APR 2000

Bee Culture

Bee Culture

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FEATURES

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Blossom by blossom the Spring begins. Behold the magnificent maples.

photo by Kim Flottum

DEPARTMENTS & COLUMNS

Publisher – John Root, Editor – Kim Flottum, Production Coordinator – Kathy Summers, Circulation & Advertising – Dawn Feagan, Publications Assistant – Mary Weigley

Contributors

Richard Bonney • Roger Morse • Richard Taylor • Mark Winston Clarence Collison • Ann Harman • James E. Tew • Malcolm T. Sanford

KEEP IN TOUCH

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

MAILBOX

Live And Let Live

I'm still fairly new to the business of beekeeping, but I'm trying to learn. Three years ago I would have guessed that propolis was some kind of athletic ointment and an apiary was the primate section of a zoo. But like so many subjects, the more I learn the more I realize I don't know.

One not surprising thing I've found is that beekeepers are really neat people, who, if given the chance, will talk about their bees and methods anywhere, anytime, to whoever will listen.

This last Summer at a local flea market I met a beekeeper at his stand selling honey. We soon had a lively discussion going and I was enjoying the talk. Toward the end of our visit it came out that he killed all his bees at the end of the season and started each spring with new packages. He said the economics were better that way. We finished our talk, I bought a very tasty jar of honey and left.

I know bees are just insects, and at best they have a short life span, and beekeeping is a business that demands as much profit as possible, but it still doesn't set well with me to routinely dispose of the critters who have worked so hard to provide that profit. After reading a few years of *Bee Culture* and some books on beekeeping I've found lots of information on how to overwinter your colonies.

Yes, we have hard Winters in IA, but not as rough as those in MN, WI, or the Dakotas and I've met beekeepers in those states who overwinter their bees.

I'd like to know how others feel about this. Is it common to kill your colonies? If so, why? If not, why not?

I'm not a 'Peta' person. I have no problem eating cows, pigs, and chickens, but I'm not going to kill my dog just because he got old and slowed down.

Dan Wieland
Davenport, IA

UFOs Tried To Land?

First of all I read *Bee Culture* every month and the first thing I read is Mailbox.

My problem – I am a new beekeeper and have only been in the business for three years. I had three hives in the edge of the woods near my house until One Sunday night we had a lot of thunder and lighting with rain.

I don't know very much about diseases and such, so see if your readers agree with my conclusion on what happened to my middle hive.

About three days later I checked my bees. All hives were fine except the middle hive. It had no bees or honey.

My conclusion: A UFO was what caused what we thought was lighting. It swooped down, sucked up my bees, and the thunder was the little green men banging against the side of the UFO when they were getting stung. I can imagine it would be some sight to see.

Troy Sharpton, Jr.
Auburn, GA

No Extractor?

The February issue of *Bee Culture* arrived yesterday. I have almost finished reading it. Not having a computer, I seldom read Malcolm Sanford's column. However, this time the discussion of top bar hives attracted my attention. A favorite book of mine is "Allen Latham's Bee Book." I discovered that he had articles in *Gleanings* before his death in 1957

An interesting chapter in his book is on "Honey without an Extractor" in which he produced honey for extraction with a minimum of expense and foundation. He left a vee similar to the top bar hive. When cutting honey from a frame, he made a cut from each side and left a vee for the bees to start a new comb. An important part of the extraction process was a wire grid through which he forced the honey comb. With a little time to settle, the wax was on top. The beautiful wax sold for a premium.

Loren Sadler

Safety & Legality

The "Bee Talk" article by Richard Taylor in your February issue has problems.

First, Richard's wire embedder that cost $1 is a potentially fatal electrical hazard. The embedder pictured on page 43 totally lacks isolation from the high side of the power line. If one were to embed frames sitting on a metal chair on a concrete floor in one's basement, or sitting in a wooden chair with one's feet not dressed in rubber soled shoes, one might by touching a metal part of the embedder shown, or the wire being embedded, close a circuit from the high side of the line to ground and be killed.

Second, most states regulate even small scale processors of food, and extracting and bottling of honey is considered processing. The rules here in the state of Maine require that the surfaces touching the food or upon which the food may splash be of a non-corrodable material such as stainless steel. A flame-cut steel drum will not suffice, regardless of what coating may have been applied to its interior. It is illegal here to sell honey bottled using the homemade bottler pictured on page 44.

Whilst agreeing with the sentiment "Simplicity should be your rule." I suggest general consideration of Albert Einstein's statement "Everything should be as simple as possible, BUT NOT SIMPLER." (emphasis added) As you teach novice beekeepers, you should be careful what ideas you give them, considering Jesus' words " and lead us not into temptation " Much can be learned from beekeeping history, but it is not constructive to

Continued on Next Page

MAILBOX

pretend that the methods of a bygone era may be thoughtlessly applied today without severe physical and legal consequences.

Bill Morong
Dover-Foxcroft, ME

Finding The Queen

Hello, I have received your video on finding the queen, thank you.

You know, we are using an easier and faster method for this on a strong hive. We don't look for her in the combs, we shake all the combs off the super and transfer them without bees into an empty brood box with bottom board and install an excluder on top of this new box. Then we put the original brood box over this excluder and once you start shaking the combs over the excluder (you can then place them in another brood box) we will quickly find the queen on the excluder. We then rearrange the combs in two brood boxes to make a split or just put it all back again to exchange an old queen for a new one.

Hope this different method helps Jim Tew.

Maria Lyford-Pike
Uruguay, SA

Inner Thoughts

I recently received my brand new (January) issue of *Bee Culture*. Of course, I turned to the Inner Cover right away, as I always find it very informative and right on when it comes to the issues of the day. I was, once again, not disappointed. I was concerned however about this 'closing' thing in your head. Like, were you completely shut down or was merely a section of your head closed while driving 80+ mph down the highway? Or was just the part that normally stays open when driving shut down?

And on a more personal note – Christmas honey. Now if I read this correctly, you kept a pail of primo honey, California Starthistle, rated 10 on a scale of 1-10, that was sent to you in error. You also had a personal stock surplus of Ohio honey as a result of an up year.

Sooo if I'm getting this I received a jar of primo-rated-10-right-up-there-with-Bo-Derek California Starthistle honey that was stolen and a jar of unrated "what-the-heck-am-I-going-to-do-with-all-of-this-darn-disguised-in-pecans-honey."

Boy, it's a good thing you apologized to (our) Mom publicly already, or I would insist on you doing it again.

Julie, in Wisconsin

Editor's Note: The writer is the Editor's sister, who did receive one each of the above-mentioned jars of honey. The Starthistle *was*, however, paid for. Next year she gets socks.

Invaluable & Inspiring

You know, I look forward monthly to receiving your publication and, as a hobbyist, I have found it invaluable as well as inspiring. So many of your articles exude the warmth and friendliness of your "culture" (and, oh, do I miss Richard Taylor's regular submissions).

With so many big-hearted beekeepers in our country, I know of no philanthropic associations or endeavors to promote beekeeping as a source of livelihood (or supplemental income) for relatively poor people located here. Do you?

I have made some contributions to "Bees for Development" and to "Bees Abroad" both of which are located in England and help indigenous peoples in various parts of the world and wonder if there are any similar organizations located in our country or "affiliates" of these or other organizations? Are there many other beekeepers interested in sharing their knowledge and money with peoples all over the world who might improve their lives with these skills.?

Again, I appreciate so much your publication and the care you take to bring us great covers, good articles and a listening ear.

Leland E.G. Larson
Portland, OR

Penncap-M Increase

In the coming growing season beekeepers across the U.S. should be alert to a possible increase in the use of Penncap-M (encapsulated methyl parathion).

This may sound like strange advice in light of the decision reached by the EPA in October, 1999, which was to ban the use of methyl parathion on a number of food crops, most notably fruit crops such as apples, peaches, pears and plums and some vegetable crops.

While this has no doubt come as good news to those beekeepers who reside in the fruit growing regions of the nation or who travel there for pollination, there may be a downside to this decision for others.

The EPA's decision will have the effect of shrinking the market for Penncap-M. Displacement of this pesticide by a switch to Bt corn for insect control has further diminished the market.

If the manufacturers of Penncap-M still regard this product as a marketable asset, the temptation will be to focus their marketing efforts on those uses which remain, either to maintain market share or reduce inventories. While it may be good news that Penncap-M will no longer be used on some food crops, beekeepers should be aware that the label still approves its use on many other agricultural crops, among them alfalfa, almonds, cotton, canola, soybeans, sunflowers, wheat, oats, barley, onions, dry beans and peas, range and pastureland, potatoes, tomatoes, and our old nemesis – corn.

Penncap-M can produce acute kills, with a large mortality of fielders and a rapid decline and demise of the colony, but often the effects are more subtle and insidious. Frequently the kill of the fielders may be modest, and may go unnoticed by commercial beekeepers, although sufficient contaminated pollen has been brought into the hive to ultimately kill or severely weaken the colony. The symptom to look for in this situation is a break in the brood cycle and the death of nurse bees, both the result of ingesting

MAILBOX

contaminated pollen.

With late Summer applications such as corn, contaminated pollen may be stored and not utilized by a colony until late Fall when fresh pollen is no longer available, or may even be carried over until the first brood rearing of the following Spring. In this case mortality may come months after the point of exposure and unless beekeepers have some prior knowledge these losses are frequently attributed to mites or Winter kill.

Beekeepers should make inquiries to growers, applicators and Extension Offices before the growing season to determine if Penncap-M usage is anticipated in their area. They should get testing procedures in place with their state departments of agriculture or regional office of the EPA *before the fact* if at all possible.

Many departments of agriculture have shown little enthusiasm for documenting damage to bee-keepers from pesticides while others have been downright hostile, attempting to excuse bee kills as anything but pesticides. Still, it won't hurt to try and it will put them on notice that pesticide applications are being monitored by beekeepers. Any funny business on the part of state departments of agriculture should be brought to the attention of the EPA immediately.

Finally, beekeepers should follow up on even minor bee kills, if for no other reason than to eliminate Penncap-M as suspect. A single field sprayed with Penncap-M under the wrong circumstances is capable of contaminating bees over a wide area. While colonies may eventually recover from modest or even severe kills from some pesticides, even minor exposures to Penncap-M may be terminal or at best produce cripples which linger in the throes of death and fail to thrive.

Tom Theobald
Niwot, CO

INNER COVER

Most of us aren't directly affected by the National Honey Board, but most of us are indirectly affected by the activities they engage in. You may not, in fact you probably are not aware of all they have accomplished. They are visible, certainly, even to a two-colony hobbyist, when it comes to marketing aids, promotional materials, giveaways, free clip art, recipes, web pages, news releases, national honey month promotions, training sessions for group leaders, videos for kids, advertisements in magazines, coupons in grocery stores, the honey bear logo and a myriad of other things we literally take for granted. If you've been in this business for less than a decade you can't imagine what life was like before they were here.

Less visible, but more important, have been their efforts at promoting honey abroad, funding research to develop new uses for honey in hundreds of different products, sponsoring promotions with regional and national restaurants, promoting honey use with food editors and cooking establishments, developing quality assurance guidelines for honey producers, handlers, processors and corporate users and a thousand other things most of us will never know. All paid for by assessments collected on domestic and imported honey.

The people who initially gathered to give birth to this productive, and sometimes provocative child probably never envisioned how it would grow. Their hope, like parents everywhere, was that it would flourish, and this industry with it.

Like all children, or most anyway, they never turn out quite like you expected. And, like all children, they grow, flex, challenge, make mistakes and blunders, create wonderful and wondrous things from seemingly nothing, become stubborn and arrogant, and still, they remain children. But all of these behaviors contribute to growth and development and most parent/child relationships survive the tears and turmoil, the accomplishments and accolades involved. But some children mature, become independent and move on. Some, the good ones in the bunch don't forget the family ties that bind. Some do. Such is life.

The Honey Board has grown. Beyond, I expect, what anyone a dozen years ago would have predicted or could have imagined. This is good. Or maybe not so good. Let's see.

In late February, the Agricultural Marketing Service published in the Federal Register, finally, the proposed amendments to the Honey Research, Promotion, and Consumer Information Order, which were authorized by the Honey Research, Promotion, and Consumer Information Act. There are approximately 3,285 producers, 400 producer-packers, 348 importers and 121 handlers currently subject to this act. That total – 4154 people – are responsible for all of the honey that the Honey Board oversees. The cut-off – anyone who produces, packs, imports or handles less than 6000 pounds of honey in a year isn't included. This group, however, is responsible for producing (at 1¢/lb) in 1998 220 million pounds of honey ($1.8 million) and importing (at 1¢/lb) 132.4 million pounds of honey ($1.4 million).

The proposal, with support from the ABF, AHPA, NHPDA (when initially made) has many components. In fact, it is 20 pages long and there's no way I can get it all in here but offered are what I consider the highlights. However, DO NOT, I repeat DO NOT consider this coverage complete, especially if you are eligible to vote. Read the proposal yourself (it'll take maybe an hour). Get a copy off the Honey Board's web page (www.nhb.org) or USDA's page, (www.ams.usda.gov/fv/rpdockethst.htm), or call 202.720.9915 (USDA AMS Office) for a copy. Comments (*NOT* the election) are due back by **April 28, 2000**. Here goes.

Of the 4154 or so people eligible to vote, as in the previous amendment vote, those representing a majority of the honey produced or imported must vote in the affirmative for the amendment to pass. So, from the exporters side, in 1998 348 importers brought in 132.4 million pounds, and eight (8) importers represent 75% of that, or 99.3 million pounds. Total honey assessed in '98 was (220 + 132.4) 352.4 million pounds. Eight importers represent 28% of the honey vote.

Continued on Page 51

NHB Referendum Comments

New Books

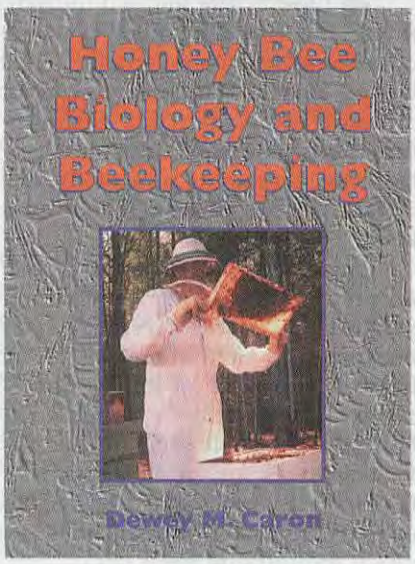
Dewey Caron's long awaited book entitled *Honey Bee Biology and Beekeeping* (Wicwas Press, ISBN 18780750908), was released in late February. Hard cover, 355 pages in B&W, this book is unique in that it offers both sides of honey bees – biology and practical management.

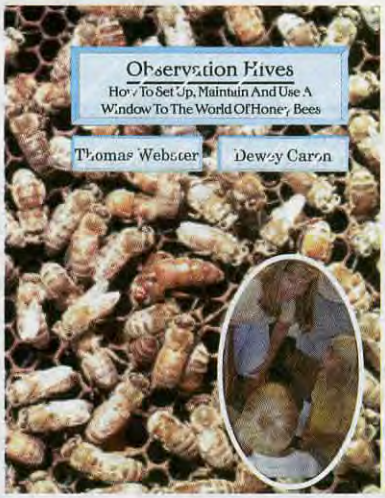
The science side of the book covers anatomy, communication, queens, foraging and other fundamentals. The beekeeping section is fairly typical. Getting started, management basics, pollination, harvesting, pests and diseases. Each chapter has several discussion questions and references for additional reading at the end.

In the Forward section, Dewey states that this book is not intended to be a basic 'how-to' manual. Rather, it provides the 'why' questions of bee biology and beekeeping management.

For that reason this is the perfect reference book for an introductory or intermediate short course. Students should have the basics this book provides, and get the how-to from the class. There is no other book like it in my experience.

Available from Wicwas Press, The A.I. Root Company and other sources. About $40 from most dealers.





Observation Hives. Tom Webster and Dewey Caron. 110 pages, soft cover with hidden spiral binding (so it lies flat when open). B&W photos, published by The A.I. Root Company, $19.95 in the U.S.

This book was taken from a series of articles written for *Bee Culture* magazine a couple of years ago by the same authors. However, for the book, many new photos and graphs and charts were added, along with several diagrams on building observation hives. Also added were chapters on the uses of observation hives, how to make a Huber-type leaf hive, and a travelling hive.

Using this book, and with the initial help of a beekeeper, any nature center, museum or farm market can set up and maintain an observation hive. If you work with these hives, or know someone who does, or would like to, this book is an absolute necessity. There's no other book like it. *Kim Flottum*

NEW

A new pollen trap, named Sundance™, has been introduced by the makers of Ross Rounds™. This trap was developed by trial and error over the past 20 years. It combines the best ideas of several other traps, and incorporates improvements to overcome remaining deficiencies.

Developed to work well in humid Northeast conditions, the manufacturer claims this trap can be left on hives all season with no adverse effect on brood or honey production. Other advantages include an ingenious set of internal drone escapes to keep hive morale high and allow bees to exit without going through the stripper screens, and a device to keep hive debris (including Varroa mites) from falling into the pollen. Finally, the trap is designed so that sticky boards can be used to monitor mite populations without trap removal. Available from most suppliers.

Strong Words

Steve Taber
Keith Newton

NO ADULTERATION. The first time I was aware of beekeepers lobbying was right after World War II, about 1950. At that time the prices of honey and sugar were controlled. The price of honey was about $0.17 per pound. The lobby efforts were directed to remove price controls on honey, which the government did. The price of a pound of honey immediately shot up to about $0.30 or above. Six months later the price of sugar was decontrolled, and the price of honey went back to about $0.17 But worse than that, every grocery store in the U.S. was stuck with overpriced honey on their shelves, and it stayed there for years. The result of the lobby efforts was worse than nothing.

Now 60 years later, we are stuck with a different problem. The two bee organizations, American Honey Producers Association and the American Beekeeping Federation, have been collecting money to lobby to prevent lower-priced foreign honey from entering the U.S. The amount of money collected and spent on these lobbying efforts is staggering and in my opinion a great waste because we cannot expect positive action from Congress.

The problem we are faced with today is not the price of U.S. honey or any foreign honey imported; the problem is honey adulteration. This problem was vividly expressed by Dr. Gary Fairchild in the February 2000 issue of the *American Bee Journal*. If we ever lose the public's or the honey consumers' trust that "pure" honey is pure, it won't make any difference if we have a Honey Board or not.

The most popular cookbook in America and one that I use and keep on my shelf (*Joy of Cooking*, by I.S. Rombaur and M.R. Becker, 1975 edition, Bobbs-Merrill Co.) has this to say about honey, page 558, "Variations in honey today are due in part to adulteration with additional glucose. Pasteurization, used to destroy the yeasts that may cause the honey to ferment, also reduces its nutrient value."

When was the last time you went to your supermarket and bought honey packed by one of the large honey packers? If you haven't, you should. Taste this product they call "pure honey." I will tell you now it has no flavor or taste; it is just sweet. I know some of you know this, but for others who don't, the big packers push heated honey through a filter at high pressure to remove any pollen, yeasts and other foreign particles which would cause the honey to crystallize, giving this thing they call "honey" a longer liquid shelf life. Even if that is not adulteration it certainly is ruining good honey.

The Quality Assurance Program Dr. Fairchild writes about should also include the treatment of honey. Honey for sale in almost all European countries is granulated honey, not a liquid product. The National Honey Board should be pushing the use of creamed honey, which is a special granulation, and the money collected from beekeepers should be spent not on lobbying the U.S. Congress but on using that money to find methods to detect and police any adulteration. – *Steve Taber*

Borrowed Time. I was appalled when I read the article written by Joe Traynor in the November '99 *Bee Culture*. His view is not that held by any beekeeper who exists anyplace except in his mind. Since Joe is not a beekeeper, he has no idea how much financial pressure we are under as beekeepers. His perspective is only peripheral at best. However, Joe has helped many beekeepers out by providing some much needed placement for the bees during almond pollination and has the ear of many in the industry. It is unfortunate that he is way off the mark on this issue.

His view that the one million-hive pool as he called it is the almond industry's way of somehow subsidizing the bee industry is ludicrous. Furthermore, to ask beekeepers already under tremendous financial pressures just to keep in business to "contribute to research from fees paid to us from almond pollination" is tantamount to taking the life preserver from people already in the water from the Titanic. For one thing, the pool of bees brought together during almond pollination is not all available for pollination afterward. Most of those bees are headed home to the plains and other wild areas that account for the honey the citizens of this country are so fond of eating on their toast in the morning. Others are off trying to make their yearly increase by splitting the few good hives they have left after the almonds have bloomed out. Some of these bees that are splits are not much good for pollination or even honey production in the year they are made. Without making these necessary increases, the numbers of hives provided to the almond growers would most assuredly drop.

The inference that bees from Canada and Mexico can come into the United States and do pollination is correct, and I fear that someday this may happen. The spread of diseases and additional pests is one of the reasons these countries can't bring them into the country already, most notably the fear of spreading AHB and fire ants that occupy the vast Mexican area.

As I see it, the almond industry is vital to the continued business of keeping bees commercially in the United States. Without government support in either trade tariffs on imported honeys or subsidies paid to beekeepers to the tune of 90 cents a pound we are all living on borrowed time.

The economic realities of beekeeping in this country are dependent on a good price for honey to the beekeeper. In 1979 when I got started in bees, the price of honey was 69 cents (with government support). Inflation was double-digit in the '80s. Honey prices are at 42 cents now. Do the math! It doesn't take a rocket scientist to know that we have lost much ground and need help.

– *Keith Newton*

THE WISE GUY

A change is at hand for the beekeepers of this country because we have a new CEO for the National Honey Board. How this will affect each of us is yet to be determined. On one hand you worry about the new person's ideas and if they will mesh with producers' ideas. You hope he will move the industry ahead and not have us stumble along blindly. You hope he will concentrate some effort on the shelf sales as that is where we all make the most money.

But if things do not change then his tenure should be short. What do you expect from the manager (the CEO title is way over done)? He needs to address all factions of our business, not just the packers. The last CEO divided this business and I believe he did it by design. The new CEO needs to figure out who pays for his organization and it is not the packers. The producers (and importers) foot the bill for all of the honey sold. We pay the 1¢ per pound, not the packer and we need to be dealt with. He needs to work with the board and be a fair and neutral manager.

The make-up of the Honey Board is flawed to start with, so his job is huge. You have two types of people on the Honey Board, each having opposite views. One produces honey and wants to sell it for a high price to make money and the other wants to buy it cheap and make money. How can these two types even stay in the same room? How can we have such agreement between these two groups? I never hear of any disagreement or big blow-ups at the Honey Board meetings. Why? If the producers that are appointed to the Board always agree with the packers then it seems we have weak representatives.

Our new manager needs to supply information to the people that furnish the money to run their organization. I have yet to see meeting minutes published on how members voted on issues. In fact, just try to get minutes from meetings. Our past manager wanted to keep us in the dark. If our new one wants support he needs to get this out to the masses.

We also need to see financial statements, not a proposed budget. Show us where our money is and where it goes. I understand there are some CDs that amont to between $500,000 and $1,000,000! If that is true – why? This is not a rainy day business. Cash flow should be very predictable. If this is true we are being over taxed for this promotion program.

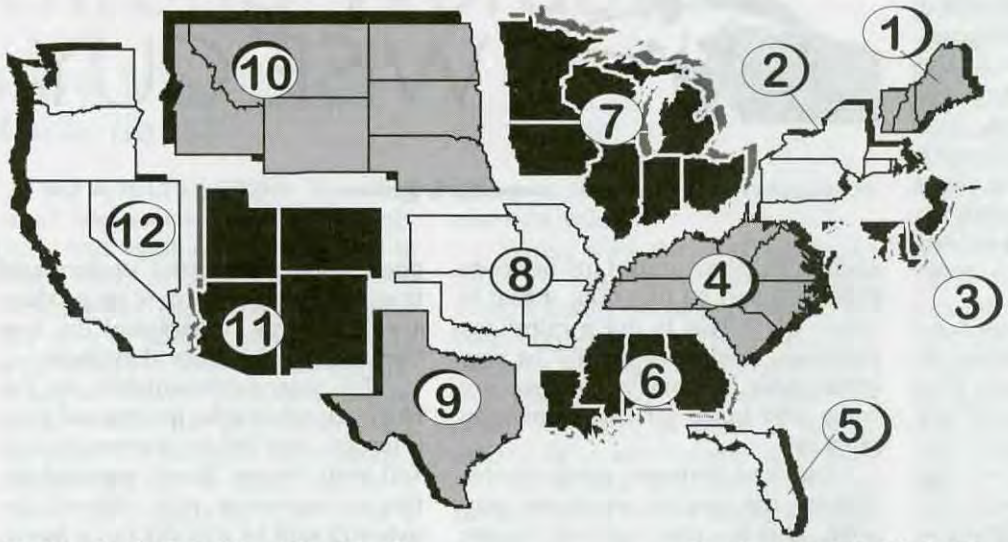
Our new manager needs to also address the quality assurance program. This is a smoke screen for two things to happen. The first is to get one more packer on the board and then to run smaller packers and producer/packers out of the business. If you don't believe it, request a copy of the proposed referendum and you will fall over with the power the board wants to have in the enforcement area. We already have laws on the books to take care of this. So why do we want more? The rumor again is the major packers want to run the small producer/packers out and this will help. It looks like we will be voting on this in early Summer and we all need to vote no to send a clear message to the packers.

I wish the new manager well but until this organization is made up of only producers we are only kidding ourselves. As I stated before when you have two sources that have different reasons for doing business you cannot mix them. I believe beekeepers know the benefit of seeing other people have success and filtering down to them. Anyone involved in pollination understands that when the farmer you pollinated for has success it filters down to you. The almond industry has done a lot for the beekeeping industry because of that relationship. Again the influence on the Honey Board is propacker and they don't understand that we need to prosper as producers. They only understand the less they pay us the more they make!

Tell your representative on the Honey Board to work for you and your interests, not for the honey packer. Tell your Honey Board representative to represent your side of the industry and be a leader not a pawn. Tell them to spend your money wisely. It's time some one on that board becomes a leader instead of a follower. If the new manager is a leader he will represent the whole industry, not just a part of the industry. He will ask for discussions and help from every part of the industry. The first manager of the Honey Board worked with all parts of the industry and was let go because a small part of the industry did not like that. You guess what part of the industry that is.

We need a fair shot here from the new guy. If he doesn't come out of the blocks strong then we as producers know this organization must go. – *Wise Guy*

APRIL – REGIONAL HONEY PRICE REPORT



Region 1, 2, 7 & 10 – The North

From the perspective of the bees, over half (54%) of our reporters feel the Winter was easier than usual. Occasional cold snaps seemed not to have hurt much. About 38% felt this Winter was about average, and about 8% think it was worse. Early inspections, quick ones show that half (50%) find everything O.K., while about 30% have found some colonies in trouble, and 13% will be feeding as soon as feasible. First major inspections start as early as late February, and as late as early April. Most get in the second or third week of March.

Region 3, 4, & 8 – Mideast & Central U.S.

Most have already made first major inspections. 27% found their colonies in good shape, 40% found them about average, while fully a third found their colonies needed significant help. Demand for colonies for pollination this Spring – 27% report increased demand, 27% report demand the same as previous years, and fully 46% report colony demand reduced this year, mostly because growers are gone. Meanwhile, reported prices for bulk and wholesale honey have not increased at all since last month. 66% report prices only steady, 34% show prices down.

Region 5, 6, 9, 11 & 12 – The South & West

The season is underway and early inspections, and help, have resulted in colonies of mixed conditions. 55% report their colonies are O.K. and off and running. 45%, however, report the early losses were higher than expected and they were busy making up losses in late February.

Honey sales, at the bulk and wholesale levels are mixed also. Only 9% report sales in these areas increasing, but price wasn't mentioned. 60% report sales steady, but price not mentioned, and 30% report sales have declined. All in all, this is a bit against the grain, but not yet strong enough.

	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)	69.42	72.60	74.00	67.58	75.00	69.50	66.14	72.00	68.70	62.00	90.00	60.67	40.00-90.00	68.26	67.41	56.26
60# Amber (retail)	65.69	63.95	68.00	66.42	66.00	69.00	67.08	67.00	72.20	62.00	80.00	54.50	39.00-80.00	64.32	63.78	54.09
55 gal. Light	0.57	0.63	0.60	0.52	0.50	0.70	0.60	0.60	0.60	0.59	0.65	0.63	0.45-1.50	0.65	0.62	0.64
55 gal. Amber	0.53	0.63	0.55	0.49	0.45	0.58	0.55	0.55	0.40	0.59	0.62	0.59	0.40-1.50	0.60	0.58	0.62
Wholesale - Case Lots																
1/2# 24's	31.54	27.59	42.19	31.52	42.19	32.00	36.59	42.19	30.00	42.19	33.15	25.50	22.24-42.00	39.19	28.68	28.63
1# 24's	45.41	39.10	46.80	44.24	40.68	44.00	51.40	39.60	44.95	38.40	38.50	45.50	32.40-60.00	43.34	42.22	42.98
2# 12's	38.42	37.96	45.60	42.71	40.43	40.00	38.99	40.70	38.40	31.80	33.00	38.16	29.40-52.58	39.34	39.22	38.66
12 oz. Plas. 24's	35.59	34.59	43.20	35.72	36.93	40.00	36.16	35.60	37.10	27.60	37.00	36.09	26.40-48.00	36.93	35.46	37.16
5# 6's	49.29	43.68	54.00	47.42	47.07	44.00	56.18	39.00	42.40	37.50	39.00	37.50	31.50-67.50	42.37	41.53	**41.05**
Retail Honey Prices																
1/2#	1.14	1.51	2.83	2.17	1.19	1.98	291.04	1.77	2.50	1.49	2.83	1.81	0.95-3.00	1.76	1.68	1.83
12 oz. Plastic	2.20	2.04	2.85	2.37	1.69	2.24	2.03	2.20	2.70	2.14	2.54	2.18	1.39-2.99	2.23	2.22	2.23
1 lb. Glass	2.86	2.29	2.95	3.10	1.89	2.85	3.09	2.49	3.50	2.39	2.88	2.76	1.58-4.00	2.68	2.64	2.74
2 lb. Glass	4.51	4.11	4.80	5.27	3.49	4.14	4.30	4.81	4.62	3.41	4.11	4.39	3.19-6.00	4.41	4.55	4.53
3 lb. Glass	6.17	6.49	7.80	6.75	7.02	6.40	5.89	6.26	6.60	4.79	5.25	5.67	3.99-10.00	6.26	6.37	6.24
4 lb. Glass	7.94	7.29	8.74	8.71	8.74	7.00	8.34	8.00	7.00	8.74	8.74	9.50	6.00-10.00	7.90	7.69	7.93
5 lb. Glass	8.82	8.87	11.10	8.86	9.03	8.00	9.44	11.00	9.00	7.90	9.05	6.98	2.50-12.50	8.66	9.56	9.31
1# Cream	3.36	3.09	3.85	3.86	3.85	2.99	3.05	3.37	5.50	2.29	3.55	3.22	2.13-5.50	3.27	3.12	3.15
1# Comb	4.14	4.00	3.60	4.35	4.41	4.25	4.10	3.50	6.00	4.41	5.00	4.65	1.95-6.00	4.22	4.06	4.37
Round Plastic	3.58	3.09	3.60	3.50	4.04	4.00	3.20	3.83	6.00	4.04	4.63	3.55	2.50-6.00	3.79	3.48	3.86
Wax (Light)	2.19	2.47	2.53	2.44	2.64	2.60	1.55	1.95	1.60	2.64	2.38	2.30	1.05-5.00	2.47	2.43	2.41
Wax (Dark)	1.98	1.92	2.30	1.76	2.50	2.57	1.48	1.20	1.10	2.50	2.00	2.10	0.95-4.50	2.18	2.10	2.05
Poll. Fee/Col.	36.75	39.13	32.67	32.00	39.21	35.00	37.71	40.00	30.00	39.21	47.00	36.72	20.00-55.00	36.87	38.14	37.47

1999 BEEKEEPING STATS

Not since 1994 has the National Ag Statistics Service recorded as many colonies in the U.S. as they did this year. Don't set your sights on a huge resurgence in the business though – the increase went from 2,633,000 to 2,688,000 – that's only a 2% increase, but any is better than a loss, which is what's been happening for the last five years.

Honey prices, however, aren't nearly as rosey. The chart below is self explanatory.

PRICE BY COLOR CLASS, 1998 & 1999
PRICE

Color	Co-Op & Private			Retail			All		
	1998	1999	%change	1998	1999	%change	1998	1999	%change
White	64.7	59.5	-8.0%	113.4	123.4	+8.1%	65.7	60.5	-7.9%
ELA	61.2	55.1	-10.0%	104.8	124.5	+15.8%	64.2	59.8	-6.9%
LA, A, DA	60.2	51.2	-15%	119.9	129.1	+7.1%	66.0	59.0	-10.6%
Other (not bulk)	64.5	61.7	-4.3%	168.4	150.3	-10.7%	83.2	73.7	-11..4%

Prices paid to producers and others for bulk honey are down from between 8.2 and 15%, while prices at retail are up from between 8.1 and 15.8%. The spread between a bulk pound of ELA (55.1¢) and a retail pound of ELA (124.5¢) is 69.4¢. You know what jars, labels and marketing add to that bulk cost. Do the math on markup, somewhere in the chain.

Where is honey produced? We compared the top 10 producing states for this and last year below. In 1998 these states had 67.2% of all listed colonies (1,860,000) and produced 73.5% of all U.S. honey. Since the U.S. gained only 55,000 colonies in '99, the 90,000 these top 10 gained indicate where the growth was strongest.

	California		North Dakota		Florida		South Dakota		Minnesota		Montana		Idaho		Texas		Wisconsin		Michagan	
Year	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000	Col X1000	Honey lbs X1000
98	450	37.4	230	29.4	230	22.5	225	21.4	140	11.1	115	14.0	120	6.0	91	7.0	89	8.1	80	6.8
99	505	30.3	255	26.8	228	23.3	224	23.3	145	11.9	122	8.5	120	5.8	108	8.7	80	6.0	73	6.2

Roger Morse

Research Review

"Watermelon and wine."

A fruit I have enjoyed eating this past year is seedless watermelon. It is not exactly seedless, but the seeds are only small, white flecks, which do not develop and are eaten along with the rest of the melon. They are not the big black seeds we normally associate with watermelons.

A fact I find interesting is that seedless watermelons must be cross-pollinated with a seeded variety in the same way that normal watermelons and most other fruits must be pollinated. Without pollination the fruit of seedless varieties will not develop. For this and other reasons, seedless watermelons are not easy to grow but are increasingly common because of consumer demand. Seedless watermelons were developed in Japan in 1939 but only recently have they become popular in the United States.

Seedless watermelons are hybrids. They are the result of crossing 4X chromosome female plants with 2X chromosome male plants. The fruit-producing plant is a triploid (3X chromosomes) that is sterile and does not produce seed that can reproduce itself. Producing the seeds that make the seedless varieties is a long, slow, expensive process part of which is usually done in greenhouses in isolation.

Hormones released by a developing seed cause fruit enlargement in most plants, including watermelons. Apparently, pollen carried to a female watermelon flower's stigma by a bee grows and reaches the seed, but at that point the seed aborts; however, the growing pollen has done its work and stimulated fruit growth.

At present, it is recommended that every third row, or every third plant in a row, be a pollenizer (provider of pollen) for the seedless variety. Selection of the pollenizer variety is important. The fruits should not look alike so that pickers can easily distinguish them, and they must be a marketable variety to make the scheme practical. Not all varieties of watermelons flower at the same time. Some varieties are better pollenizers than others as regards producing a pollen that will grow readily on the seedless variety.

Honey bees are recommended for the cross-pollination of seedless watermelons at a rate of one "strong" hive per two acres. It is reported that growing seedless watermelons has been increasingly popular during the past several years in the Delaware-Maryland area, and today about 30 percent of the watermelon market is seedless. It is recommended that growers use transplants, plastic mulch and drip irrigation. I have not seen or read anything about growing seedless watermelons in home gardens, but I presume the advice is much the same.

Beste, E. and eight others. *Watermelon production guide for Delaware and Maryland.* University of Maryland/ University of Delaware Cooperative Extension Publication (not numbered). 52 pages. 1999.

Honey Wine At King Midas's Funeral Feast

Midas was an ancient king who lived around 700 B.C. He became famous in Greek mythology when, in return for a favor, a god granted him his wish that everything he touched would turn to gold. However, when even his food became gold when he came in contact with it, he nearly starved to death. Midas was forced to beg the god to take back his favor, which was done.

Archaeologists at the University of Pennsylvania working with the artifacts from what is believed to be the tomb of King Midas in central Turkey are trying to learn what these ancient people ate. The tomb, a wooden structure under a large mound of dirt, was in good condition when it was first explored a little over 40 years ago. The mound was more than 150 feet high and 1,000 feet wide.

What is available today, and was not when the tomb was first opened, are methods of chemically examining the residues on the dirty dishes and cups and in three 33-gallon bronze cauldrons that held the alcoholic beverages used at the funeral feast. These were not washed or cleaned but were placed in the tomb when the king was buried.

The food residues indicate that the main coarse was lamb or goat, which was identified by the compounds that are associated with the fat of these animals. Carbon remains suggest the meat was first barbecued. Either anise or fennel, both local spices, was added. A stew contained legume seed (probably lentils), olive oil and honey.

Tartaric acid, which is apparently found in quantity only in grapes and grape products such as grape wine, was present in the cauldrons as were materials found in beer made from barley. Beeswax was also present, and it is from this that these researchers suggest honey wine was one of the alcoholic drinks. We do not, of course, know how the ancient peoples made their honey wine or honey beer, but an alcoholic beverage made from honey today in remote parts of several counties in eastern Africa also contains beeswax.

When this beverage is made today, the makers add comb that contains pollen and brood. It is presumably from these that the yeast cells that make the alcohol obtain some of the nutrients that are needed for their growth. In thinking about the making of alcoholic beverages, which

is done exclusively by yeast cells, it is important to remember that these are living creatures and that they must have a proper diet and the right environment in which to live and grow to make the alcohol. BC

McGovern, P. E. and eight others. *A funerary feast fit for King Midas.* Nature 402: 863-864. 1999.

Mark Winston

A Sting In Time?

"Why can't doctors predict whether someone will have a serious reaction to a bee sting?"

Modern medicine is amazing, truly amazing. What physicians can do today is astounding, and even more remarkable is what medicine will be capable of in the future. Heart transplants are now routine, and within a few years we'll be doing transplants with completely artificial hearts. Many other organs joints, and assorted body parts are equally replaceable, and we're beginning to repair even damaged areas of the brain and spinal cord by injecting laboratory-grown nerve cells to the proper regions. And diagnostics are superb; with genetic testing, we can predict the likelihood of a cascading array of diseases afflicting anyone and their descendants.

So, with all of this medical whiz-bang, gee-whiz stuff, why can't doctors predict whether someone will have a serious reaction to a bee sting? And why is it that if you talk with six different doctors you'll get six different stories about anything to do with sting reactions? Yes, medicine today is extraordinary, but the super-advances seem to have passed our industry right on by.

This issue has been on my mind lately because we used to sting potential students to test for reactions. We figured that it was better for someone to have a reaction on campus, with our university health services close by, than out in the field, distant from medical help. We didn't invent this routine, but rather it was recommended by our university physicians. However, the doctors changed, and now we're told this is not a safe practice, and have we checked our liability insurance lately? I don't fault our university clinic. They went to considerable effort to look into this for us, and even they received a bewildering array of advice from allergists throughout our region.

Medical research has worked out the fundamental story of allergic reactions, so at least we know what a reaction involves. Bee stings have hundreds of proteins in their venom, and when injected into the body, these foreign substances encounter the human immune system. The first sting may induce the production of an allergy-causing antibody, so that the next or a later sting causes these antibodies to trigger an allergic reaction.

Most of us become less sensitive to stings as our bodies become accustomed to these venom proteins. Less sensitive does not mean no reaction, however. A normal reaction includes pain, local swelling and itching, often accompanied by off-color language. Allergic reactions show an increasing severity of responses beyond this level, including extended swelling outside the immediate sting site, hives and whole-body redness and itching, minor respiratory problems, sneezing and abdominal cramps. A life-threatening anaphylactic reaction presents with symptoms including shock, fainting, severe breathing difficulty and massive swelling in the throat.

These reactions are different from massive stinging by tens, hundreds or thousands of insects, in which enough venom is injected to poison the victim. These massive envenomizations occur most commonly with Africanized bees. Massive stinging will induce failure of almost every organ system in the body over a few hours or days, resulting in death, but these are not allergic reactions.

The medical community has worked out the basics of sting reactions, but not in a predictive way. We know that most people don't have a serious allergic reaction after the first sting, but sometime later, after a second or later sting. However, about 15 percent of those who will have an allergic reaction are hypersensitive, and will react after the first sting. Further, no one can predict when a reaction will occur. Some stingees have a life-threatening anaphylactic reaction after the second sting, some show a gradually increasing severity in reaction over tens of stings, and there are even a few beekeepers who show no responses after 50 years of receiving thousands of stings, then suddenly keel over one Spring after a single sting.

We also can't predict what will happen to someone's sensitivity after being stung. Typically, an allergic response diminishes over time on its own, so that five years post-reaction, the responder is no more likely to react than anyone in the general population. Desensitization treatments that inject increasing quantities of venom over time in carefully controlled doses generally can bring someone down to a less-

Continued on Next Page

"At a minimum, good safety practices should include education for all employees concerning bee sting reactions, appropriate first-aid training and availability of Ana-Kits wherever there are bees."

responsive mode in a year, but about five percent of the anaphylactic-responding population don't improve, even with treatments.

In my laboratory, we became increasingly concerned about anaphylactic reactions because of an unusual cluster of serious incidents. I have been working with bees for 25 years, and in the first 20 years only experienced one situation in which someone had a reaction, and that was in 1983. One of my students' husband, training to be a dentist, would help her out in the field, and he received about 20 stings over a 12-month period with no unusual response. Then he got stung on the head one day, and began going into anaphylactic shock. He injected himself with epinephrine from the Ana-Kit that even then was always in our bee truck, went to the hospital, and never went out to the beeyard again.

Our next incident was over 10 years later and was the first of many we experienced in a short time. That case was classic, a student whose reactions progressed from normal, large-scale local responses through systemic allergic reactions, culminating in an ambulance trip to the hospital following a full-scale anaphylactic response. A subsequent off-campus sting a few months later from a bumble bee landed this student in the ambulance again, and desensitization has not been effective. She now works on bark beetles.

A few months later, a second student found herself in an ambulance following a sting during honey extraction, although her reaction was not as full-blown or life-threatening. A third student passed out in our bee truck and had every anaphylactic symptom except for massive throat swelling, but fortunately she recovered and her research was complete enough by then that she could finish her degree. We've also had to call the university emergency team a few times due to fainting, but in those cases it was more fear or heat prostration, and anaphylaxis wasn't the culprit.

This rash of reactions over a short period sent me over to our university clinic to get some advice as to what we could do to predict these reactions. The advice at that time was to sting new students on campus twice, a week apart, and try to weed out the reactors early on. They also suggested we conduct training sessions for all students on how to recognize and respond to reactions and that we always have Ana-Kits available in our trucks, laboratory and beeyards, recommendations we have followed with considerable diligence.

This program went along fine for a few years, until we had a student faint after a sting test and we called the university emergency response team. Personnel had changed by then, and the new team didn't know where my laboratory was. Twenty minutes later when they finally showed up, the crisis was over. This incident induced a chain of events leading to a new policy, in which prestinging is no longer recommended. The medical director of the university clinic called a range of allergists around town and received enough conflicting advice to make all of us cautious about proceeding with stings. The only consistent advice she received was that annual skin testing for all staff might be desirable, except that, as she put it, "with skin testing it is only possible to predict if someone is safe with the next sting." Given that we may get stung tens of times a week, that didn't give us much predictive value.

I've asked around other bee research laboratories and beekeeping operations, and they show a range of practices, none of them any better or worse than what we have done. Some pre-sting and some don't, some insist that students or employees get stung routinely, at least once a week, and others just take their chances. Most beekeepers pay little attention to stings and figure that anyone who is going to develop an allergic response will become obvious pretty quickly.

At a minimum, good safety practices should include education for all employees concerning bee sting reactions, appropriate first-aid training and availability of Ana-Kits wherever there are bees. In addition, liability management is an unfortunate reality in our litigatious society, and carrying proper insurance a must.

Most of us follow these practices, but an area of largely unregulated concern is beekeepers who offer a stinging service for "patients" who suffer from arthritis or other immune diseases. There are innumerable reasons to discourage this practice, not the least of which is that injecting someone with bee venom directly from the bee provides a completely unregulated venom dose, and thus is both medically vague and highly dangerous, especially if medical help is not close by.

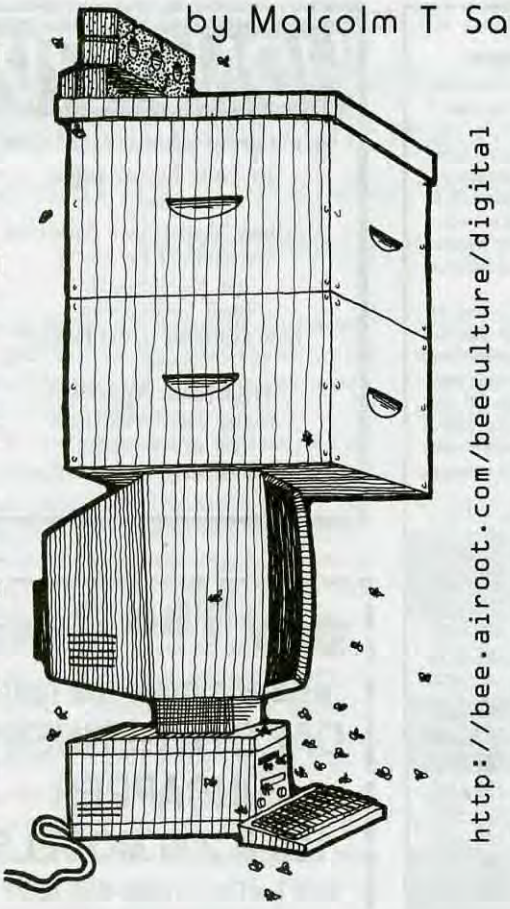
The good news is that fatalities from anaphylactic reactions are unusual, more because of the quality of emergency care available in North America than the rarity of these events. I suspect that almost anyone working with bees commercially or in full-time research has an anaphylactic story or two to tell, and these reactions are common enough to suggest continued diligence certainly is in order. But wouldn't it be nice if high-technology medical advances would provide us with better tools with which to predict these responses. How about it, you physicians-beekeepers-scientists? I smell an interesting, and incredibly useful, research project here, one from which all of us could benefit. 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

Pointing To Pollination



http://bee.airoot.com/beeculture/digital

It has been my impression that as problems proliferate in the beekeeping industry, only one sector has much growth potential. This is **commercial pollination**. For although honey can be imported, pollination potential cannot. Naturally there are many sources of pollination information on the World Wide Web. Significantly, what I have called the pollinator's bible, Agriculture Handbook 496, *Insect Pollination of Cultivated Crop Plants*, authored by S.E. McGregor is found in two places, linked to the **Bee Culture** and **GEARS** home pages. The latter belongs to the Carl Hayden Bee Research Center at Tucson, Arizona. The best place to begin searching for pollination information is Dave and Janice Green's The Pollination Scene. That URL is: **http://users.aol.com/pollinator/polpage1.html**. There is a lot on this page. It begins with a picture of a melon that will never make it to market. One end is deformed, the result of too few visits by a bee. According to the Greens, their web page is an attempt to help bring together practical pollination information for all those who are involved in horticulture.

The site has grown considerably and the Greens are in the process of converting **The Pollination Scene** into a full-blown commercial enterprise with a .com address. Perhaps in the near future we might even see an initial public offering (IPO) in the New York Stock Exchange along with many of the other .coms that have come of age lately. The new site is the pollination home page. Its URL is: **http://www.pollinator.com/** The phrase, "En Espanol, gracias a Alta Vista," at the top of the page caught my eye. This is something I had not seen before and is quite remarkable. Clicking on this phrase takes one to a dialogue box that asks how the page should be translated. It does a really fine job translating the English to Spanish!

A link to an essay entitled: **Why Manage Pollination**? provides the *raison* d'être of the pollination home page. "You manage the soil, the water, the pests. But many growers don't manage pollination, because they don't recognize what poor pollination costs them. If you lose 30% of the value of a crop, you've wasted that much of all the other inputs. Many growers think that a bee visiting a blossom will accomplish its pollination. In most cases, however, a single bee visit is not sufficient to make a quality fruit or vegetable. One visit may be enough for easy-to-pollinate peaches, but for apples, melons and many other crops we would like to accomplish 15 or 20 visits." The story goes on to discuss what happens when pollination goes awry and shows pictures of misshapen fruit as examples.

Another prominent link off the pollination page directs one to an article in **Penn State Agriculture**, a magazine published for the friends, alumni and others at the **Pennsylvania State University**. In a story in the **Winter/Spring 1998** edition, there is a discussion of what has happened to honey bees around the country due to the ravages of both tracheal and **Varroa** mites. "Millions of honey bees have died in the United States over the past five years, eliminating some beekeeping operations and creating a critical shortage of honey bees for pollination in some areas. In 1981, Pennsylvania had 85,000 commercial honey bee colonies. By 1995, the number had plummeted to less than 27,000 colonies. That year, some large beekeepers lost 50 to 75 percent of their colonies..." The focus is on the effect all this will eventually have on pollination potential.

Continued threats to pollination listed include **Varroa mites**, **small hive beetle**, **pesticides**, and **other worldwide problems** are described by the pollination home page. A narrative of where pollination might be going authored by David Green is titled "**Pollination—Century 21 Style**." It discusses large-scale commercial pollination as practiced today by "strange midnight 'cowboys, who can be found in the coffee shops at daybreak in the almond country, coated with mud and dead tired. Beekeeping is not an easy life, and many beekeepers are known as 'rugged individualists' or as 'independent SOB's' depending on your perspective. But this almond crop, and other major US crops, totaling about ten billion dollars worth of produce, depend on these hard working guys."

Under the Odds 'n Ends category at the pollination home page are links to a **pollination exhibit** at the South Carolina State Fair, **pollinator planning tips**, news about pollination, including **announcements** of the 8th International Pollination Symposium in Hungary, the XVI International Congress of Sexual Plant Reproduction to be held next April in the vicinity of Banff, Alberta, Canada, the National Conference on Pollination Ecology and Its Contribution to Conservation and

Biodiversity to be held February 22 - 24, 2000 at Visakhapatnam, Andhra Pradesh, India. Even the possibilities of pollination as far away as the **planet Mars** are considered. There is also information on **selling bees**, **pollen vendors**, and **chemical bee attractants**. Finally, the page sports a **bulletin board** where parties can exchange ideas and information on pollination

My favorite link off the pollination home page is a table describing many aspects of **pollination management**. There is a brief discussion of Joe Traynor's book, *The Almond Pollination Handbook*. The book is surprisingly reasonable in cost: $7.00 postpaid, from Kovak Books, PO Box 1422, Bakersfield, CA 93302. There is information sorted by **different crops** and other **general information** based on specific plants. There is a link to list of **alternative pollinators** and the **forgotten pollinator campaign**. Regional pollination sites are referenced, including one for the **south** and **north**, as well as **other countries** around the world. A **short course** on pollination, as well as the **definition** of basic terms can be accessed from this page. A well-organized **course on pollination** along with various guidelines to establish how each pollination unit performs is also found here, along with a **case study** of a cherry pollinator. Finally, the Oregon State University. Links to **other universities**, which have pollination activities, as well as the **GEARS** site at the Tucson Bee Laboratory.

The pollination home page has listed an extensive **number of beekeepers** who are doing commercial pollination, not only in the United States, but also in the rest of the world. These are alphabetically arranged and grouped into eastern and western states. A list of **pollination brokers** and **sample pollination contracts** is also found here. Finally there is a pointer to *Bee Culture's* **Who's Who in the Bee Yard** in case one should want to contact references in their own state. The Greens are promising a lot more in the future as pollination continues to get the respect that it has in both the **home garden** and the **forgotten input** in commercial agriculture. BC

Dr. Sanford is Extension Specialist is Apiculture, University of Florida. He publishes the APIS Newsletter: ***http://www.ifas.ufl.edu/~mts/apishtm/apis.htm***

James E. Tew

Bee Culture's Beeyard

Mixed Season

Building your own woodenware is much like taking bees from a building – everyone should try it once. For most of us, once is enough. However, there have been changes in woodworking equipment, and there will be more to come. Building good bee equipment has gotten easier. Though for the foreseeable future, you will be able to buy equipment made better and cheaper than you can build it, for many of us it is enjoyable to build our equipment. Those of you who have been reading along for the past year or so are aware that I started a yard last year from splits, nucs and packages. I ordered a few supers, but not enough for a full honey crop this season. Anticipating a need for more supers, I decided to build a few from pine lumber. For those of you who don't get a charge from beekeeping woodwork, skip on down to the following section on "Feeding".

Wood for Building Supers I suspect that most of you will go to your local building supply store and purchase the cheapest pine lumber you can. That's what I did. Cheap lumber is just that – cheap. Expect it to split, twist and warp, but it's all part of the process.

Cutting Out the Pieces Commercial equipment is noted for "finger joints" that are remarkably strong, but a bit tedious to build. For ease of construction with common power tools, I would recommend the time-honored rabbet-joint that most of us built in years past, by hand, in a high-school shop class. To build 6 5/8" supers, from a 1" x 8" board, cut the front and back to 16-¼" x 6-5/8" If you must err, do it on the scant side. You could squeak by with 6-½" but don't push it. Cut two sides to 19-1/8" x 6-5/8" Neatness counts. Most beekeepers can justify a small table saw. They are affordable and available. You could also use a router, a radial arm saw, or cut the joint by hand. Set your saw up with a dado head to cut ¾" wide by 3/8" deep.

I would recommend breaking down the dado head and re-sizing it to take a 5/8" cut that is also 3/8" deep. Then cut the rabbet along the top for the frame rest.

The Handhold Slots If you are woodworkingly competent[1] use a molding head cutter with the Sears

[1] A molding head cutter should only be used on approved saws. Consult your owner's manual. Safety first.

A dado cutter head and one rabbet cut.

The homemade super – glued and screwed.

Continued on Next Page

Two types of pollen substitute fed above the brood nest.

Molding Head Cutter number 9-23214 to get a nice commercial-looking hand slot. Make the handhold 3/8" deep and as long as you want it (about 4" long). Alternatively, just use the dado head set to cut a ¾" wide slot about 4-½" long (centered) and 3/8" deep for the handhold. I used exterior quality glue and 3-½" galvanized screws to assemble the box. I did not try to side-nail or side-screw. Then I used a pipe clamp to square everything up. Buy metal rabbet protectors from a bee supply company to protect the frame rabbet. Paint it. It's finished. It's the super that Jim built.

Feeding

Though it's much later as you read this, it is presently late February. As I have written in previous articles, I have always planned to feed pollen substitute. The problem is (no offense intended to bee supply companies) that I really haven't found a great one. I am using a powdered formula that is mixed with water to form a stiff patty. When feeding this product last Fall, I found that it became brick-hard if not taken expeditiously by the bees. The second product I am feeding was documented as being a good pollen substitute but is expensive and a bit difficult to get. It is manufactured by BioServ and is called the Beltsville Bee Diet.

The commercial diet is thick. I fed it directly on the frames. While the Beltsville Bee Diet was thinner, I could have made it thicker, but it was hard to stir, and I wanted to get to the yard. I fed the Beltsville Diet on waxed paper.

I will give you a report concerning how well the bees take the two different products. For those in this area of the U.S., I noted a harbinger of Spring. I saw three bees that had managed to find pollen. Little, bright orange pollen loads. Anyone know what it was from (February 23, 2000 in Northeastern Ohio)?

A Dead Hive While putting pollen substitutes on I was disappointed to find that the single-story colony in my yard had died (See Figure 5, *Bee Culture*, January, 2000, page 30, for a photo of the now-deceased colony). Dysentery was the obvious symptom, but something else could have caused the stress that caused the dysentery. It's full of somewhat soiled honey, but still usable. I suppose I will make a split or possibly order a package to restock the colony.

Warm Weather Beekeeping

Mr. Rex Aldridge, from Robertsdale, Alabama, tactfully pointed out to me last February that the BC yard was quite a bit behind the bee climate in Alabama – by several months in fact. He's right. Here I am writing about surviving the Winter while many beekeepers in warm climates are almost ready to super. I have a few hives in Alabama, so I feel justified in making a few warm weather comments.

In February, I visited one of the yards of Edward Norman, a commercial beekeeper from Ramer, Alabama. He was busily stocking a 55-gallon drum with corn syrup that was derived from peppermint candy. He indicated that he fed about a drum a month throughout the Winter to about 50 colonies. I used to open-feed, but only as a desperate measure. After all, during the old days, we were feeding all the wild bees in the community when we open-fed. Now, the wild honey bees are gone. Would it not be a labor-saving procedure to consider open-feeding again – this time without the wild

Edward Norman checking the open-feeding drum in one of his yards.

Taking my bees for a Saturday ride.

bees? There are possible problems with disease spread, but compared to individually feeding colonies, the time and equipment saved could be significant. I was considering the open-feeding procedure as I manually opened each colony just a few hours ago to put in pollen substitute. There are so many occasions to open colonies now that I feel that I sometimes may be doing more harm than good with my constant intrusions. Mr. Norman's procedure is simple. He just puts a few pine boughs in the drum and lets the forager bees have at it. The peppermint has a strong odor, and the bees readily find it and take it. Does he produce peppermint honey? Nope. The bees quickly use it up to make more bees that Mr. Norman uses either to produce packages or to provide pollination colonies. The particular area he is in is not noted for honey production.

A Small Bee Move If you keep bees long enough, you will – sooner or later – be required to move a colony. Such an occasion arose during the middle of February when I moved three colonies to Auburn University for a one-day workshop. I used my Dad's van. I closed up the three colonies the night before and did a neat job. I loaded the cold bees the next morning and took off for the 2-½ hour trip. I was not five miles from home before I noted five or six bees buzzing around the back window. Then, more bees. Finally, lots of bees. By the time I was about two hours into the trip, I suspect I had about 2,000 bees in the car with me. They were not the least bit aggressive, but what a spectacle I must have been. The response of passing motorists ranged from amazement to guffaws. For a while I was amused, but it finally became tiresome. I considered putting on my bee veil, but that would have only made things worse. Finally . I got to the meeting location and released the bees. Upon closing them up for the trip home, I found that one of the entrance closing devices lifted – ever so slightly – as I screwed it on. The bees had a clear shot to freedom. What did I learn (again)? When closing up a cold colony, check all cracks and crevices carefully. Just because the bees are calm and quiet does not mean they won't warm up and check for weaknesses in your system.

Thieving Beekeepers

What's a good description of the way one feels upon discovering he/she has been robbed? A few weeks ago, I went to the BC yard shack. You may recall that I have discussed the converted truck body that I use in the yard for an apiary house. It ain't pretty, but it is very functional and very secure. I noticed that one of the brass window screens had been destroyed, and the window was slightly ajar. I wondered why I had not noticed this before. Standing there I noted that my laptop computer was gone, but the carrying case and the power pack were there. At that moment, one only has pieces of thoughts What did I do ? Where did I ? Why would I have ? What is ? Finally, it soaked in. Someone, and I have my reasons for being afraid it was a beekeeper, pulled the window open and was able to pull the small computer to the window, but when he or she took the computer through the window, the power cord dropped off, fell back into the shack and was unreachable from the outside. Nice job, Bozo. Read my thoughts. The first crime of BC's yard.

By Next Month I am planning to remove the entrance reducers, reverse hive bodies and get strips installed. Just now the yard is soggy wet. Spring of 2000 is upon me. BC

Dr. James E. Tew, State Specialist, Beekeeping, The Ohio State University, Wooster, OH 44691 330.263.3684, Tew.1@osu.edu

RELEASE OF ARS RUSSIAN HONEY BEES

Thomas E. Rinderer[1] Lilia I. deGuzman[1] ·Jeffrey Harris[1]
Victor Kuznetsov[2] · Gary T. Delatte[1]
J. Anthony Stelzer[1] · Lorraine Beaman[1]

For most of this decade, the Honey Bee Breeding, Genetics and Physiology Laboratory of the USDA, Agricultural Research Service has been studying honey bees from Primorsky Territory, located on the Pacific coast of Russia. We are interested in honey bees in that area since settlers from European Russia started bringing *Apis mellifera*, the western honey bee, to the area in the mid 1800s. The area is within the natural range of *Apis cerana*, the eastern hive bee and its external mite parasite, *Varroa jacobsoni*. Since this is one of the longest known associations of the western honey bee and *V. jacobsoni*, we speculated that natural selection operating on the honey bee populations in the area had one of the best chances to produce resistance to *V. jacobsoni*.

Staff of the USDA, ARS, Honey Bee Breeding, Genetics and Physiology Laboratory in Baton Rouge, pursued this logic with a two-week trip to Primorsky in 1994. We visited numerous beekeepers in the area and inspected many of their beehives. We left with: 1) an impression that the beekeepers treated colonies for *Varroa* much less often than beekeepers in the United States; 2) an observation that the Russian honey bee colonies generally had fewer mites than did colonies of honey bees in the United States having similar histories; 3) an observation that a greater proportion of mites in Russian colonies were found on adult bees rather than in worker brood in comparison to the situation with colonies of honey bees in the United States; and 4) a realization that with the scientific support available from the Russian Academy of Sciences we were able to conduct cooperative studies of honey bees and their mites.

The first part of this determination was to measure and evaluate the growth of mite populations in the Russian honey bee colonies. Many of the colonies of Russian honey bees supported less mite population growth than the predicted rate, and a few of them supported only a very meager mite population. Using an isolated island mating station, we produced daughter queens from the Russian queens that seemed to be the most resistant of the queens that were imported and began two extensive trials in which the resistance of the Russian honey bees to *V. jacobsoni* was directly compared to that of domestic honey bees commonly used commercially in the United States. One trial began in mid-Summer of 1998 and ended in early December 1999. The other trial was conducted in the Spring and Summer of 1999 in commercial apiaries in Iowa, Louisiana and Mississippi in cooperation with Mr. Manley Bigalk, Mr. Steven Bernard and Mr. Hubert Tubbs, respectively. All of these gentlemen are commercial beekeepers who are primarily honey producers. Last August, when most of the year's data were collected, ARS held a teleconference with these beekeepers. They had seen the bees in their own apiaries and could evaluate the quality of the stock for general beekeeping characteristics as well as help to evaluate the commercial implications of the data.

Following the advice of the cooperating beekeepers and the Office of Technology Transfer and attending to the constraints of having a limited number of highly desirable breeder queens and the need to have a CRADA partner in close proximity to Baton Rouge, Bernard's Apiaries in Beaux Bridge, LA was asked by ARS if they would be willing to serve the beekeeping industry and function as the CRADA partner. They would be responsible for producing and selling ARS Russian honey bee breeder queens to the industry and also be responsible for collecting information from the industry concerning the performance of the various queen lines distributed by the program. Bernard's Apiaries agreed to assume these responsibilities and have produced breeder queens for distribution in the late Winter 0f 1999 or early Spring of 2000.

The release program is not a one-time event. Rather, it is a cycle of releases resulting from an underlying stock maintenance and selection program (Fig. 1). The queens that produced the colonies having the most resistance to *V. jacobsoni*, and were otherwise acceptable for commercial beekeeping, were divided into three groups or "blocks." For the purposes of maintaining the stock, daughters of the queens of each of the three blocks are mated with drones produced by queens from the other two blocks. An isolated island mating station is used in order to have natural matings of the desired combinations of queens and drones. We chose natural matings in order to maintain the high genetic diversity afforded by queens mating with about 20 drones if allowed to naturally mate. For purposes of selection in 1999, the queens in block A were used to produce daughters for the large field trial with cooperating beekeepers. Each of six queen lines was represented by daughter queens in each state and in each apiary. As a result of the trials, one queen line was dropped from the program, two queen lines were maintained in the program but not used to produce breeder queens for distribution, and the best queen in three of the lines was selected to produce breeder queens for distribution to the industry. Of the five queen lines retained by the program, the best daughter was used to propagate daughters for stock maintenance. In future years, queen lines from the 1997 importation which have been assigned to the other two blocks will be evaluated in similar selection procedures to identify the program breeder queens. Thus, the program has provisions for selection among several queen lines each year. Also, the program will select the best queens of the selected lines. These queens will be used both to propagate the queen lines and to propagate breeder queens for industry.

Because of the continuing flow of new queens from Russia into the program and our selection within and among the existing queen lines, we will be able to apply strong se-

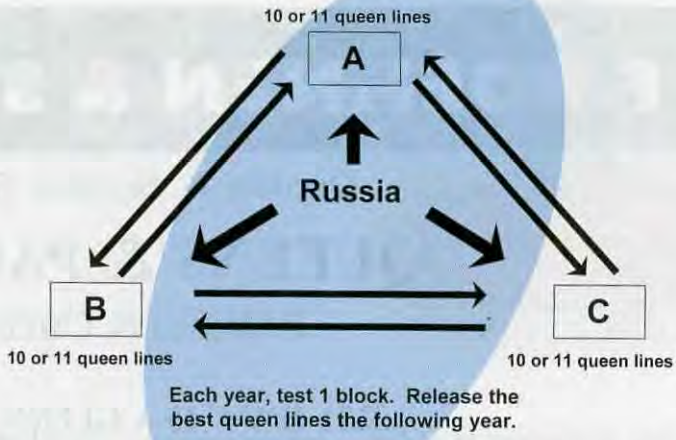
[1]USDA, ARS, Honey-Bee Breeding, Genetics & Physiology laboratory, 1157 Ben Hur Road, Baton Rouge, Louisiana 70820-5502

[2]Institute of Biology and Pedology, Far East Branch of the Russian Academy of Sciences Vladivostok 690022, Russia

lection for resistance to *V. jacobsoni* and still be able to maintain good genetic diversity within the overall stock. The main criterion for selection will be resistance to *V. jacobsoni.* However resistance to *Acarapis woodi* (tracheal mites), honey production and the presence of chalkbrood in colonies will also be considered when we make selections of the parents of future generations. Because of these aspects of the program, the ARS Russian honey bee stock will be different from year to year. We expect that the most noticeable difference will be a slow, steady increase in the expression of desirable traits.

In the first year of the release program, those who obtain production queens will be getting Russian queens that will produce hybrid colonies. Because of the genetic nature of honey bees, the Russian queens of the first year will produce hybrid worker bees, but also will produce Russian drones. These drones will be available for matings the second year. During this first year, it is recommended that beekeepers (both queen breeders and those who buy production queens) produce or obtain enough hybrid Russian colonies to produce the drones needed for the second year to produce "pure" Russian matings. Queen breeders will need the Russian drones to produce Russian queens that will foster "pure" Russian colonies. General beekeepers who have hybrid colonies the first year will have a supply of Russian drones that will mate with any Russian supersedure or other queens that may be produced in their apiaries. They will thereby assure that their apiaries with ARS Russian stock will remain Russian.

It is not possible for the laboratory to test all of the various hybrids that will be produced in the Spring of 2000. We expect that at least some of these hybrids will be quite desirable. In such instances, queen breeders might consider organizing at least some of their program to continue to offer queens that will produce hybrid colonies. However, our best prediction is that there will probably be large variations between different types of hybrids, but generally, that they will be within the usual range for commercial honey bees in the United States, which also are highly varied. One hybrid we did test produced an average of about two pounds of honey more than the average of commercial controls. This



difference is not statistically different, and suggests that hybrids will generally be commercially acceptable. However, the hybrid we tested did not display resistance to *V jacobsoni.* Perhaps others will show at least some resistance.

Each year, the program will release queens that are sufficiently unrelated to the prior year's queens that inbreeding will be avoided. Of course, people are welcome to organize their own breeding and selection programs that include Russian honey bees. Indeed, we encourage breeders to include some ARS Russian honey bee parentage into their own programs in order to enhance resistance to *V. jacobsoni* in their own stocks of honey bees. However, attempting to produce ARS Russian honey bee stock by making crosses other than those recommended by the program may result in inbreeding problems. Also, such stock will not have the advantages to be derived from the ongoing selection program.

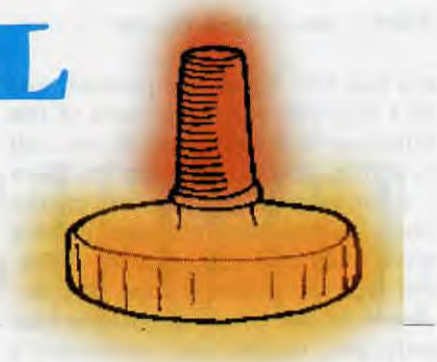
The current releases of Russian honey bee breeder queens are resistant to *V. jacobsoni.* This resistance is strong enough to have economic value. Beekeepers should be able to use half as many treatments for the control of *V. jacobsoni* as they are currently using. The ARS Russian honey bees are not immune to *V. jacobsoni.* Given enough time, many of them will succumb to the mites. However, ARS Russian honey bees are a good centerpiece for integrated pest management approaches to the control of *V. jacobsoni* that rely much less on miticides. As the selection program proceeds, the level of resistance to *V. jacobsoni* in the ARS Russian honey bees predictably will be further improved, and the need for miticides will be further reduced.

On average, the honey production of the ARS Russian honey bee colonies tested in 1999 was about 14 pounds less than the honey production of commercial control stocks. The queens selected to produce breeder queens headed colonies that average 26 pounds more than the average commercial control colony. This selection differential will contribute to increasing the honey production of the selected Russian queen lines.

The ARS Russian honey bees are, for the most part, dark bees that in some regards are similar to Carniolan honey bees. However, one queen line has fairly yellow bees. This queen line is a bit more like Italian honey bees. *None* of the ARS Russian honey bees use propolis to the degree that typical Italians use it. For the most part, ARS Russian honey bees are *not* sting prone. However, early in the Spring or in poor weather conditions, an occasional colony will be as sting prone as some of the more defensive commercial stocks that are currently used in the United States.

The ARS Russian honey bee stock is not "finished." Indeed, selection will be continuing for several years. Because of this, the ARS Russian honey bee stock will be continually changed and improved for the life of the selection program. This selection program is designed to produce Russian honey bees of the future that will contribute to the gene pool of the honey bees in the U.S. in two ways. First, it is and will be developed as a stock in its own right. Second, it will be bred in ways so that it will be useful as a source of genetic material to enhance existing stocks of honey bees, especially in regard to resistance to both *V. jacobsoni* and *Acarapis woodi.* Hence, ARS Russian honey bees, and the breeding program to further improve them, are a resource for all American beekeepers. BC

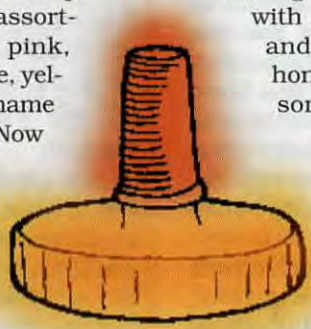
COLORFUL CAPS



Ann Harman

We all know that bears hibernate during the bitter cold months and putter around during the warm months, but here's a way to make your bear sales increase every month that we have a holiday or celebration. Sorry – that's squeeze bears full of your honey, not real ones. Or if you prefer selling honey in squeeze cylinders or skeps or other shapes that take flip-top or spout caps, you can use this idea.

Both spout tops and flip-tops come in a wide assortment of colors: blue, pink, red, green, white, purple, yellow, brown, black, you name it and you can get it. Now let's look at the possibilities.



Christmas: tops in red and green

Valentine's Day: red and white

Presidents Day: red and white and blue

St. Patrick's Day: green and white

First day of Spring: pale green and yellow or light blue

Easter: purple and yellow

Fourth of July: red and white and blue

Halloween: black and orange

Thanksgiving: brown and yellow or orange

You can deck your squeeze bears out with holiday colors for their caps. If you tie hangtags around their necks, the ribbon can match the cap color. A display of squeeze containers with the appropriate colors would be impressive at any roadside stand or craft show. Even if you just sell "out your back door" you can make a small display and include some seasonal props.

Since two colors, or sometimes three, can be used for each occasion, the possibility arises of selling two containers instead of just one – a holiday pair. Bears or other shapes, as a pair with the appropriate cap colors, can be put into a box or a little crate or even a basket.

The squeeze containers can be the start of an Easter basket. Use a small, inexpensive basket with two containers of honey, one with a purple cap and one with a yellow cap, sitting on Easter basket "grass" with a sprinkling of jelly beans and a few honey candies or honey stix. Yes, you do need some jelly beans. They are not made with honey, but what would Easter be like without jelly beans? If possible, you could make a basket or two to put on display and offer to take orders to be picked up close to Easter. By the way, I have not found a way to make squeeze bears look like Easter rabbits.

For Fourth of July, wrap squeeze cylinders in red paper and use a white spout cap. You have an instant firecracker. A bear with a blue cap plus a "firecracker" can be combined in a little crate. Your label can be underneath the red paper on the cylinder.

For Christmas you might try the plastic squeeze angels with a yellow flat-top cap for a halo. Bears will look better in red and green caps. An angel can be combined with a bear for Christmas crates or baskets.

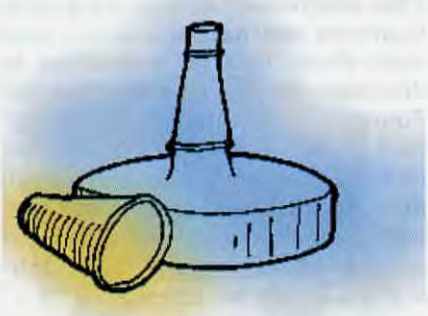
A Halloween "basket" could be an inexpensive plastic pumpkin. Try to pick one that will fit two bears, one dressed in a black cap and one in an orange cap.

Perhaps you know of some special local celebration. For example, a high school or a college will be having a graduation. What are the school colors? Select caps to match the colors and make a sign suggesting a simple graduation present of a couple of containers of honey.

If you know of an organization that is having a dinner, have you thought of selling honey to the organization for the table? Here is where squeeze cylinders, skeps or bears make a nice addition to the table – especially four or eight ounce sizes. The caps should be in the colors of the organization giving the dinner meeting. Or if the dinner is taking place on a special day with a special theme, such as St. Patrick's Day, the caps can be in the colors for that occasion. Placing your honey at such a dinner is actually some good advertising for you. Do your labels have the necessary information of name, address and even your phone number?

It would be interesting to find out just what customers do prefer in the way of caps on squeeze containers. Do they like the flat flip-top caps? Or maybe spouts? What colors sell well when it's not a holiday or special event? What do custom-

These lids 'snap' on the spout, keeping them secure. They can be purchased in separate colors – lid and spouts.



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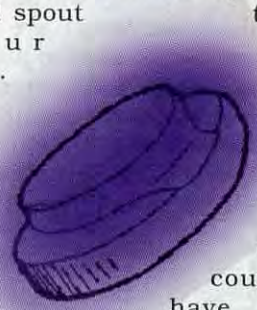
ers ask for? If you are present, say at a fair, you can keep track of the customer's preferences. If you sell to a shop, you can monitor the sales – what is gone, what is left on the shelf. Ask the shop manager if there have been any requests for different types or colors of tops. The answers to all these questions can help you target your customer's wishes and add up to increase sales.

If you really want to conduct a survey, you can obtain a sample assortment of colored caps, both flat and spout to show to your customers. It is possible that different areas of the country will have different choices. If you do have some interesting results, please let me know so the information can be shared with other beekeepers.



I mentioned seasonal props. I never cease to be amazed at the proliferation of decorations available in shops selling greeting cards, wrapping paper and such. There's an explosion of decorations out there! No matter where you are selling your honey, you should take advantage of decorations. With reasonable care they will last a number of years.

These are the common flat top, fliptop lids that come in a variety of colors.

Some sort of Easter egg decoration along with your purple and yellow capped bears will attract attention to your honey display. If you sell honey at a farmer's market or craft show, look for something to decorate the table: a flag for the Fourth of July or a big green shamrock for St. Patrick's Day. The flag or a red, white and blue banner will also serve for Presidents Day. Then, with the matching colored caps, your display will certainly be eye-catching and also a bit different.

If you have a color printer, you can create some clever seasonal posters and signs that will complement your colored caps. The clip-art available for computers always has holiday and celebration items. The posters and signs can feature a special sale, an invitation to arrange for a basket or crate or a new flavor of honey that you are offering.

Colored caps can also be used to indicate the different flavors of honey that you are offering. You can use these colors year-round so that your customers learn to find their favorite flavor from the cap color. For example, clover could always have a blue cap, fireweed an ivory cap. Or you might wish to have Spring honey with one color cap and Summer honey with another. Consider your floral sources, design your own color coding; then, for best success, introduce your customers to it.

Colored caps may be a tool for keeping track of your sales. If you have several outlets for your honey, each one could have its own color. Then you could know which case of squeeze containers to deliver to which outlet, and if any crystallizing honey is returned, you could tell where it came from easily, even after several weeks of it sitting around in your honey house.

If you make gift baskets, either for sale or as an entry in a honey show or just to present to someone, use the colorful caps on squeeze containers as part of the theme decoration. If you sell to creators of gift baskets, ask what colors the caps should be. Perhaps they are unaware that colors other than yellow are available.

Have you thought of any other uses for colorful caps? I am sure there are many more. Would you like to share them with other beekeepers? If so, please let me know your ideas and I can include them in another article. BC

A new style on the scene looks like a spout, but acts like a flip top. Easy to use and doesn't leak.

European/British Label Sources

THORNE
Beehive Works
Wragby
Lincoln LN3 5LA United Kingdom
www.thorne.co.uk
FAX +01673 857004

SAF Natura
36016 Schio (Vicenza)
Via lago di Misurina, 28 Z. I. Italy
FAX +0445/576151

THOMAS
86, rue Abbe Thomas
45450 Fay-aux-Loges France
email: thomapi@wanadoo.fr
www.beekeeping.com/thomas/
FAX +33 2 38 59 28 28

Steele & Brodie
Chilbolton Down Farm
Stockbridge
Hampshire S020 6BU
United Kingdom
FAX +01264 810916

SWIENTY
Hortovtvej 16
6400 Sonderborg Danmark
www.swienty.com
FAX +0045 74 48 80 01

Ann Harman is a sideline beekeeper and international marketing consultant.

As An Expert, Go . . .

BACK TO SCHOOL

Raymond Lackey

Having fun and getting paid for it! It doesn't get much better than that! I enjoy talking. I enjoy kids. I enjoy honey bees. I enjoy talking to kids about honey bees. Getting paid for talking to kids about honey bees doesn't bother me in the least!

Beekeeping is a unique and unusual hobby that is fascinating to children of all ages, but going into schools as a special speaker on the subject will take significant preparation, beyond the presentation itself. Oh, you can get in once as the parent of one of the kids for a show and tell but getting invited back, or to a new school, for pay, will take some effort.

I know I should let my love for this insect move me to do free presentations to anyone who will listen at any time, but I have found that people tend to value you at the level you are willing to sell yourself, much like our honey. I know that I have a unique service to provide, and I do so at a good price.

This article focuses on the business aspects of presentations for hire. Part two of the series will cover the presentation preparation.

Getting In, Getting Back In

Getting back in will follow naturally from doing a good job the first time you are in. Getting the first opportunity is the hard part.

Start with the principal. Oh, if you know the teacher, go ahead and approach him or her, but if you are trying to go beyond personal relationships, the principal is the boss. Explain to him or her what you could offer and ask how he generally arranges guest speakers. Provide him with information on your program so that he can pass it on to the appropriate teachers or department head. Include references, credible references!

The schools in my area contract guest speakers through a central resource management group at the county level called the Board of Cooperative Educational Services (BOCES). This group requires information packages with references a year in advance, but then they publish a book with a page describing each program and speaker, which is sent out to each school. They require references by teachers! Does anyone else see the problem here? To get in, you need references by teachers saying how good you are, but you have to get in to get the references in the first place! This is when that free presentation to your child's class really helps!

The Customer

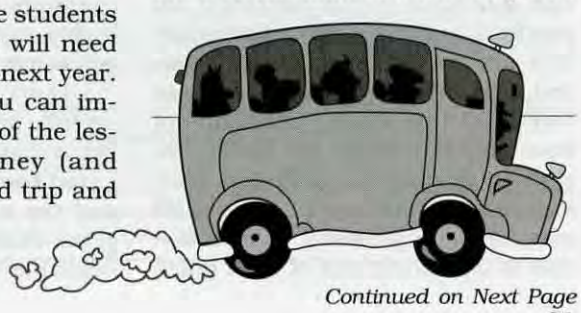
Why would the schools want to have you in? What benefits do you provide? They have a job to do and want to make it as easy as possible. If you make their job difficult, you won't be invited back, *if* you made it in the first time. Their goals include education, cost savings and entertainment.

The teachers have busy curriculum schedules and want the presentations to fit into their lessons. A visiting speaker is often considered a low-cost field trip where the kids are expected to learn something that goes with the curriculum while having some fun. The teacher is your number one customer. The students move on, but the teacher will need to teach the same subject next year. Show the teacher that you can improve students' retention of the lesson material, save money (and hassle) compared to a field trip and entertain the children, and you will be a repeat performer!

Liability insurance is a must and is required before most schools would let bees into the school. The school administration is afraid of a lawsuit should a child be stung, and it is justified in today's litigious society. You need to show proof of insurance. You also need to show in your equipment and the handling that you don't contribute to the potential of a stinging incident. That old, weathered observation hive that you threw together one weekend 10 years ago may be strong, but does it say **SECURITY** and **PROFESSIONAL** when you carry it down a hallway passing teachers, staff, or worse, a visiting parent? Never let a child carry the observation hive, and always close it up before changing classrooms.

Working with the teachers is very important. Let them know that you realize you are there to help them and adapt your presentation to their needs. Ask them their goals for your visit and ask them what they are covering in class in association with your visit. Be prepared to make suggestions; you are their expert consultant!

Provide them with preparation material. This will vary with age and class goals, but may include a book or video loan or a lesson plan including an activity. Leave them with some review material. This may be a



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SCHOOL ... Cont. From Pg. 31

fun quiz of terms that you covered or a prepared activity, appropriate to the age group and relative to their class subject. When a new need arises, be responsive and develop a solution. You can then add it to your normal package for future use.

Prepare and leave an evaluation sheet with each teacher. Make it easy for rapid completion, but provide some spaces for more complete feedback. These evaluations provide guidance to improve your program, evidence of program quality and references for future job applications!

The Subject

There are many possible presentation subjects using honey bees as the starting point. The general program for elementary school may be "Our Friend the Honey bee." Fourth graders studying insect life and social insects may want a program entitled "The Honey Bee, a Social Insect." High-school biology classes may want a presentation on "Pollination." You need to know what the customer wants.

Don't Overcommit!

Are you really able to talk solid for four or six hours? I often go into a school and cover all three to five classes at a grade level in a day. I talk a fair amount in my regular business, but I still find this marathon session tiring. Plan breaks between blocks of classes. Work with the school to limit the number of iterations in one day, possibly by combining classes. Your fee may be less, but the better quality will be worth it in return business. Keep in mind the age and audience size constraints so that you don't wind up with a different problem.

Class Size

When you charge by the hour, the customer will want to reduce the number of hours. You need to provide guidance to the customer on practical audience size. Remember that you are the expert. Set up general guidelines of audience size, age and time. This will be a function of their attention span, the setting including equipment, skill and your material. A kindergarten class of 20 may be more stressful than a lecture to an auditorium of 10th grade biology students, but the goals, material and equipment will be very different as well.

Fees

How much to charge is always a difficult question in any business. Sometimes the business will fail because the perceived value of the service is not sufficient to cover the costs of providing that service. If you are not a beekeeper, this business will cost too much to get into to make it pay on its own. If you are a small or hobby beekeeper, and a good speaker, this business can be more profitable than honey or pollination.

First, what will it cost to develop the program including the minimum materials? Over how many programs do you need to recoup this cost? That is the overhead for each program. Second, figure what it will cost in time and material to provide a program. Every program requires preparation immediately before and restoration after it, so don't forget the overhead on each presentation. Add these two and you have a break-even fee, if you book enough programs.

I charge an initial fee for the first hour or part thereof and then an hourly rate for each additional hour. I also charge mileage beyond local. This is much like a plumber or an appliance repair service call, and that may be a good comparable fee for your area for general presentations. If you are good and can develop a following, you may be able to charge more. If you are providing a slide lecture to the auditorium of 10th grade biology students, you will have to charge more to cover expenses in development, but the benefit to the customer has also increased.

You also need to know what the schools in your area are expecting to pay. If they are used to having speakers subsidized by some business or organization, you may not be able to compete. If expert guest speakers are commonly used and highly valued, you should be able to get some business.

Don't price yourself too low, especially on new contacts. I have had the occasion to see a speaker rejected because the fees were too low and the school wanted a good program. Surely a good program wasn't available at a rate so much below the normal! If they balk at the price, talk to them. What fee do they expect? Is there a reasonable way to reduce their cost, such as combining classes? Can you barter to reduce the price such as a table at their craft fair or an ad in their newsletter?

Other Markets

Once you have established yourself as an expert speaker on honey bees for schools, you'll want to branch out to balance your workload. Other places to sell yourself include nature centers and parks, summer camps, Scout troops and as a dinner speaker. The local fruit and vegetable organization may want "Honey Bees, the Universal Pollinator" and adult organizations may like to hear about "Honey Bees and Medicine through the Ages" or "Bees and War through the Ages." If you are interested enough to research a subject and can present it well, others will find it interesting, too.

The Scouts are an excellent place to get started because they don't need all of the references, but provide references for future efforts. I give them a very low price, really just to cover expenses. They also spread the word very quickly. Provide business cards and pamphlets, and you'll be surprised how quickly they get into teachers' hands.

Park and nature center presentations get you known by the local naturalists for credible references and referrals. This also got me started in a second aspect of my business, installing and maintaining observation hives.

Be prepared to sell something more. Many non-school presentation scenarios expect you to have products to sell: honey, candles or booklets on your subject. Ask if it is expected, or allowed, when setting up the engagement. Carry some in your vehicle even if the answer is no because you will have a few who will want to follow you out to the parking lot to get something. Business cards and pamphlets are always in order! BC

Ray Lackey is a beekeeper on Long Island, New York, an EAS Master Beekeeper and past president of Long Island Beekeepers' Club. Visit his Web page at www.tianca.com or e-mail to raymondj@cleanweb.net

MAPLES

"Blossom by blossom the Spring begins."

Richard Dalby

You're out in the woods on a warm Spring afternoon. Up ahead there's a tree which appears to be surrounded by a yellowish haze. You head in that direction to investigate this unusual sight. While still some distance away, you hear a contented humming sound coming from somewhere.

Now near the tree, you realize that the yellowish haze is actually a myriad of tiny, clustered, greenish-yellow, pendulous flowers. The tree is covered with them. And that enchanting humming is the sound of many bees busy among the blossoms, gathering nectar and pollen to carry back to the hive.

What kind of tree is this, you wonder. You examine one of the newly developed leaves, noting that it has five points like the spread fingers of a human hand. The leaves have long stalks and are arranged in pairs opposite each other on the branches. They certainly look familiar. Yes. That's it. You've seen this leaf on the Canadian flag. It's depicted on Canadian pennies, too. It's Canada's national symbol. It's a maple leaf.

Maples are found around the world in the temperate zone. Botanists don't agree on the number of maple species, but 100 is probably close to the mark. About a dozen different maples are native to North America, with a number of other species having been introduced over the years. When the maple's seeds (technically fruits) are present, identification becomes certain. The seeds are always produced in pairs joined together at the base, both seeds bearing a long, papery wing. These paired seeds are called "keys" or "samaras." They are typical of maples.

Maples belong to the genus *Acer*, the word denoting a maple tree in classical Latin. As sources of nectar and pollen, the maples often go unnoticed and unappreciated. For beekeepers in many locations, the maples supply the first bee forage of the season. The bounty the bees take from maple blossoms provides an important stimulus to Spring brood rearing.

Let's take a closer look at some of our North American maples. The most famous is probably the sugar maple (*Acer saccharum*). This tree is prized for its wood as well as its beauty. It is also the tree whose sugary sap is collected to make maple sugar and maple syrup. Other maples are tapped for their sap, but for this purpose the sugar maple is the best. Indians showed the English colonists how maple sap could be concentrated into sugar and syrup. For many years maple sugar was the only sugar early-day Americans could obtain.

Sugar maples average 75 to 100 feet in height. The leaves have the classic maple leaf shape. The wood is heavy, hard, close-grained and durable, prized for making fine furniture, for cabinets and for flooring. The flowers of the sugar maple appear with the leaves, the greenish-yellow blossoms hanging in clusters. The stamens and pistils are found in the same flowers. Sugar maples are common from southern Newfoundland west to southeastern Manitoba and in the northeastern United States. They are valued as a shade and ornamental tree and often planted as a street tree. Come Autumn, the leaves of the sugar maple turn brilliant yellow or orange-red. It is the state tree of Vermont, New York, West Virginia and Wisconsin.

The red maple (*Acer rubrum*) is aptly named. In Winter, the buds and twigs are red. Spring brings clusters of bright red flowers. The stalks of the leaves are red in Summer. Autumn turns the leaves a brilliant red. Red maple is found from Florida to Newfoundland, west to Manitoba, Nebraska, Oklahoma and Texas. The flowers of the red maple open long before the leaves appear. Male (staminate) and female (pistillate) flowers may be on the same tree in different clusters or on different trees.

Red maples have an average height of 60 to 80 feet and mature in about 75 years. Its wood is relatively softer and lighter in weight than that of sugar maple. Red maple is popular as a shade and street tree.

The silver maple (*Acer saccharinum*) has about the same natural range as the red maple, but the silver maple has been much planted far beyond its original habitat. The mature trees average 80 to 100 feet in height, with leaves that are large and deeply lobed. The leaves are dark green above with a silvery underside that shows in the slightest breeze, giving the silver maple its common name. In Autumn, the leaves turn yellow before falling. The tree has enjoyed popularity as a shade tree because of its rapid growth and attractiveness. But the limbs and branches are brittle and prone to break in ice storms or high winds.

The silver maple is one of the "soft" maples, its wood neither as hard nor as strong as that of the "hard" maples. The sap of silver maples has been used for making maple syrup, but the tree yields less

and its sap has a lower sugar content than does sugar maple. In late Winter or early Spring, dense clusters of tiny greenish-yellow flowers emerge from the buds. Staminate and pistillate clusters are found separated on the same tree or on different trees. By the time the leaves appear, the paired seeds have developed and are ready to sail away with the wind.

The bigleaf maple (*Acer macrophyllum*) takes its common and scientific names from its large leaves, the largest of any American maple. A native of western North America, bigleaf maple is found from Alaska to Oregon and on into southern California. The trees range in height from 50 to 75 feet, with those growing in the river bottoms of the northwest sometimes attaining 100 feet. In Autumn, the deeply lobed leaves turn bright orange or a translucent yellow. As a young tree, bigleaf maple grows rapidly for 40 to 60 years, then more slowly, reaching maturity at 200 to 300 years.

The range of bigleaf maple.

The fragrant flowers of the bigleaf maple appear in April or May, long after the leaves. The bright yellow blossoms hang in clusters on long stems. The same tree will bear both staminate and pistillate flowers, the latter forming mature paired seeds by Fall. Bigleaf maple wood is similar to that of the sugar maple and much prized.

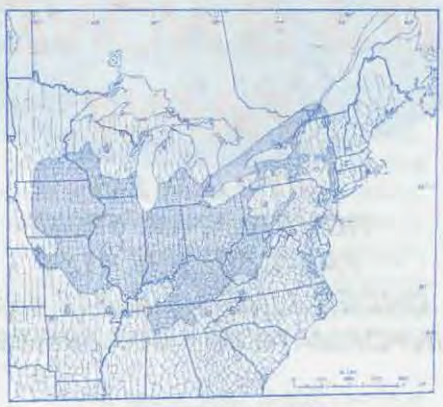
Vine maple (*Acer circinatum*) is sometimes found as a small tree to 30 feet in height but is typically a prostrate vinelike plant which branches freely. It grows along stream banks and on mountainsides from British Columbia southward into northern California. It achieves its most luxuriant growth on low alluvial bottom lands. Its many stems spread in wide curves, putting out long, slender twigs that often take root where they touch the ground. Vine maple is very shade-tolerant and sometimes forms dense thickets many acres in size.

The leaves are circular in outline with seven to nine pointed lobes and prominent veins. Autumn turns the leaves of vine maple to red and gold. This maple is an important forage plant for deer and elk which eat its leaves in Spring and Summer and the leafless twigs in Winter. The wood is dense and hard but of no commercial importance. The flowers of vine maple appear with the leaves. The blossoms hang in loose clusters of up to 20 flowers, with staminate and pistillate flowers in the same cluster. Vine maple is often grown as an ornamental outside its native range.

Maple honey, unlike maple syrup, is a rare commodity. Typically, the bees use the nectar from maples in the burgeoning brood nest as fast as it comes in. But hives located near an expanse of maples do sometimes store a surplus. Maple honey is described as light to amber in color with a good flavor. And the trees supply pollen at a critical time. So, all in all, the maples are pretty marvelous. You might want to consider planting one. BC

Richard Dalby is a beekeeper, freelance writer and frequent contributor to Bee Culture.

The range of red maple.



Range of black maple

The range of silver maple.

The range of sugar maple.

HI TECH MANAGEMENT

Science Fiction or Reality?

Jerry Bromenshenk

Would you like to buy a package of bees and know that you could expect them to perform well in your climate and geographical area? If you live in Seattle, you might want to buy bees that resume foraging as the last drops of rain are falling. You might not want the bees that decide to wait for a drier day before going back to work. But if you lived in an arid area, this delay might work to your advantage. You'd want maximum foraging during the days following heavy rain, as desert plants come into blossom.

If you rent bees for pollination, would you like to know the best deployment strategy to produce the greatest number of bee visits to your crop, or the most efficient use of the number of colonies rented? If you have problems with bee kills from pesticide applications, shouldn't you have the ability to quickly and easily detect and measure the exact degree of loss? More importantly, could the risk of bee kills be reduced or eliminated by knowing exactly when the bees are in the fields, and when foragers are out in peak numbers?

If you buy queens or packages of bees that have to be shipped, or if you truck bees from one location to another, would you like to know whether the bees had been heat- or cold-stressed during the transport or be able to reduce these stresses via a warning system that would alert the driver that the bees need attention? Are you disappointed in the clustering behavior of colonies in cool weather, and would you like to be able to buy queens whose daughters are guaranteed to cluster quickly and tightly over the brood nest or around the queen in cold weather?

If you make your living running a beekeeping operation, would you like to reduce the time and labor required to inspect and manage thousands of colonies? Could simple changes be made to improve your management methods and optimize honey production or pollination? How about adding as much as an hour to the amount of time your colonies fly each day by simply facing the hive in a different direction? And finally, shouldn't you be able to stroll through your beeyard with a handheld wand and be able to tell immediately whether the queen was present in each hive and find the box that she is in without opening the hive? Some commercial beekeepers would like to have a device for determining the age of the queen and then be able to push a button that would eliminate her if she was more than two years old.

Is this science fiction, or is it real? With the exception of the handheld wand, it's real, and a prototype even exists for the wand. It is all based on the use of electronic or "smart" hives that count the comings and goings of forager bees, monitor temperature regulation in the brood nest, and transmit data by a radio transmitter. In addition, these hives can be outfitted, as needed, with additional devices to sample for pesticides, continuously weigh the hive, or measure almost anything for which an electronic sensor exists or can be built.

Is it affordable? That depends on the system, the user and the use. A beekeeper with two colonies of bees will not find it cost-effective to use our multi-hive, trailer-based, smart hive systems. On the other hand, a commercial beekeeper or large grower will find that a full-featured system consisting of 10 hives, a trailer for transporting the equipment and bees and wireless communications system costs about the same as a full-size pickup truck. But prices are dropping, and options are increasing.

Five years ago, we built and tested prototype electronic hives. Four years ago, we started using complete hive systems with full arrays of electronics and communications for long-term studies at three sites in Maryland and another site in Montana. Ten months ago, we built the first self-contained, mobile bee testing system. Three months ago, we deployed the first solar-powered system. Five smart hives, a complete weather system and a notebook computer ran for several weeks, powered by solar panels producing 80 watts of power.

As you are reading this article, we will be testing an autonomous smart hive system that should cost about $2,500, unassembled. Each of these hives will function as an independent unit that can be used alone or in groups. These hives will eliminate the need for AC power, the stringing of long cables for data collection or power, and for most purposes, will no longer require PC computers in the field. Best of all, these systems will not have moving parts and should be capable of surviving rough use and severe weather extremes.

Each autonomous hive will have a base built from a modified Dadant hive body, an infrared bee counter, temperature probes for monitoring the brood nest, a solar panel and battery for power, a two-way communications module that can receive, transmit and respond to digital information, and a wireless modem for transmitting data.

In practice, one or more of these hives could be placed in a beeyard, orchard or on crop land. For a few hives, a beekeeper could carry a $300 palm top organizer with a wireless

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"If you make your living running a beekeeping operation, would you like to reduce the time and labor required to inspect and manage thousands of colonies?"

modem. By walking near an autonomous hive, aiming the palm top at the hive like a television remote control and pressing a button, the autonomous hive would transfer information to the palm top. If a large number of these units were developed at the same site, an on-site computer could be used to gather, store and transmit the data to a more convenient location, such as the beekeeper's desk at home.

So how does this fit into beekeeping? Let's first examine another area of agriculture in which a similar system is already in place and is changing the way business is done. I'm referring to the production of grain and corn, aspects of agriculture with which I have firsthand experience.

I grew up on a farm in eastern Montana. We supplemented our dairy farm's income by baling and hand-stacking hay and straw and by cutting corn for silage. Silage cutters made easy work of the corn harvest, but stacking bales was hot, sticky, itchy work that provided me with the motivation to find something easier to do for a living. But I didn't think that one through when I went into beekeeping.

The equipment used for harvesting grain has come a long way in my lifetime. When I was in grade school, neighbors still got together and went from farm to farm, using grain reapers and stationary thrashing machines. I clearly remember a heated discussion over lunch about combines; the gist of the argument was that these machines dumped more grain on the ground than they harvested and that they would never come into routine use. By high school, I knew how uncomfortable it was to drive a grain combine amidst all of the dust and chaff. At that time, deluxe combines and corn harvesters were self-propelled and came with an umbrella!

Now, you get an enclosed cab, air conditioning and a stereo. And if you look closely, you will also find, on the newer and larger machines, an outlet for plugging in the data port from a notebook computer. Take a closer look at a self-propelled fertilizer applicator, seeder or pesticide sprayer, and you will probably find an identical outlet.

On many modern farm implements, these data interfaces are no longer optional; they come pre-wired from the factory. What is optional is the system that plugs into these outlets. Basically, it consists of a portable computer for data collection, a global positioning system (GPS) for satellite tracking of the movements of the combine or farm implement and sensors that monitor things like the amount of grain pouring out of an auger and its moisture content. When you finish harvesting the field, you will have in the computer an exact map of the field and a yard-by-yard map of the grain or corn yield for every point across the field. Take this system and plug it into a seeder, fertilizer or herbicide applicator, and the computer, mapping and GPS system will adjust feed rates and chemical mixtures as the machine moves across the field, adding more seed and fertilizer to areas of low yield, reducing amounts applied to high-yield areas, and selectively applying pesticides. The electronic technology should quickly pay for itself by fine-tuning these applications, reducing the amount and cost of the seed and agrichemicals used, and increasing yields. This method of farming is called precision agriculture, and PA courses are being taught in many agricultural programs and schools.

However, what is important is not the technology per se, but that it enables farmers to make informed decisions about what works best for their own fields, crops and geographical area. Furthermore, if they want to experiment, the system will provide reliable data concerning the effects of altering application rates or chemical applications on yields of their own crops. Farmers have always been experimenters and problem solvers. Now they can base their management decisions on more accurate and precise information. And best of all, they don't have to wait for some ivory tower researcher to do it.

By comparison, the tools and practices of bee management have changed very little since the invention of movable frames and the production of wax foundation sheets in the mid-1800s. Granted, hive lifting booms, front-end loaders and hives on pallets are comparable to the bale loaders and large round bales that have reduced the manual labor needed to handle hay and straw. And the equipment available for honey extraction and packaging has continued to evolve and develop. But we still keep bees in boxes and have to take them apart one by one to inspect them. We spend a lot of time on routine tasks, and even the best beekeeper has difficulty at times finding a queen that should be replaced. This may not be a problem for the hobbyist beekeeper. After all, part of the fun of the hobby is poking around inside the beehive. But for a beekeeper with hundreds or thousands of hives, time is money.

Our next article will describe the technology that makes hi-tech bee management a reality. The following article will cover some of the ways in which this technology can be used by beekeepers. See you then. BC

Dr. Jerry Bromenshenk is a researcher at the University of Montana in Missoula.

EQUIPMENT REPAIRS

A broad class of methods for managing pests in an IPM program emphasizes management strategies. One example is establishing and following a regular program of equipment maintenance.

Nicholas Calderone

I frequently see beehives that resemble several large blocks of Swiss cheese stacked on top of each other. The openings in these hive bodies present opportunities for pests to enter your hive where they can damage your bees and equipment. So, I spent much of my last article emphasizing the value of maintaining a secure hive for your bees. This month, I want to finish up my obsession for bee-tight equipment with a few tips on maintenance. The tips presented here are based on what I learned when I worked as an apiary technician for Vic Thompson at The Ohio State University Bee Laboratory. Remember! A regular program of equipment maintenance is not only an important component of an IPM program, it is important to the long term economic viability of your operation, because it will extend the useful life of your equipment by many years.

WHEN TO REPAIR

When the fit between two hive bodies deteriorates to the point where you can see through them, you should be thinking 'repair-time' Even though pests may not yet be able to move freely in and out of the hive, the opening will promote robbing and will certainly make it more difficult to control robbing if it gets started. Carry several good hive bodies with you when you work an out yard. If you notice a damaged hive body or if you split off a piece of wood from one while working your bees, replace it with a sound one, and take the damaged equipment to your shop for repair. When you are scraping your frames over the winter, pull out damaged hive bodies and store them for repair. I accumulate damaged shells until I have 30-40 that I can work on at once, and then I spend a day restoring and painting them. I use two basic methods to repair damaged hive bodies – the wood insert and the metal patch.

The wood insert When the frame-rest end of a hive body is damaged along a substantial part of its length, I cut it off and replace it with a hardwood insert sawn from a block of well-seasoned white oak. The repair part is 16-1/4" long by 3/8" thick by 1-3/4" high, although you may need to adjust those dimensions slightly to fit your equipment. Since the repair part is hardwood, you have to pre-drill 3/32" pilot holes in it before nailing it in place, otherwise, you will split the wood.

Begin the repair by removing all nails within 2" of the top of the shell on the damaged end. A nail puller helps if you have several shells to repair. Next, remove the metal frame rest and pull out any remaining nails. Scrape the frame rest clean, and double check for nails, unless you enjoy sharpening your saw blade. The shell is now ready for the table saw.

You will need to make two cuts in the shell to remove the damaged end and to accommodate the repair part. One cut removes the outer 3/8" of wood along the entire 16-1/4" width of the damaged end. This cut is set 1-3/4" deep. The second cut is made perpendicular to the face of the damaged end, 1-3/4" from the top and 3/8" deep. These two cuts remove a piece of wood from the shell the same size as the repair part. If you have a lot of shells to repair, make all of one cut first, then make the other cut. This way, you only have to set your saw twice. The dimensions of your equipment may vary somewhat from what I have given. So, be sure to set your saw so that you do not remove any of the actual frame rest area.

Once the damaged end is removed, apply waterproof wood glue to the joining surfaces of the repair part and the shell, then, press them together. Nail the repair part in place with two 7d galvanized nails on each

Safety Tip: Always wear appropriate eye protection when working with a table saw or any other tool. Wear a particle mask when sawing wood to protect your lungs.

Bad equipment means robbing.

Pull out nails

Then remove frame rest.

Remove any remaining nails.

Cut out the damaged area, and glue in the replacement part.

Nail it in but pre-drill the holes first.

end. Grip the repair part tightly against the shell to keep it aligned, then, drive in the nails. Prime and paint over your repair work. The repair will last longer than the shell.

If the shell is damaged along a bottom rail, I use hardwood pieces cut ¾" wide by 1" deep. I cut them either 19-7/8" long (the length of the shell) or 16-1/4" long (the width of the shell). I pre-drill 3/32" pilot holes every few inches along the ¾" side, then, I countersink the holes to accommodate the nail head on a 7d galvanized nail.

Begin the repair by removing all nails within 1-1/2" of the bottom of both ends of the damaged side of the shell. Set your table saw to a depth of ¾" then, remove 1" of wood from the bottom of the damaged side of the hive body. Apply waterproof glue to the joining surfaces of the repair part and the shell, press them together, then, nail the repair part in place. If a shell is heavily damaged, consider cutting it into a shallow, or patching together two good remnants from two damaged shells. To patch together the halves from two shells, apply wood glue to the joining surfaces, then, clamp the pieces together. Drive in several hive staples along the inside surfaces of the shell. Be sure to place the shell on a solid, flat surface when hammering the staples into the wood so that the joint stays aligned. Orient adjacent staples at opposing angles. Keep the pieces clamped together until the glue is set.

The metal patch If the damage is less extensive, I use 28-gauge aluminum sheet metal to complete the repair. This is thinner than standard flashing, but it can be ordered from most sheet metal fabrication shops. Use the templates provided to pro-

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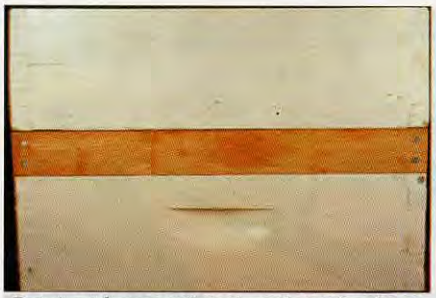


Paint replacement part and you're done.

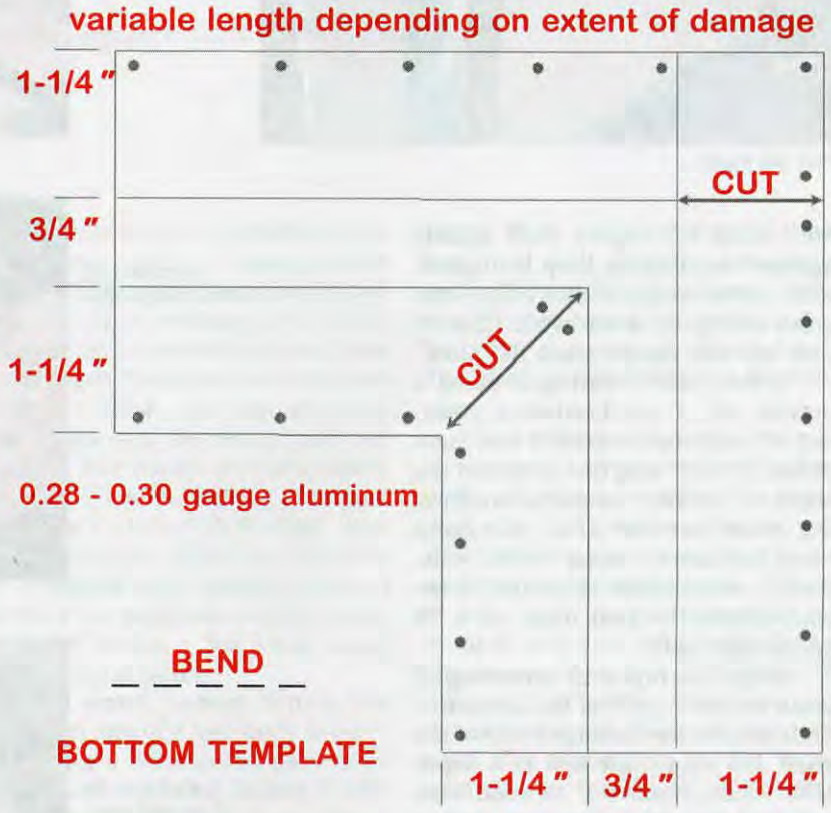
duce repair pieces for the top and bottom corners of the shells. Stack up 5-10 repair pieces and pre-drill the nail holes with a 1/16" bit. Store until needed.

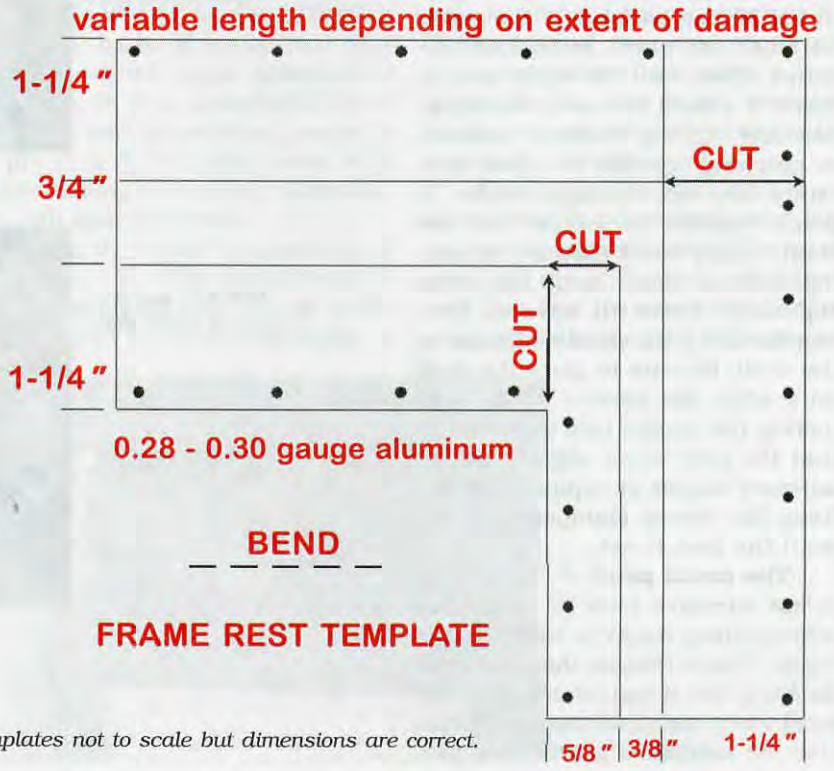
Begin the repair by cleaning the damaged area with a sharp hive tool. Next, use a wood rasp to remove just enough wood from the top or bottom of the narrow edge of the shell to accommodate the thickness of the sheet metal. This ensures a flush fit where two hive bodies come into contact. Next, fold the repair part on the corner of **an undamaged shell** to produce the correct fit. You want crisp, right angles for a good fit. Finally, place the repair part in position on the damaged shell and nail it to the sides. Use ¾" or 3/8" nails, depending on the thickness of the wood into which you are nailing.

If you like, you can partially fill the folded repair part with wood putty before positioning it. Work the repair part into place. The putty will fill any depressions in the wood and provide additional support for the sheet metal. Clean off any excess putty that oozes out. Complete the job by nailing the repair part into place. Prime and paint over your repair work. The corner should be as good as new. You can use smaller pieces of sheet metal to repair small damaged areas anywhere on the shell. Always rasp out the thickness of the sheet metal on the contact edge of the shell.

Maintaining your equipment is a great way to spend cold winter days in your shop. You can make the entire process go more smoothly if you build or purchase equipment of uniform dimensions for your operation. That way, each repair part will be compatible with all of your equipment, and you will not have to set your saw as often. Sharp saw blades also make for good joints. Remember! Well-maintained equipment is easier to work with, protects your bees from pests, and is economical in the long run. I can restore 40 supers (one major repair per super) in a day at a cost of $2.00 per super. Weigh that against the cost of purchasing 40 new supers, assembling and painting them. So, whether you use the methods outlined here, or those of your own making, be sure to incorporate routine equipment maintenance into your overall management program. BC

Nick Calderone is a professor in Apicultural Extension and Research at Cornell University, Ithaca, NY.





Templates not to scale but dimensions are correct.

Richard Taylor

Bee Talk

"Joe Rowland . . Outspoken, and an outstanding beekeeper."

There is in some people, I being among them, a deep satisfaction in living simply and close to the earth. We eschew luxuries and the needless complexities of modern life which contribute nothing to that simplicity, preferring to nourish our own inner resources. We like to see things flourish and grow as nature intended them to, patterning our own lives after the same natural scheme of things. People like us tend to become gardeners and beekeepers.

Much of agriculture has abandoned that simplicity. The family farm is a thing of the past. Agribusiness has taken over. Complex and costly machines have moved in, and with them a steadily increasing array of chemicals and pesticides. Even the natural genetic structure of plants is becoming manipulated, and farmers who save their seeds are dealt with as criminals. Perhaps all this is progress in a sense, but it is purchased at a dear price.

Beekeepers, as I have noted before in these pages, can stand aside from all this. We need only the simplest of tools. We need not worry about rising costs of land and feed. Our challenge is rather to develop the knowledge and skills needed for success, or in other words, our own inner resources. You can keep one or a dozen colonies of bees in your backyard, or even on your roof, and do so profitably, or you can have 300 or so in out yards here and there, on land you need not own, gaining a decent livelihood through this alone.

I have a friend, Joe Rowland, who does just that. His holdings average about 300 colonies – fewer in the Fall, more in the Spring – and he makes a good living at it. He is not rich, and has no need or desire to be, but he has an independence and a mastery over himself and his craft that are precious in themselves.

I'm going to describe how this beekeeper does things, believing that he serves as a model for anyone who is serious and who wants, not just to play around with bees, but to do things really well and to succeed.

Joe was graduated from Cornell University in the early '70s and couldn't find a job in the areas in which he had been so expensively trained. He knew something about bees, for they had been in his family as a kid. Having no job, he took to travel in his old van, ending up in Mexico and then California. The apiaries he saw here and there kept bringing his thoughts back to bees, and he finally got from the California Department of Agriculture the locations of commercial beekeepers. The fourth such beekeeper he visited hired him to help with his queen rearing business. This did it. The price of honey began to rise at about this time, and the relative affluence of beekeepers did not escape his notice. He returned to lush New York, and beekeeping has been at the center of his life ever since.

Here is how he does things, beginning, as the beekeeper's year does, with Fall preparations.

Weaker colonies are combined with strong ones, and all go into Winter three stories high, the bottom story being pretty much empty and the other two containing 50 or 60 pounds of stores. The hives are wrapped with 15-pound felt roofing paper, with a sheet of Styrofoam in the top of the hive. The colonies need no feeding at this time or, for that matter, any other time, except for special circumstances. This Winter preparation takes about three days.

In late April the top two stories are moved down, the bottom one going on top, with the queen. The brood nest is thus expanded into that top story, an important step in discouraging swarming.

The queen rearing yard is set up in early May. This is perhaps the most important aspect of Joe's management. He never buys queens or package bees, and thus has control over the quality of his stock. He strongly believes that only northern-bred queens should be used for honey production in this northern climate. I will not undertake a detailed description of his queen rearing, as it is basically standard, but a general outline is needed.

Three very strong colonies are selected as cell builders. The queens have been removed from these, and they immediately build queen cells in great number. These are all destroyed on the fourth day, the royal jelly being saved.

Joe carefully selects just two or three of his very best colonies for his breeding stock, these being the ones that have been most productive, free of disease and reasonably gentle. Disease resistance is tested for and encouraged by seeing which colonies are the best housekeepers, that is, which ones are most thorough and quick to remove dead or diseased brood. The way this is discovered is simple and direct. It is called the pinpick method. That is, Joe punctures the cappings of a cell and the six adjacent cells on a frame of solid brood in each of the several colonies he is considering as breed-

Continued on Next Page

BEE TALK ... Cont. From Pg. 43

ing stock. This is done in the afternoon. The following morning these combs are checked to see which colonies have been first and most thorough in cleaning out the brood killed by the pinpricks. The two or three that pass this test best are the ones whose queens become his breeder stock.

Grafted queen cells, 42 per frame, are given to the cell-building colonies at three-day intervals, and harvesting of the completed queen cells begins 10 days later.

Joe uses regular hive bodies for queen mating nucs, with four frames of brood and bees to each nuc. Later swarming is discouraged by taking more combs of brood from the stronger colonies, fewer from those that are less strong. These colonies, with their newly mated queens, become the splits used to build up his apiaries for honey production.

There are always quite a few completed queen cells left over. These are distributed to colonies which, for whatever reason, might need requeening, such as those with chalkbrood, those that are weak, and so on. The old queens are not removed. Instead, one or, often, two queen cells are put in the very top of the hive, the hope being that the virgin queens that emerge will displace the old queen down below.

The honey harvest begins around the first of June, ahead of the basswood flow, which begins in early July. Honeys from different sources are thus kept separate. As Autumn approaches, the weaker colonies are combined, so as to have maximum-strength colonies ready for the goldenrod Fall flow.

Joe's aim throughout, then, is to get the maximum production from every colony, and his system works. He averages about 140 pounds per colony, which is way above the average for this area. Winter loss is not heavy. Prior to the appearance of *Varroa* mites, Joe had about two percent Winter loss. Now it is about nine percent, because of the mites, but that is still manageable. Mites, up until now, have been controlled fairly well with Apistan. Joe does nothing about tracheal mites. One year he treated one yard with menthol and left another similar yard untreated and could see no difference in outcome. He does not consider tracheal mites a very significant problem. American foulbrood is rigorously controlled by burning any diseased colony the moment it is discovered, and the bees are checked regularly for this. No antibiotics are used. Joe has found no AFB in his yards in the past three years. Swarming is no serious problem, due to the procedures described above.

Joe does all the marketing himself. He does some pollen production, but mostly it is honey. About half the crop is marketed in five-gallon pails, to stores and other outlets, and the other half is bottled. In the Fall he rises at about 3:00 in the morning every Saturday and trucks bottled honey to New York City, where he sells it in an open market right from his truck.

It is all good hard work, but it is wonderfully organized and for the most part out in the open air and sunshine, close to nature. Perhaps most important of all, Joe works for himself, beholden to no one. He's not among the richest men in the world, but, in things less tangible, he is rich indeed. BC

Richard Taylor is a philosopher and lifelong beekeeper who lives in the Finger Lakes region of New York.

Joe Rowland

GLEANINGS

APRIL, 2000 • ALL THE NEWS THAT FITS

New Faces

ABF REORGANIZES

Clint Walker (photo by M. Hensen)

Pat Heitkam

Clint Walker, III was elected president and Pat Heitkam vice president during the American Beekeeping Federation's 2000 convention in Fort Worth.

The ABF members also approved an overhaul of the organization's bylaws to re-structure the ABF Board of Directors and give more power to the three ABF Special Interest Groups (SIGs).

In broad terms, the reorganization turns the body which was known as the ABF Directors into the Delegates Assembly – up to three delegates from each state. The new Board of Directors is a much smaller group; the president, vice president, and past president; four directors elected by the Delegates Assembly; six directors from the SIGs (two from each of three SIGs); and two directors appointed by the president. Much of the responsibility formerly relegated to the ABF Executive Committee will now be handled by the full Board of Directors.

Mr. Walker is a third-generation beekeeper from Rogers, Texas. He has a diversified operation: honey production and packing, pollination and queens and packages. He was ABF Vice President.

The new ABF Vice President, Mr. Heitkam, is also involved in all phases of beekeeping, but he specializes in queens and packages from his Orland, CA base. He had been a member of the ABF Executive Committee for three years.

TM Susceptible Bees To UK

NZ SPREADS THE WEALTH

New Zealand exporters have won the right to ship bees to Britain.

British beekeepers had argued against imports of New Zealand bees because of the risk of introducing disease.

New Zealand has only a few bee diseases and does not need to use antibiotics or other chemicals.

New Zealand Agriculture Minister Jim Sutton said two disease risk assessments undertaken by British authorities had found there were no scientific grounds for barring New Zealand bees.

New Zealand Honey Advisory Service manager Bill Floyd said the decision was a marketing opportunity for New Zealand apiarists.

He said while the British market would be small, recognition of New Zealand bees as being safe and of high quality would reflect on this country's honey exports.

"There is huge brand value from being recognized as the supplier of quality bees," he said. "If we are the country where people can get good healthy bees then it should follow that we are a country that produces good healthy honey."

New Zealand beekeepers are seeking to increase earnings from bee exports now worth almost NZ$1.2 million a year. The bees are usually shipped to cold northern hemisphere countries where local bees are killed off by winter weather.

Sutton said World Trade Organization rules had helped win access to the British bee market.

Those rules require trade-restrictive practices to be transparent, soundly based in science, and for protection of human, plant, or animal health.

Trade bans could not be used to protect domestic producers from foreign competition, he said.

"Without such rules, our beekeepers certainly would not be able to export bees to Britain," Sutton said.

Sutton said a battle to win access to the United States honey bee market that has been underway since 1978 will continue.

"Basically, our honey bees have been locked out of the United States and we don't know why," Sutton said.

Alan Harman

HOME MADE BEETLE TRAP WORKS

Observations:

1. The beetles would congregate around my boardman feeder (I only feed my bees honey).
2. The beetles seemed to favor nooks and crannies.
3. The beetles, with their heavy armor, seem fairly uncoordinated. The beetles are easily thrown out of the hive by the bees (though they come right back).

I have constructed what I call the "Nepenthes Beetle Trap." To make this trap, I cut out the center of a mayo jar lid, leaving 1/8 inch around the circumference, glued the lid to the bottom of my hive using "Liquid Nails," and drilled holes big enough for the beetles to pass, but too small for the bees. I filled the clean mayo jar 1/4 full of honey and screwed the jar in place under the hive.

In 12 hours, I had trapped 120 beetles. In 24 hours, 200 beetles and in 36 hours, 220 beetles and 10 beetle larvae.

I opened up the hive and looked for beetles. Though I'm sure they're there, I cannot find them (they're very good at hiding). This is a great improvement over the previous situation, where opening the hive caused beetles to scatter (even after treating with Coumophos alone).

Christopher Creel

INNER ... Cont. From Pg. 8

Of course the same is true for handlers, producers, producer-packers and packers. Most of the honey passes through very few hands. Bodies *and* honey count. It was explained to me by AMS, and I quote "Affirmation by a *majority* of the number of people representing a *majority* of the honey dealt with. A majority is more than 50% in *both* cases." (Emphasis mine.)

Producers will be required to keep better books to facilitate enforcement of the act, to document how much honey they produce and how many colonies they run. There are a few other reports that will be required, along with a few changes in both qualifications and nominations procedures, too, that have been added.

The proposal calls for a change in the Board's make-up to from 13 to 14 members: seven producers, two handlers, two handlers who are importers, two importers, one from a national co-op. The public member and the exporter position will be no more. To be qualified as an importer at least 75 percent of gross income in three of the last five years must be from selling imported honey. (There is no minimum at present.)

Also proposed is authorization to conduct honey bee and beekeeping research designed to advance cost effectiveness, competitiveness, efficiency, pest and disease control and other management tasks – helping to solve production problems and reduce costs. Along with this is authorization to develop new markets for honey and honey products and to enhance the image of honey.

The Board is required to reserve at least eight percent of all assessments collected each year for this research (roughly $400,000). If approved, this money would be used, or carried over to be used later.

The proposal also calls for authority for the Board to carry out activities and develop procedures for the inspection or monitoring of honey and honey products, including the authority to develop minimum purity standards.

The Board, if the amendment is passed, would also be authorized to develop and recommend to the Secretary a system or program for monitoring the purity of honey and honey products. Also, to develop and implement a voluntary quality assurance program concerning purity standards. This includes establishing an official seal to be displayed on products that meet the standard, actions to encourage the use of, and purchase of these products and periodic inspections by the Secretary of individuals who use the seal (this has already been implemented in the 1998 action and does not need approval).

Assessments. Producers – domestic honey and honey products – $0.0075/lb. Handlers – $0.0075/lb. Imported – $0.015/lb. (.0075 from handler and .0075 from importer). First handler is responsible for collection from producers and handlers and shall maintain separate records for each producer. Producer-packers pay for all honey that they are first handlers of, *and* for all honey they produce. Penalties and interest will be charged if payments are late. All this allows the Board to collect about $4.9 million/year – a $1.6 million increase.

These are what I consider the highlights. Now, a year ago the Board published philosophy statements regarding the research and quality assurance programs. I'm sure you can get a copy of these directly, but I, again, highlight their thoughts.

Beekeeping Research. Applied research is the focus and priority. Research proposals would be reviewed fairly, and in detail, to determine if they met the standards, including reasonable timelines, communication, ownership of results. Bottom line – reduce the use of chemicals, improve technology to reduce costs, improve honey handling, facilitate pest controls and IPM. For others pollination value, pesticide problems, IPM for growers.

Quality Assurance. The consumer will demand the industry meets quality assurance standards, and this program will help members meet those demands. The Board *will not* inspect beekeeper facilities, but will invest in research to detect cheap sweeteners used for adulteration.The guilty will pay all costs, and adulterated honey will be removed from market. From their paper, exactly: "The Board's new enabling legislation grants to USDA and to the Honey Board authority, unique to promotion programs, to enforce quality assurance standards. It will be the highest priority of the Board, in association with the industry, to develop with USDA the tools for enforcement. The Board will work to have a high level of effective cooperation between USDA and other government agencies to achieve the highest level of enforcement."

Bottom Line. There will be a clear definition of honey, and effective means to determine if it is pure. Communication increases awareness of these issues with all segments of the industry. Honey is perceived as pure by the public, it is effectively monitored and purity standards are enforced to stop adulteration, and to have all of this benefit all segments of the industry equitably.

At the beginning I said most of us aren't directly affected by the Board, but we are indirectly. That will change after this referendum is voted on by those 4000+ people, no matter which way this goes. Think about this.

Right now there's a lot of, ummmm, discussion on the pros and cons of this amendment. Each voting segment of the industry – producers, producer-packers, packers, handlers and importers has a different perspective on what the outcome will be, really, if it passes. More money, greater representation, enhanced enforcement, new information as viewed by some is viewed equally as higher costs, unequal representation, government intervention and expensive research by others.

And, while the loudest voices are crying foul regarding imported honey costs, promoting only U.S. honey and conspiracies by U.S. packers to squeeze U.S. producers, other, quieter voices are murmuring thoughts about big brother in the accounting area. Still others are raving about the $400,000 raised for honey bee research, and how that will help, and some are still trying to determine why AMS oversight costs so much.

Is this change good for the industry? In my opinion it has some real good points, and some not so good. I like the research money – a lot, and I like producers paying less assessments. I'm not keen on the voting, the enforcement, and the Board membership change, but I could live with them. But I don't particularly like the added scrutiny, unregulated it seems to me, the Board would have to investigate, using 'agents, anyone they feel like harassing – producer, packer or importer. Nor do I like the assumption honey is universally adulterated and they are the crusaders in charge of cleaning up the mess, and that, of all promotion programs that exist, they and they alone want this authority. That's a stretch, I think. Not unlike other political campaigns (and this is political far, far more than economic) the main choice comes down to more, or less government.

I can't vote on this. Most of us can't (only about 2.6% of all U.S. beekeepers have a voice here, but then only they pay the bills), and most of us won't even be aware of any changes. Of course that was the same exact argument used when income taxes were first explored way back when. Keep that in mind, about the middle of the month.

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SMALL HIVE BEETLE EXPERIENCES IN SOUTH AFRICA

P.J. Elzen[1] · J.R. Baxter[1] · M. Allsopp[2]

Since its discovery in 1998 in the southeastern United States, the small hive beetle (*Aethina tumida* Murray) has become a serious economic pest of honey bees and bee products within hives and in honey houses. Adults and larvae feed on immature bees and eggs, depleting the hive of bees. Adults and larval beetles also feed on honey within the hive and in honey house storage, rendering the honey unfit for human consumption. Numbers of adults and larval beetles within individual hives in the United States have been seen as high as the thousands, completely overtaking the hive.

This dire situation in the United States is quite different from what is seen with this species in its native range in South Africa. While the small hive beetle may infest unextracted combs in storage, numbers of adults and larvae rarely reach damaging levels in the hive. In October of 1999, we initiated cooperative research between the USDA and the South African Agricultural Research Council (ARC) to investigate the biology of the beetle and the behavior of Cape bees (*Apis mellifera* capensis) toward the small hive beetle in South Africa.

Conversations were held with local beekeepers and bee researchers to determine the extent of damage caused by *A. tumida* in South Africa and measures that are taken to counter the beetle. Beekeepers in the Cape report that the presence of damaging numbers of beetles in colonies is extremely rare, and they believe that the local Cape honey bees control beetle numbers below the economic threshold. In the opinion of the Cape beekeepers, this control results from active aggression toward both the beetle adults and beetle larvae by the bees, with common reports of bees physically removing beetles from colonies. In the Cape, only colonies severely weakened by other factors appear to be susceptible to *A. tumida*, and as such beekeepers do not practice any beetle control measures. This is the situation throughout South Africa, as *Apis mellifera scutellata* is reportedly even more vigorous in its defense against the beetles.

Problems are caused by *A. tumida* in honey houses in South Africa, however, and beekeepers in South Africa are very aware of these problems. In an effort to counter this threat, beekeepers in South Africa extract honey supers as rapidly as possible, with two to three days considered the maximum that supers can be safely stored in a honey house. Some beekeepers store unextracted supers in cold rooms if they cannot be extracted in a timely manner. Other than these measures, beekeepers in the Cape do nothing more to control beetles in honey houses; no chemical controls are used.

One point of interest is that the South African beekeepers maintain that the beetle will be a problem in the honey house only if either brood or pollen is present in the combs to be extracted. If combs contain nothing but honey, they suggest there will be no problems. Queen excluders thus would appear to be advisable.

We conducted a preliminary study in Stellenbosch, South Africa, that demonstrated the small hive beetle in South Africa will readily feed on bee brood under laboratory conditions. This agrees with observations made in the United States. In field tests, however, beetles in colonies of Cape honey bees were not found to be actively eating bee brood, and low numbers were limited to the periphery of colonies. These experiments are currently being repeated to confirm these conclusions.

In watching the behavior of the Cape honey bee toward the small hive beetle, we observed that the Cape bee was very aggressive toward individual beetles. Bees were seen attacking and carrying off beetles, appearing to aggressively defend the hive against beetle invasion. Such a level of defense has not been observed in European honey bees in the United States. This defensive nature of the Cape bee against the small hive beetle, two species which have co-evolved together, is suggested to be sufficient to prevent access of the beetles to the brood of these bees and hence severely limits the beetle population numbers in these colonies. The active defense of the bees may be sufficient explanation as to why the small hive beetle is not a serious pest within the hive in the Cape region of South Africa or in other regions of Africa.

Breeding of the Cape bee in the United States is not an option, since the Cape bee is not considered a desirable species. Efforts need to be made, however, to further study and understand the active and successful defense against small hive beetles by African honey bees, and then perhaps to select similar attributes in bees in the United States. Such attributes may also afford some protection against *Varroa*.

We plan to continue cooperative efforts between the USDA and the ARC in efforts to find natural controls for the small hive beetle in the United States. BC

Photos from OH Dept. of Ag.

[1]USDA, Weslaco, Texas
[2]Agricultural Research Council, Stellenbosch, South Africa