined a pink Cadillac in my driveway. Turn beeswax and mineral oil into a cosmetic base, add a little red or pink dye and voila... Lipstick! A little blue or purple coloring and...eye shadow! Or how about...uh... what other kinds of makeup are there, anyway?

I studied the article with a dictionary in hand. Foundation, bronzer, eye liner brushes – this sounded like construction or machine shop stuff. Maybe a guy could find cosmetic supplies right in his tool box. I already have a brass bristled brush and bronze soldering rods. Perhaps I could develop products that men could apply with a hive tool or a spray gun or router attachment.

The biggest obstacle would be overcoming men's reluctance to enhancing their naturally good looks. What responsible male would want to drive women into uncontrollable frenzies of passion? Still, the profit potential was vast. I decided to seriously research the cosmetics industry. Walmart sells cosmetics and seemed to be a good place to see what people buy. I didn't want to give any false impressions, so I wore my green leisure suit, steel toed logger boots and a Sire Power cap. Shaking hands with the greeter, I squeezed until he collapsed on the floor. "Where's your makeup department?" I asked. His firm handshake went dead-fish limp as he pointed somewhere toward the middle of the store. I thanked him and headed west. The store was a maze of aisles. Cosmetics appeared to be centered in the ladies lingerie (pronounced "lonjeray") section. I hadn't thought to bring a compass and soon found myself slightly bewildered and somewhat embarrassed. Why hadn't I brought my wife as guide? I turned down a row of nylon things and into some scanty things, then turned left into some skimpy nightie things, then right past stuff I couldn't look directly at. Suddenly there was an identical row of nylon things...I was traveling in circles. The sweat poured off my face. My tongue swelled. Women were glancing at me out of the corners of their eyes and scurrying off until I was alone in an endless expanse of lingerie. When lost, it's best to sit tight and wait for rescue. I staggered into a changing room area and crashed onto a bench. I looked up and in the distance saw a DeWalt power tool sign and shelves of tools. Hardware! I jumped up and ran, fell, then staggered up. Concentrating on putting one foot forward at a time, I riveted my eyes to the DeWalt sign. As I approached, it melted into a display of bikinis. A mirage! Losing all hope I fell on my face and lost consciousness.

When I awoke, I saw a pair of high heeled shoes staring at me. "How may I help you?" the shoes said.

"I'm looking for the cosmetics section," I croaked.

"You're here," the shoes answered. "And you've been circling it for the last two hours." I slowly stood. The shoes weren't talking at all! It was a woman in a blue smock. She quickly stepped behind a glass counter. "Now what do you need? Something for your wife?" I pulled out the crumpled newspaper clipping from my pocket and flattened it out. According to the article, "...while some women may feel more comfortable buying from a man, men feel the same way..." "Pardon me, ma'am, but is there a man around here who could sell me some makeup. No offense or anything."

Her eyes narrowed. She picked a microphone and I heard over the loudspeaker, "Hank from automotive to the cosmetics counter, please. Code 16. Hank to the cosmetics counter, code 16." She couldn't seem to take her eyes off me. It's a problem most of us professional beekeepers have. We attract women like flies to a... "Hank will be here any second." She stood staring at me and tapping a two inch long fingernail on the countertop. I noticed a guy threading his way through a brassiere aisle with a tattered map and compass. He was about 6 foot 5 inches, 250 lb. and carried a tire iron.

"Is there a problem, Debbie?" he said, glaring at me. Service is really slipping at Walmart. They seem to be losing that friendly atmosphere.

"This here fella needs to buy something." Hank's face softened.

"Come along, I'll show you the way to hardware and automotive. It's a little confusing without a map."

"Err...I need cosmetics." Hank's face changed again. I wish Walmart wouldn't hire such moody people.

Hank turned to Debbie. "He needs cosmetics."

"You will stay here until he's done." She must be the bossy suspicious type. Turning to me she asked, "So what would you like?"

I found my list from the newspaper. "Satin foundation, bronzer, brow set, blush, lip conditioner, one lip liner brush and one eye liner brush unless I can use one brush for both, and one jar each of whatever I'm supposed to brush on."

Debbie peered past me as if someone were hiding behind the shelves. She started to pick up the microphone. I had to act fast. I didn't want to have my name in the Police Blotter section of the local paper. And I wasn't sure my wife would post bail. I quickly shoved the newspaper article across the counter. "I'm just trying to keep up with my customers at work and relate better to women, too." She looked over the paper.

"Ah." She seemed to understand. "Let me get Madge for you." She paged Madge, then dismissed Hank who ran back to automotive. Madge and Debbie conferred for quite awhile behind the counter. Madge came forward. "I think you are an Autumn. Let's see what we can find for you..."

Twenty minutes later I left with $79.95 in little bottles and brushes, and instructions to check myself into Terrie's Unisex Hair and Beauty Boutique should I have problems.

If it doesn't work, hey, beeswax makes great candles.