



SEP 2000



Bee Culture

**RUNNING 100 COLONIES
FALL REQUEENING
INCAPPING SEASON
LAST MINUTE CHANGES
IN NHB REFERENDUM**



Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

SEPTEMBER 2000 · VOLUME 128 · NUMBER 9

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Buzz and Nancy Riopelle, River Ridge Honey Farms in Valley City, OH spend part of their Summers touring Lake Erie in their boat, Honey Money. Buzz is a sideline beekeeper with 100 hives. Honey Money is a 22½' Sunrunner with a 350cc, 260 hp I/O engine. Buzz purchased Honey Money in 1987 with . . . Honey money from his sideline business. Photo by John Lang

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KEEP IN TOUCH

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Missing Roger

That was an excellent cover picture of Roger on your July issue, and also an excellent summary of his life and achievements.

What some of your readers may not know is that Roger did not just mingle with experts, even though he knew them all and had been the mentor to a lot of them. He loved being with ordinary beekeepers, big and small. Whenever we asked him to come talk to our bee club he always did, even when it was small and he could not expect an audience of more than a dozen or so, mostly beginners. He never let us down. Early on he organized most of the honey shows for the EAS and the Empire State Association, and assigned his graduate students as judges in them. Sometimes he would get together with beekeepers and just travel around to visit apiaries and honey houses. I often introduced him as a speaker, even though he needed no introduction, and I would note that Roger Morse knew more about honey bees than anyone else in the world. That seems like an extravagant statement, but it isn't. He really did know more about honey bees than anyone else in the world.

Richard Taylor
Interlaken, NY

Supporting Referendum

I am writing in support of the upcoming National Honey Board referendum vote. First off, please vote; if you don't vote, you shouldn't debate the issue.

1. The NHB provides us with a credible information outlet in case of a health scare. We need a trained, aggressive, and skilled spokesperson to deal with media hysteria. I fear few of us are prepared to deal on our own with a reporter bent on a sensational story.

2. We need to fund our own

MAILBOX

research. This is a fair, equitable means for having us all contribute for the industry's benefit.

3. Why be afraid of improving the standards on nature's most perfect product? It comes to us clean and pure; we are the ones who mess it up. If a new standard is established and a plan is presented on how to keep our honey pure, why fear it? Dairymen adopted standards and have either Grade A or Grade B dairies. We know the Grade A boys are paid more for their milk, but they pay more to get their operation up to an established standard. It doesn't have to be a "Gestapo" thing; it's how can we make our product better.

4. I have watched my father and brother serve on the National Honey Board and their goal was to do what's best for the industry. True, some have served on the NHB and quickly proved they had a selfish personal agenda. Thankfully, their efforts found no support by the majority.

Like most industries, beekeeping enjoys both really smart and really dumb players. Not voting is dumb, supporting the referendum is smart!

Jay Miller
Blackfoot, ID

Congratulations!

I recently received my first issue of *Bee Culture*. Nice printing (on recycled paper, thank you), nice photos, nice articles, nice protecting envelope, well . . . what can I say!

I really appreciate Clarence Collison's "Do You Know?"

Keep it up.

Andre Simoneau
Montreal, Quebec

Helpful Hints

Just a suggestion or two that might be helpful to a beekeeper or two. I'm 82 years old and have kept

bees since I was 12. I still have equipment I inherited from my father.

First I will call your attention to nails used for building concrete frames. They have double heads, one about 1/4" above the other. That way there's a head, *always* a head protruding so you can remove it with a claw hammer. Comes in handy for guys like me, always changing my mind on how to make something. Can always pull nails out and start over. When you get it all worked out for size and shape you can finish it with common nails and remove the double-heads to use on another job. Have fun. Don't hit your thumb.

John Humphreys
Humphreys, MO

More About GMOs

Mr. Gates, in reference to your letter in the June issue of *Bee Culture*, before you call others nasty names, I suggest you avail yourself with the facts and risks involving GMOS.

We should all be concerned about genetically altered crops. It is not plant breeding. It is inserting genes from totally unrelated organisms including fish and bacteria. It is powerful chemical companies venturing into the world of the unknown with inadequate research. We and our environment are the guinea pigs. Environmental problems are already surfacing.

81% of Americans and most of the rest of the world want these new foods labeled. This is not an unreasonable request.

Since it will mean less carbaryl (Sevin®) will be used, BT corn will be good for bees. Roundup-ready crops however, will result in killing bees and honey plants. I had some bees killed after the county sprayed Round-up. The bees rear four legs were paralyzed. A friend had the same problem. There are over 30 formulations of Round-up

Continued on Page 7

MAILBOX

which makes research on this problem difficult. French researchers have discovered that some varieties of transgenic rapeseed can harm bees by shortening their lives and destroying their ability to recognize plant pheromones.

Roundup ready crops mean more Roundup in our food, higher costs to farmers, dead soils, lower yields and huge profits for Monsanto.

Scientists, the world over, are deeply concerned that GMOs containing bacteria will cross with the beneficial bacteria and in so doing will destroy the good bacteria.

Monsanto sold our military Agent Orange without removing the hazardous dioxin which the other chemical supplier had removed. Monsanto has been found guilty of misrepresentation involving their advertising and the research for the labeling of Roundup.

I spent 35 years in the pest control business and since retiring I have found the best sources of accurate information on GMOs and pesticides to be the Northwest Coalition for Alternatives to Pesticides located in Eugene, Oregon. Their phone number is 541.344.5044.

I would be interested in hearing from anyone who has had experience of Roundup or Garlon 3A killing bees. I can be reached at 6888 Crown Point Road, Coos Bay, OR 97420. My telephone is 541.888.5695.

Robert C. Burgdorff
Coos Bay, OR

It's Time To Vote

It now appears that the honey industry will be voting on the changes to the National Honey Board this month. The changes we will be voting on are mainly the change in the producer assessment to $\frac{3}{4}$ cents per pound, with honey packers or handlers also paying $\frac{3}{4}$ cents, the addition of a quality assurance program, and the addition of a bee research program.

While it is true that producer-packers and Sioux Honey members will be paying the full 1-1/2 cents per pound, the other packers will now be paying for programs that are badly needed and will be of great benefit to themselves and the rest of industry. This added revenue would allow the NHB to continue the current programs while having the funding to add the new programs. With the funding changes come changes in Board composition with producers continuing to hold at least 50% of the Board seats.

The Quality Assurance program will help us maintain the most important aspect of our product; it is a pure and healthful food. With the potential for rampant adulteration and the continued need to treat our hives for mites and disease, we desperately need one organization to oversee and conduct a QA program. The NHB is the logical choice to be the organization to do this.

Additional bee research is something that every beekeeper in this country recognizes as a need for our industry. Again, the NHB is the logical organization to oversee this program. The proposed changes mandate a minimum of 8% of the funds will be allocated to bee research. If funds are not used during one year, they will be carried over to the next year and cannot be used for any other area other than bee research.

I encourage all of you to vote yes, however, I urge every eligible voter to research the issues and take the time to vote, regardless of your views. The eligible voters need to speak their will and then go forward to make our industry stronger and better able to meet the needs of all of its segments.

Albert Belliston
Burley, ID

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INNER COVER

You may think the cover photo this month a bit odd for a magazine about keeping bees, but if you missed it, look again at the name and artwork on the boat. We thought it appropriate that we 'launch' a series of articles about profitably growing your operation with a photo of someone who did, and one of the results of his work. That this is National Honey Month only helps.

You can run a sideline operation profitably. Yes, you need to make investments in efficient equipment, commitments in time

for planning, for doing, for selling and for analyzing the results of this year's efforts to improve next year's outcome. And yes, you won't get rich overnight, nor will every year be as good as the last, or the next.

That's why it's a sideline business. More than a hobby, less than a full-time job (sometimes anyway).

To keep it part-time, good equipment is needed. Fifty or 60 colonies and a hand uncapper and a muscle-powered three-frame extractor are extremely time-consuming (not to mention producing lots of sweat). You need to spend some money to get the equipment you need to handle the work you have to do in the time you have to do it in.

Time is even harder to find than money. By time I refer to the amount of time needed to do things right. Running 75 colonies and not getting some medicated, not getting some supered, not getting some harvested and not getting some winterized is not running 75 colonies. It's mostly just running. Rather, stack some of that equipment in the barn (or sell some to buy a new extractor), and run 45 or 50 well. All medicated, all reversed, all supered, all harvested, all winterized . . . and (nearly) all surviving to next year is much, much wiser, cheaper and easier than trying to do the impossible.

It's an even bet that those 50 well-managed colonies in an average year will give you as much, if not more honey than those 75 would have anyway. And all that honey has to go somewhere. By spending less time managing those 50 (or whatever) colonies, you'll be able to devote more time to selling what you harvest. And here's the key to making money in this sideline business.

If you put your honey in pails, your pails on the truck and head for the nearest big packer, your return will be barely worth the effort. Smaller packers, and most producer packers, pay more because they generally have a more-or-less local market, commanding a higher price than the generic stuff. But it's still not retail. And, with time and (yes), more effort, you can sell retail. Time and effort taken from running, devoted to selling.

Records. How many beekeepers keep good records? In my experience, most of them *could* dance on the head of a pin because there are so few. No excuses. Poor records make poor beekeepers. Good records take time. Time to enter. Time to analyze. Time *saved* later.

And no, when you do everything right it doesn't mean everything will go right. Drought. Rain. Accidents. Lost accounts. Broken truck. Broken bones. All are against you, sometimes. A conservative outlook, a careful approach, realistic expectations, and good records will pay in the long run. Financial planning and always knowing that, because it's only a sideline business, your family will eat next month, no matter what, is what keeps you going.

Maybe a Sun Runner boat isn't in your future, but it could be.

In the short time the Wise Guy column has appeared on these pages it has incensed some, irritated some, amused some and been ignored by almost everybody. But for those interested, it has put a spotlight on the differences between the people who produce honey and those who sell honey.

Who is the Wise Guy? Is it important, really? The column could just as well be the combined effort of a collection of writers, not even the same every month. But it isn't. Nor is it any of the writers who routinely appear on these pages, or this page for that matter.

Mostly the column has voiced the frustrations of a struggling group of people - those who produce honey for a living. It has looked at the arrogance of some packers with foreign options and the stubbornness of many producers who have few options. And it has weighed the value of the proposed change in the Honey Board and found it wanting.

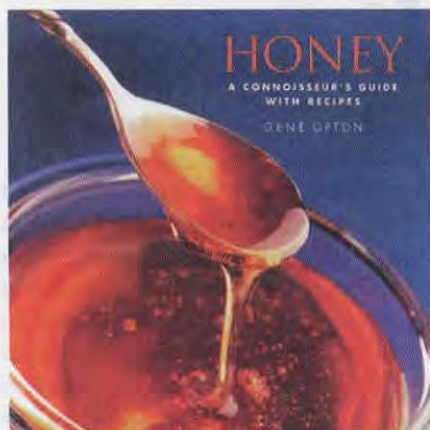
In doing so the Wise Guy has been accused of outright lies, half-truths and innuendo by some. Others have ceased advertising here in an economic boycott supporting their opposition. Conversely, the Wise Guy has galvanized the loyal opposition - those legions of producers with similar frustrations.

Is the column balanced? Not hardly! What business deal is balanced? And this is business. Packers have obstacles in the way of profits - consolidating buyers, steady supply, competition, rising costs and a flat market. At the same time producers have the same obstacles to profits - rising costs, the same foreign competition and the same flat market. What's fair? The Wise Guy is a producer, what do you think? This isn't Socialism.

As long as some people work for other people this struggle will go on. Packers work for buyers, and producers work for packers, though none will admit it. But the way things are going many of the producers and even some of those packers are getting laid off.

I offer this advice to those who take offense to the Wise Guy. He's a one-issue candidate. Packers, The Honey Board and Queen Producers will probably be here forever. It's producers we're not so sure about.

Honey & Money



Honey, A Connoisseur's Guide With Recipes. Gene Opton. Soft Cover, color, 122 pages, \$14.95. Available from 10 Speed Press, 800.841.Book. ISBN 1580081770 8" x 8".

If I were to give a honey recipe book to someone who really cared about honey, this is it. Gene Opton first published her *Honey Feast* book 25 years ago, and this is an update, with a difference. Here, Opton delves into the many varieties of honey available describing the source and flavor and color of over 50 she found. Then she tells all about where honey comes from – the nectar of flowers, the hives of bees, the efforts of beekeepers. She also discusses combining various flavors for an even different experience.

Using all this information, she, along with Nancie Hughes put together more than 80 recipes, "drawn from diverse cultural tradition for using honey in breads, muffins, fruits, vegetables, syrups, toppings, desserts and more."

At the end there is a list of over 30 sources for varietal honeys and a thorough index. Color photos sprinkled throughout add a touch of class. Well researched and fun to read for anyone not familiar with the mystery of honey, and even beekeepers who are. Everyone will enjoy the food.

Kim Flottum



Uncapping Tank and more from Brushy Mountain this year. The photo shows all the parts except the optional nylon filter that fits inside (\$9.95). Uncap, filter and bottle all in one. A stainless steel grid on the bottom of the top shell keeps the big stuff out so your cappings can fall freely. If you don't extract simply mash your combs in the top and let honey drip to bottle below. Honey gate below lets you bottle. \$89.95 plus shipping, 1.800.233.7929.



Also from Brushy Mountain, the Merrill Tool Box, carries tools inside of course, but also has a frame perch, smoker holder, brush holder and frame grip holder. Use as a stool, capture and take home swarms, and because it's the size of a nuc it can double as that, too with the screened hole already there. \$34.95 plus shipping. Call number above.



Hive Splitting. A 50-minute video by American Digital Video, a part of the Beekeeper's Educational Series, with Eric Reed. \$29.95 + \$4.95 s/h. 879 W. park Ave. PMB#266, Ocean, NJ 07712.

Eric Reed and his video company have produced an excellent video on making splits. It is definitely for hobby and sideline beekeepers who don't have a lot of experience in this management practice. It's an 'easy-to-watch' program because Eric is deliberate in his delivery, and the business of the video is broken up with several breaks that show, though don't explain, some of the tricks and equipment used.

Eric does a good job of emphasizing good record keeping, a favorite cause of mine. He keeps a log book for his work so he can refer back later for information.

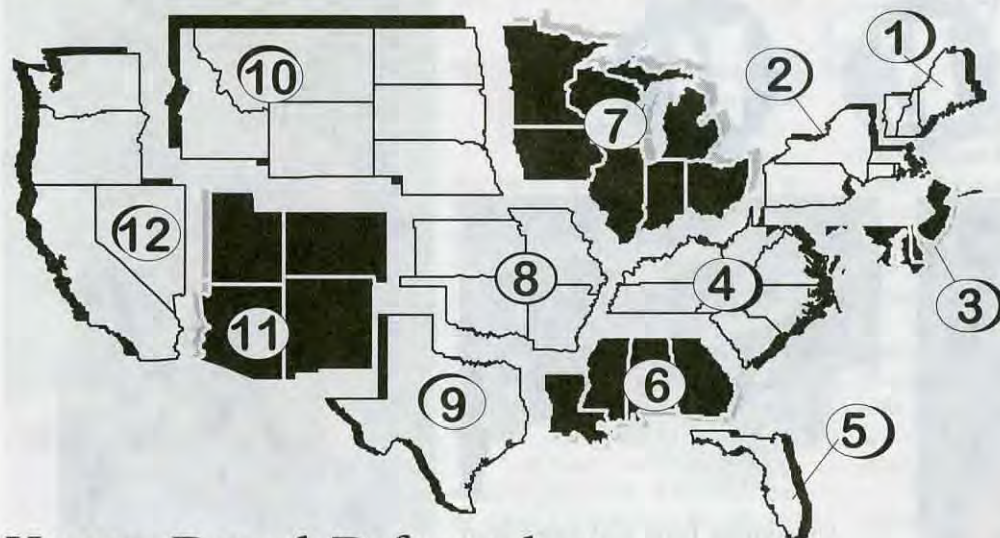
The rest is pretty straight forward. Sound biology, well explained drives the schedule for overwintered colonies, building weak colonies and choosing parents. Nuc box types are explained too.

What comes from a parent, and why, are well explained and shown as is queen introduction and evaluating acceptance.

Transferring the nuc frames to a full size colony, and then a unique way to get foundation filled are demonstrated and finally evaluating the new colony.

Considering a package costs about \$50, this is worth the money, and fun to watch.

SEPTEMBER - REGIONAL HONEY PRICE REPORT



Honey Board Referendum

We polled our reporters in July about their opinions regarding the Honey Board Referendum that is to be voted on this month. We first qualified eligibility to vote, and then asked whether they supported the referendum, or not. Then we asked why they decided the way they did.

Interestingly, exactly 50% of our responding reporters were eligible to vote for the referendum because they produce over 6,000 pounds of honey each year. Half of those eligible will vote in favor of the referendum, citing the research money raised (30%) and the quality assurance portion (50%) as reasons for support. However, fully 20% were concerned about the Quality Assurance program not being written yet.

20% of those eligible to vote do not support the referendum. Uncertainty of the Quality Assurance program was cited most often as the reason to not support. 30% of those eligible were undecided in July.

30% of our reporter ineligible to vote supporting the referendum, citing research money, and packers paying as reasons. 40% of these did not support the referendum.

Totals for all reporters: 43% support, 30% do not support and 27% were undecided.

| | Reporting Regions | | | | | | | | | | | | Summary | | History | |
|---|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|--------------|-------|------------|----------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Range | Avg. | Last Month | Last Yr. |
| Extracted honey sold bulk to Packers or Processors | | | | | | | | | | | | | | | | |
| Wholesale Bulk | | | | | | | | | | | | | | | | |
| 60# Light (retail) | 70.62 | 66.00 | 50.00 | 73.33 | 85.31 | 64.67 | 64.40 | 59.00 | 78.00 | 62.00 | 100.00 | 50.00 | 45.00-142.00 | 68.93 | 70.26 | 69.14 |
| 60# Amber (retail) | 67.31 | 62.35 | 48.00 | 64.25 | 76.41 | 60.00 | 63.00 | 56.50 | 88.00 | 62.00 | 90.33 | 45.00 | 40.00-123.00 | 66.22 | 68.10 | 65.22 |
| 55 gal. Light | 0.63 | 0.60 | 0.55 | 0.65 | 0.55 | 0.65 | 0.64 | 0.61 | 0.61 | 0.61 | 0.64 | 0.59 | 0.45-0.75 | 0.63 | 0.64 | 0.59 |
| 55 gal. Amber | 0.59 | .55 | 0.50 | 0.62 | 0.52 | 0.68 | 0.59 | 0.62 | 0.48 | 0.62 | 0.59 | 0.50 | 0.48-0.80 | 0.58 | 0.61 | 0.54 |
| Wholesale - Case Lots | | | | | | | | | | | | | | | | |
| 1/2# 24is | 34.42 | 27.84 | 35.65 | 35.25 | 45.65 | 36.43 | 41.50 | 45.65 | 30.00 | 35.65 | 24.00 | 26.00 | 20.40-44.00 | 32.55 | 29.65 | 30.33 |
| 1# 24is | 48.00 | 39.87 | 69.54 | 46.90 | 41.00 | 45.50 | 47.34 | 42.00 | 45.00 | 38.40 | 43.00 | 43.00 | 31.00-132.00 | 45.61 | 42.82 | 42.90 |
| 2# 12is | 40.09 | 39.59 | 40.66 | 45.66 | 40.66 | 42.90 | 38.89 | 40.00 | 42.00 | 31.80 | 34.00 | 39.00 | 29.40-52.58 | 40.01 | 39.47 | 37.95 |
| 12 oz. Plas. 24is | 35.32 | 34.62 | 36.53 | 33.94 | 36.53 | 31.85 | 34.39 | 33.00 | 40.00 | 27.60 | 37.00 | 35.00 | 26.40-48.00 | 35.19 | 36.14 | 36.97 |
| 5# 6is | 53.67 | 40.41 | 42.87 | 52.00 | 52.00 | 36.00 | 66.56 | 39.00 | 48.00 | 47.50 | 40.00 | 36.00 | 35.10-65.00 | 48.52 | 42.52 | 40.59 |
| Retail Honey Prices | | | | | | | | | | | | | | | | |
| 1/2# | 1.82 | 1.49 | 2.83 | 2.17 | 2.83 | 2.09 | 1.70 | 1.58 | 2.50 | 1.49 | 2.83 | 1.49 | 1.19-3.00 | 1.80 | 1.79 | 1.84 |
| 12 oz. Plastic | 2.32 | 2.07 | 2.49 | 2.77 | 2.49 | 2.49 | 2.20 | 2.20 | 2.50 | 1.82 | 2.49 | 1.97 | 1.39-3.79 | 2.30 | 2.25 | 2.24 |
| 1 lb. Glass | 3.01 | 2.30 | 3.84 | 3.54 | 3.84 | 2.85 | 3.16 | 2.63 | 3.50 | 2.39 | 3.16 | 2.19 | 1.58-6.99 | 2.94 | 2.80 | 2.77 |
| 2 lb. Glass | 4.60 | 4.10 | 4.78 | 5.99 | 4.78 | 4.43 | 3.98 | 4.47 | 4.86 | 3.41 | 5.45 | 3.39 | 2.75-7.00 | 4.58 | 4.54 | 4.55 |
| 3 lb. Glass | 6.86 | 5.83 | 9.06 | 7.10 | 9.06 | 6.50 | 7.59 | 6.17 | 6.33 | 4.79 | 6.32 | 6.03 | 5.40-16.19 | 6.59 | 6.67 | 6.05 |
| 4 lb. Glass | 8.10 | 6.60 | 9.56 | 9.50 | 9.56 | 6.80 | 6.80 | 7.99 | 7.00 | 9.56 | 9.56 | 5.99 | 4.99-16.00 | 7.70 | 7.43 | 7.76 |
| 5 lb. Glass | 11.20 | 9.24 | 15.73 | 11.18 | 15.73 | 8.50 | 12.72 | 10.99 | 9.00 | 15.73 | 12.00 | 7.99 | 7.99-28.65 | 10.55 | 9.46 | 9.14 |
| 1# Cream | 3.26 | 3.02 | 3.71 | 3.50 | 3.71 | 2.95 | 3.40 | 2.98 | 3.71 | 2.29 | 4.50 | 2.49 | 2.19-5.75 | 3.20 | 3.25 | 3.30 |
| 1# Comb | 4.42 | 3.99 | 4.53 | 4.00 | 4.53 | 4.33 | 4.50 | 4.48 | 4.53 | 4.53 | 4.25 | 4.53 | 1.95-4.25 | 4.40 | 4.34 | 4.28 |
| Round Plastic | 3.83 | 3.11 | 3.90 | 3.88 | 3.90 | 3.50 | 3.70 | 3.99 | 3.90 | 3.90 | 4.67 | 4.49 | 2.00-5.89 | 3.82 | 3.79 | 3.87 |
| Wax (Light) | 2.46 | 2.28 | 2.81 | 2.50 | 1.00 | 3.50 | 1.93 | 2.13 | 2.77 | 2.81 | 2.04 | 2.50 | 1.00-5.00 | 2.42 | 1.64 | 1.49 |
| Wax (Dark) | 2.33 | 2.13 | 2.59 | 2.25 | 1.00 | 2.95 | 2.00 | 1.35 | 3.00 | 2.59 | 1.50 | 2.25 | 1.00-4.50 | 2.28 | 1.39 | 1.14 |
| Poll. Fee/Col. | 39.76 | 40.33 | 28.00 | 40.00 | 30.00 | 37.00 | 42.20 | 41.00 | 20.00 | 38.31 | 52.00 | 50.00 | 20.00-55.00 | 39.93 | 39.44 | 37.88 |



THE WISE GUY



Quality Assurance! This subject has made some strange bedfellows. It has drawn articles from many people with many views. Now a political blitz is on to get the majority of voices to vote to pass the National Honey Board referendum. Referendum supporters point out there will be more promotion, bee research and getting adulterated honey out of the pipeline. Why doesn't everybody just approve this? Because not one of the proponents has said this will increase the price! Our industry at the producers' level is running on fumes. We need a better price or honey production in this country will be the business of sideline and hobby beekeepers.

Adulterated Honey! We cannot pass enough laws to make people honest. We cannot pass enough laws to make our food totally pure. When you take greed out of the picture, adulteration will stop. According to the U.S. Justice Department there are currently over 2,000 laws, federal and state, that deal with food. Some of these are mandated inspection laws and some are customs-driven for imported products, but they aren't vigorously enforced. We already have all the laws we need. Do we want another layer of laws that may or may not work?

Let's look at what's important. The price of honey is below the cost of production while the price in stores has not changed; in fact, often it has increased. Who should be upset? If the retailer or bulk user is

pushing the price down for packers and greedily taking the profit from all of us - show us. If you aren't making money, share with us. Everyone knows what producers make. If you want sympathy, show us your problems. But don't tell me it's because you had to beat a lower bid. That's a poor business decision. We should not subsidize a packer's (or producer's decision) just because he needs a lower price.

Before we give more money for promotion, all of us should share these numbers. Producers need to know who is not telling us the truth. If packers complain and point fingers at other packers for selling at low prices, please tell me how a quality assurance program will elevate that price. Explain to me how our price will increase with this program. Are you telling us (between the lines) that some honey packers or importers are adulterating honey? If so, turn them in to the feds. Why compete with a crook? My point is that if we are going to do true quality assurance let's assign a percentage of the total assessment toward testing and enforcement - maybe 30 percent. Let's keep that money aside. But if this is only a way to get more promotion money, tell us, but then let's look at promotion.

We have had the National Honey Board for over 13 years. The board has spent over \$45 million in promotion and administrative costs, yet the price of honey today is less than in 1986. We have 100,000,000

pounds of leftover domestic honey from the previous year. But in 1986 packers had to import honey to meet the demand. In 1986 almond pollination was handled by California and other West Coast beekeepers. Today beekeepers from all over the United States flock to California to have cash flow just to break even. Packers used to pay for quality honey and you had a difficult time selling your poorer quality honey. Today the poor stuff goes first. In the supermarket the name HONEY appears on everything in huge letters, but the labels often list more corn syrup in the product than honey. Who won on that exchange? Honey is imported into this country based upon price and not quality, but in 1986 quality honey was imported because it had to match the quality of domestic honey. If these results had happened in a private business, the CEO would have been fired and the board held responsible for the results.

The honey board needs to listen to the producers also. It seems to me that the Quality Assurance Program is to further fund an already failed promotion program. Consumption is the barometer we need to follow and to date per capita consumption hasn't changed much. Will it take another \$40 million or \$80 million or does anyone know? What will it take to increase consumption? Check out next month's article, I will give you a proven promotion that has worked.

Wise Guy

? DO YOU KNOW ?

Time To Eat
Clarence Collison
Mississippi State University

As I write this column in Mississippi, like most of the south, we are experiencing the so called dog days of summer. At the present time we are suffering from a serious drought compounded with extremely high temperatures. In spite of these tough conditions, the bees continue to forage and search for nectar and pollen sources, so that they can replenish the food stores that are rapidly being consumed by our large colony populations. From a production standpoint, we are in a nectar

and pollen dearth. Efficient discovery and exploitation of food resources is fundamental to productivity and colony survival during the year when conditions will allow foraging activity. Colonies use a variety of strategies to integrate individual worker activities to meet colony requirements most efficiently.

Please take a few minutes and answer the following questions to see how well you understand this important topic.

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

1. ___ Communicative dances are used in the broodnest to recruit foragers to nectar, pollen and water supplies.
2. ___ Foragers use the round dance to convey both direction and distance of a newly discovered food source.
3. ___ Foragers searching for nectar and pollen can see ultraviolet light reflected from flower petals.
4. ___ Honey bees rob both honey and pollen from unprotected combs or weak colonies.
5. ___ Foragers collecting nectar usually complete their foraging trip much more quickly than those collecting pollen.
6. ___ Worker honey bees tend to visit only one species of flower on a trip.
7. ___ Honey bees prefer to collect nectar over pollen.
8. ___ Foragers from a hive normally forage at the nearest, most profitable floral sources.
9. ___ The size of nectar and pollen loads collected tend to increase with environmental temperature.

(Multiple Choice Questions, 1 Point Each)

10. ___ Honey bees are able to distinguish between sugar concentrations as small as:
A. 2.5%
B. 5.0%
C. 7.5%
D. 10.0%
E. 12.5%
11. ___ A chemical isolated from pollen and found to be attractive to the honey bee is:
A. 10-hydroxy-2-decenoic acid
B. Octadeca-trans-2,cis-9,cis 12-trienoic acid
C. Isopentyl acetate

- D. 9 oxo-2-deconic acid
- E. Citral

12. Name four factors that will affect the size of the honey bee foraging area. (4 points)
13. A forager collecting only nectar often becomes covered with pollen. What does the honey bee do with this pollen? (1 point)
14. What navigational aids are used by the honey bee as it flies away from the hive and returns? (2 points)
15. How do dancing bees convey the profitability of food rewards to potential foragers? (2 points)
16. When a forager enters the hive with a load of pollen, nectar or propolis, briefly explain how the forager unloads her load. (3 points)
17. What two environmental factors have the greatest impact on nectar secretion and indirectly on foraging activity? (2 points)

ANSWERS ON PAGE 45

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Mark Winston

Franken-Beekeeping



“A clear consensus has yet to emerge about the long-term impact of GM crops in the field on beneficial organisms like honey bees or on their own wild plant relatives.”

In our agriculture-intensive world, genes may be the ultimate pollutant. We already have dramatically modified our environment by moving genes around the globe, by deliberate and accidental introductions of crops and weeds, and even insects like the honey bee. Now transgenic crops have erupted on the scene, providing a new twist to this ancient problem.

Genetically modified (GM) crops have many potential side effects, but none have aroused the public ire as much as their potential for environmental damage. The operative word is “potential,” because a clear consensus has yet to emerge about the long-term impact of GM crops in the field on beneficial organisms like honey bees or on their own wild plant relatives. The rhetoric has been extreme, the scientific data scanty, but that is beginning to change as slow-moving granting agencies have gradually begun to slip funding toward resolving this most important of issues.

One concern about GM crops is that they may have adverse effects on the food chain by harming non-target beneficial organisms such as pollinating bees. It has proven particularly difficult to obtain insights in this area, partly because food chain studies are inherently complex, but also because biotechnology companies and the government agencies that regulate GM crops have not been forthcoming about proprietary research industry has

conducted (see my column in the July 2000 *Bee Culture*).

Sensing this information vacuum, a few independent university and non-regulatory government laboratories have conducted studies in reaction to this excessive secrecy. Fortunately they have not yet revealed serious negative effects of GM crops on non-target species, but publicly reported studies are still few and incomplete.

Bees could be particularly vulnerable to GM crops because the nectar and pollen produced by plants are the sole food sources for bees, and crops today make up a substantial part of the diets for both wild and managed bee species. Nectar is the principal sugar and carbohydrate source for bees, but nectar from GM crops is not a problem for bees because it contains virtually none of the proteins produced by transgenic plants. Of more concern is pollen, which is the only protein source for bees and in some bioengineered crops contains the same proteins that are found elsewhere in GM crops.

The limited publicly accessible knowledge about GM pollen and bee health comes primarily from the laboratory of Minh-Hà Pham-Delègue, who works for the French government research branch INRA outside Paris. Her group has investigated the effects of pollen from some GM oilseed rape and soybean varieties on adult honey bees. Both crops are important sources of pollen for managed and wild honey bee colonies and produce bioengineered

proteins that potentially could harm bees.

Pham-Delègue's laboratory has investigated a gene transferred to both soybeans and rape that produces a protein providing resistance to fungal diseases. This protein interferes with the production of chitin, a substance found in the cell walls of fungi that also is an important component of the digestive system and external skeleton of bees. They also examined other modified proteins from GM soybeans that inhibit insect digestion and substances from GM rape that interfere with other insect functions. These inhibitors are effective against insect pests but also harm honey bees if consumed in pollen. A study from another laboratory, Louise Malone's research group in New Zealand, examined a number of insect-killing proteins produced by the bacterial pesticide *Bacillus thuringiensis* (Bt), as well as other GM soybean proteins.

Taken together, their studies are comforting in that they indicate none of the GM pollens kill adult bees outright, and it is only at unrealistically high doses that any long-term effects on adult bee survival are found. However, GM pollens can induce more subtle behavioral changes in adult bees, particularly in their ability to learn, which could be potentially harmful as bees leave the nest to forage and must remember their way home.

Caution is advisable when interpreting these results since there is no information from field studies to

Continued on Next Page

“These inhibitors are effective against insect pests but also harm honey bees if consumed in pollen.”

indicate whether this learning disability occurs in the field or, if so, is important. Further, research so far has been restricted to only one bee species, and only to adult bees. Field work, larval studies and research on other species are the next obvious and essential steps before clearing GM crops of any accusations that they harm bees. All we can say so far is that a few varieties from two GM crops don't kill adult honey bees directly.

Bees also could be unwitting participants in the transgenic world by moving pollen long distances and pollinating closely related wild plants. This phenomenon of cross-pollination between species was first reported in the mid-1990s, when Thomas Mikkelsen and colleagues from the Risø National Laboratory in Denmark grew transgenic rape in small plots interspersed with wild turnip. Fertile, recombined turnip seeds resulted that expressed the herbicide-tolerant rape characteristic when grown in the next turnip generation.

A related issue is whether bees could transfer pollen between crop fields, creating super-weeds resistant to many herbicides. Bees do move pollen up to a mile or more between fields, and seed companies recommend that GM crops be separated from each other and other crops to minimize pollen transfer by bees or wind.

Nevertheless, in the Spring of 2000 a Canadian farmer from Sexsmith, Alberta, discovered an event had occurred that was supposed to be virtually impossible, triple-resistant canola seed. He had planted three different herbicide-resistant GM canola crops over a two-year period, in adjacent fields, and the following Spring wanted to “clean” his fields of any remaining canola before planting wheat.

He discovered that the volunteer canola sprouting in and around his fields could not be eliminated by spraying any of the commonly used herbicides Roundup®, Liberty®, or Pursuit®. Resistance to each of these weed-killing pesticides had

been bioengineered into the canola varieties he had planted, and apparently the genes conferring resistance had been transferred between plants sequentially to produce triple-resistant hybrids.

This phenomenon of gene stacking is likely rare and manageable by not planting different herbicide-resistant varieties in close proximity to each other. Further, triple-resistant volunteer canola can still be controlled by spraying a fourth herbicide, 2,4-D, which has not been part of GM crop technology. Yet, it remains troublesome to contemplate the ease and speed at which the herbicide-resistant genes combined to create a super-resistant weed with limited management options.

The best strategy for managing weeds remains debatable, but the methods adopted will be important for beekeepers in determining what nectar and pollen resources are available for their foraging bees. Will herbicide-resistant GM crops reduce chemical spraying and thereby lower the selective pressure on feral weeds to evolve their own resistance, or will the resistant gene itself spread from crop to weeds? Will GM crops themselves become wild weeds or die outside of farmers' fields? The outcome of this large-scale natural experiment will be crucial both for the success of weed management strategies and for plant diversity in and around agricultural regions, but the predicted outcomes depend on perspective.

Environmentalists focus on the worst-case scenarios of intensive gene flow, escape of crops into the wild and damage to beneficial organisms. Farmers and the biotechnology industry remain confident that there will be little impact on non-target helpful organisms like honey bees and believe we can stay one step ahead of any weed problems by rotating crops and using diverse herbicides on and off the farm

In the end, this issue may revolve around philosophy more than around science. That is, are we will-

ing to accept increasingly intensive management in order to utilize the advantages of GM crops, or has our impact on nature reached a point where it's time to call a truce?

Science is telling us that the effects of GM crops on bees and the potential of GM crops to become weeds through pollination or escape appear to be acceptable and manageable risks. But opinions about the environmental spillover from biotechnology do not hinge on this science, but rather on our individual tolerance for management and human-induced changes to our ecosystems.

All human endeavors affect the world around us, and no activity has more environment-bending influence than agriculture, even with conventional crop varieties. Whether GM crops are within or outside our individual comfort zones will depend on where we draw the line between tolerable side effects and intolerable environmental damage. For beekeeping, no calamitous risks have reared their ugly heads, but continued vigilance would be advisable as new crops come on line and long-term effects become apparent.

For now, most scientists and farmers believe that the balance of benefit and risk for GM crops is more squarely in the benefit sector, with the benefits considerable and the risks being definable and acceptable. Keep your eye on this issue, because biotechnology will change our world, for better or worse, and we need to make sure that any impact on bees is not in the worse end of the spectrum. **EC**

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

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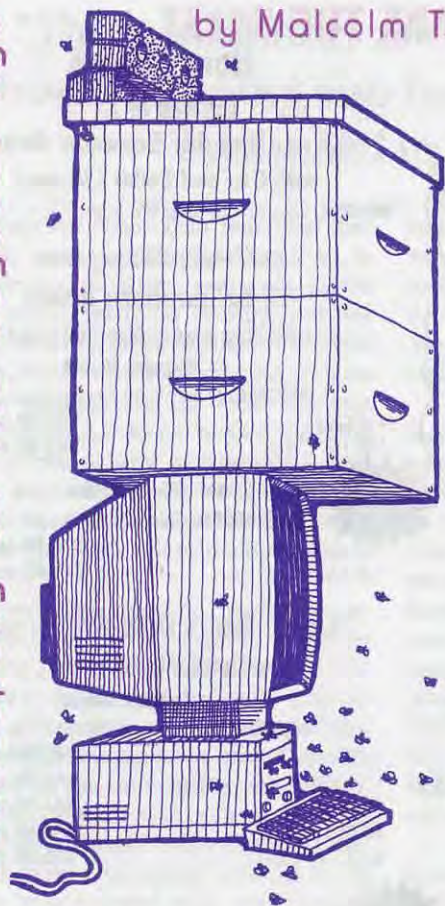
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by Malcolm T. Sanford



Beekeeping Association Ring on the Web

Topsfield Fair (the largest such exhibition and show in the country).” The site includes the following links: application, upcoming events, recipes, e-mail list with member photos, chat/forum and bee school information. The latter states: “The Essex County Beekeepers’ Association offers a nine-week course for beginning beekeepers and others with an interest in bees. ‘Practical Beekeeping’ is an introductory level course designed to provide students who have no previous knowledge or experience with beekeeping the necessary information and skills to keep honeybees, and to produce honey and beeswax. The course includes a workshop on building bee equipment and culminates with a field session working with live bees. Registration and the first night of class in 2000, is Tuesday, February 1st. Classes run through the middle of April, meeting once a week on Tuesday evenings. The cost of the course ranges from \$15 to \$50 depending on Senior status and the textbook(s) selected. 80% classroom attendance offers the student a chance in the raffle of bee equipment and associated peripheral items at the end of the course.”

The **Middlesex County Beekeepers Association** of Massachusetts has 137 members. The dominant theme of the club is beekeepers helping beekeepers deal with problems in an increasingly urban county. It does co-operative buying of glass, sugar and medications, and welcomes new members by having classes in beekeeping for beginners every winter. The last two years of the association’s newsletter are linked to the home page, which also includes links to members’ home pages and those of neighboring associations.

The **British Beekeepers Association** (BBKA) represents member associations in England, in most cases counties. Most Associations are sub-divided into Branches or Divisions. A comprehensive list of **frequently asked** beekeeping questions can be found here. A list of where **genetically modified crops** are likely to be found in the country, along with a **policy statement** deploring the current state of affairs in this area is prominent. The site promotes the **British Bee Collection**, hand-sculpted miniatures exquisitely cast in finest English Lead Free Pewter. Any royalties received from sale of these items will be used by the British Beekeepers Association General Research Fund to help fight against bee disease and promote the well-being of the honeybee world wide. A **list** of bed and breakfast establishments available to members, including a location in France is linked to the home page. The association publishes **Bees in the Curriculum** targeted at schools, structured around six topics; looking at minibeasts, the honeybee colony, beekeeping, pollination, honey and beeswax. Finally, there is a section called **“Discover the Bumble Bee.”**

The **Kent Beekeepers Association Home Pages** of the United Kingdom, also known as Beenet: The Beekeeping Computer Network for the modern Beekeeper. It features many of the above links and includes a sound file of bees buzzing. A unique resource is a paper on

Many beekeeping associations are using the web to distribute information about their membership and activities. These associations can be found by using the various search engines as described in a **previous column**. The **Bomis: Science/Agriculture/Beekeeping/Associations Ring** is similar to **that** found for general beekeeping sites. Any association site can be **entered** into what is called an “open directory,” and is then considered for inclusion into the ring. It should have content that is relevant to the subject matter, a short history of the site and what it includes can also be entered. Finally there is a list of submission policies that must be strictly adhered to.

The list of sites on this ring provides a fascinating array of information. The **Apimondia 99** meeting home page is featured, although the actual Apimondia home page is found **elsewhere**. The **American Beekeeping Federation** is also listed: “The American Beekeeping Federation will act on behalf of the beekeeping industry on issues affecting the interests and the economic viability of the various sectors of the industry.”

Dominant on the site are associations found both in the U.S. and U.K.. The **Essex County Beekeepers’ Association** states that it is an “organization comprised of hobbyist beekeepers based in Topsfield, Massachusetts, USA, with a membership of over 400 from several states. Monthly meetings are held for the purpose of fellowship and discussion about honeybees. The club is active in education, sponsoring an annual multi-week course in the art of apiculture, and maintaining a beekeeping exhibition and honey show each autumn at the


using the **Trichogramma** wasp to control wax moth. This technology deserves further attention as chemical control becomes more problematic for this beehive pest. These wasps are available from several **commercial outlets**.

According to the study, "In 12 comb stores owned by Swiss beekeepers, five batches of *Trichogramma* were released at 3-week intervals, from the beginning of June to the end of August. Single applications were carried out by means of cardboard discs onto which parasitic wasp eggs ready to hatch were glued. Overall, the procedure was successful in practical tests. In seven of the comb stores, wax moths were controlled to the extent that no damage occurred on the combs. This in spite of massive infestation pressures found in most testing areas. In five cases, a few larvae were observed in the combs. It must be remembered that in these locations, too, the majority of wax moth eggs were parasitized." The tests showed that wax moths in stored combs can be satisfactorily controlled with *Trichogramma*. The following points must however be observed: periodic control of stored combs (e.g. with *Varroa* inserts), closely fitting doors on comb storage facilities, periodic checks of newly stored combs for wax moth larva infestation. There are some weighty reasons for using *Trichogramma* against wax moths, the article concludes: ease of application (no odor emission, no danger to users, simple and timesaving insertion), no residue problems, and no danger of bee poisoning when stored combs are returned to the hive. A **general manual** also exists on the use of this insect in agriculture.

The **Bee Improvement and Bee Breeders Association** (BIBBA) of the United Kingdom is one of the few sites I know that is dedicated to bee improvement, which is in fact the name of a new journal published by this association. The **second edition** of this quarterly publication includes the following topics: Good behavior by Jacob Kahn, Why breeding bees is different by Dr. Francis Ratnieks, Conserving biodiversity in the dark European honey bee by Harris Burry, and Honey bee improvement in a nutshell by John Dews. The **first edition** is now considered a collector's item.

Related to the above site is **The Galtee Bee Breeding Group** of Ireland. Since the Galtee Group commenced its evaluation and selection program in the 1992

season, it has seen considerable progress in morphometric assessment, the identification and evaluation of a number of important behavioral characteristics of our local strains of the native bee, links with BIBBA and Black Bee improvement groups in many other European countries. There has been a major emphasis on docility, and controlled mating using instrumental insemination. Prior to 1990, the main selection criteria for breeding were honey production and freedom from disease. Over the past five years, while maintaining emphasis on these economic qualities, more and more consideration has been given the behavioral aspects such as temperament and swarming-tendency. A paper entitled *Breeding Better Bees - Record, Select, and Cull* by Michael Mac Giolla Coda found on the page includes a huge amount of data concerning this particular breeding program. Those interested in more information about this site can e-mail jacobkahn@eircom.net.

Several other sites are featured on the **The Bomis: Science/Agriculture/Beekeeping/Associations Ring**. Presumably this particular technology will be used more and more in the future to publicize and categorize the activities of beekeeping associations across the world. 

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



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Bees, Beekeepers & The BLM

Government Land Could Be Used

John Mitchell

If you call the local Bureau of Land Management office about keeping bees on its property, it could be a short conversation, like this one with a staff member in the Garfield County, Colorado, office:

"Who would I talk to about keeping bees on BLM land?"

"I haven't a clue. Why don't you call the extension? Maybe they can help you."

"No, I wanted to know about keeping bees on BLM land."

"Oh, on BLM land. I'm sorry."

Sound of voices in the background.

"Okay. What we're going to have to do is get your name and phone number and call you. That's a first-time question."

The bureau worker's ignorance of bees and beekeepers reflects more on beekeeping than on the bureau. Once, after World War II when there were millions more beehives being kept by commercial beekeepers and sideliners than there are now, many made use of public lands.

"There used to be commercial operators around here that kept their bees on BLM land, but our old-time commercial guys are out of the business, or have died off," says Bill Goff, president of the Northern Nevada Apiary Society.

More than two-thirds of Nevada falls under BLM oversight. The Bureau of Land Management controls 264 million acres in the United States, most of it in 12 western states and Alaska. That adds up to about one-eighth of the country, the bureau's Web page proclaims. BLM land offers a cross-section of North American habitats, including grasslands, forests, mountains, Arctic tundra and deserts. Many areas edge on rural landscapes with potential apiary sites bordering farm fields. Water is a valuable asset in America's arid Western outback, and

the agency manages thousands of miles of streams, *rivers and lakes*.

Beekeeping is a permitted use of bureau land, making it potentially a huge resource for sideliners, commercial beekeepers and even hobbyists looking for new apiaries beyond the reach of anti-beekeeping ordinances and litigious neighbors. In states like Nevada and Utah, so much land is under BLM control that hobbyists in urban and suburban areas may be able to drive to the outskirts of town and keep bees on bureau land there.

The BLM mandates an annual fee for keeping bees, which is determined by local managers who have wide latitude in setting the fees. How much you pay may depend on how good your relationship is with local agency staff. A Utah BLM employee said his office charged \$50 per acre annually. Linda Estrada, a realty specialist in the Bakersfield, California, BLM office, said the fee there was \$60 annually per 100-by-100 foot parcel. In Washington state, a beekeeper wheedled a \$400 annual fee covering a number of different sites, says James Bach, a former state apiarist.

"It's up to the beekeeper to negotiate the price," says Bach, who helped draw up guidelines for keeping bees on public lands in Washington. "So much of it is open to the local area manager."

In northern Nevada, Goff says commercial beekeepers kept apiaries near alfalfa fields located in valleys. The alfalfa provided a bounty of honey, but more importantly, the farmers ensured a good supply of water in the form of irrigation.

"Alfalfa is grown for seed around here, so beekeepers can take a good honey crop when farmers let it go to seed," Goff says. "This year is a good year because they are growing a lot for seed. Also, they were late with the alfalfa leafcutter bees, so there's

a lot more for the honey bees, making for an excellent honey crop."

Grant Warner, another northern Nevada beekeeper, maintains hives on property adjacent to a 3,000-acre parcel of BLM land 30 miles north of Reno. Though there are no cultivated fields near his apiary, "there's enough forage for them to survive on as long as you can supply water. That's the key thing on that high desert land."

The open spaces of Nevada BLM land really aren't suitable for somebody who is after big honey surpluses, Warner says, though beekeepers in the area always get some. "You get very interesting honeys off the BLM property."

Warner has kept bees in the area for nearly 40 years and currently manages about a hundred hives. He says nectar flows come in short, intense bursts after occasional rainfalls, but just as often their origins are unknown, and seemingly unknowable.

"A lot of the honey is almost like a mystery where it comes from because it's such a vast area," Warner says. "I do notice sometimes up on that BLM property that all of a sudden you'll go out there and lift frames out and there will be a solid brick-red pollen in every cell. It looks like a piece of art. Then you go to find that color pollen on the plants out on the property and you can't find it. It's amazing what you get off that BLM land."

Warner chose the area because he wanted little interference with open mating from feral bees.

"I'm breeding queens from colonies that were resistant to mites. I've done that for the last eight years or so and I've developed a really good strain of bees, but nothing that is a guarantee as far as mites go," Warner says.

In many areas government land has been overtaken by non-native

but excellent nectar plants like star thistle and purple loosestrife. The BLM has set policies to eradicate these weeds wherever possible. Last year in Colorado, a controlled burn on BLM land to clear star thistle near the town of Lewiston jumped fire lines, consuming 2,000 acres and 23 homes. Beekeepers may not successfully gain access to BLM land if local officials erroneously think beekeeping results in "noxious weed" proliferation.

"State regulations take precedence in noxious weed areas," says David Quick, a land specialist for the agency based in Washington, D.C. "The bad news is that if beekeeping

flatbed trucks. The hives are taken on these smaller vehicles to fulfill pollination contracts. For commercial operators seeking such yards, size matters. "If you are going to operate on semis, you've got to have a place big enough to turn semis around," Bach says. Small lots won't do.

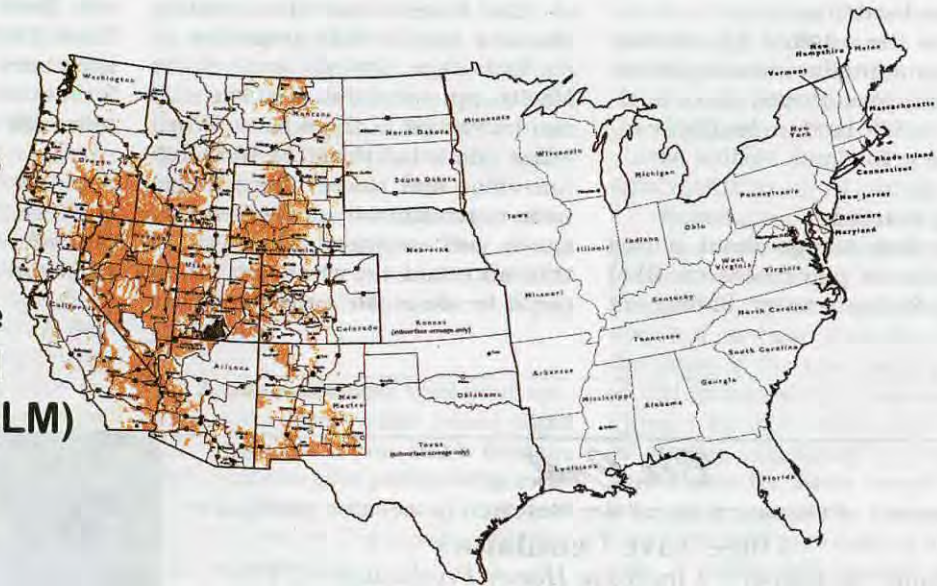
"Most of our commercial guys here don't have year-round sites, except for the holding yards. Public lands may be good areas for that," Bach says. He explains a typical operation: "Summer yards hold only 24 to 36 to 60 colonies at the most, unless it's an out-of-the-way place with a big nectar crop available. So

your case."

Land managers may consider a number of factors in determining whether to allow an apiary site or a staging area, and if so, what fee to charge. If cattle or horses are already present on the land for grazing, a dual-use permit may not be allowed unless the beekeeper can ensure the bees and the human activities that come with them aren't a threat to the larger animals. How the bees affect the public will also be considered.

"Like what happened up here on (state) fish and wildlife land when the public started complaining," Bach recalls. "Some neighbors

Public Lands Managed by the Bureau of Land Management (BLM)



is perceived as something that will help propagate a plant that is controlled under state noxious weed regulations, it would probably be frowned upon and discouraged."

Many state departments of agriculture have noxious weed control programs that have developed detailed maps of areas where loosestrife and star thistle predominate. These maps, used to help the state direct its control efforts, may be available to the public. The Oregon state department of agriculture provided maps of areas with high concentrations of loosestrife and star thistle upon request.

Transfer yards

Migratory beekeepers need special locations as staging areas or transfer yards where hives that have been transported cross-country can be unloaded from 18-wheelers to

then workers have to bring the colonies all together with their one-tons and two-tons (flatbed trucks), in order to load them onto semis to move them to California," he says. "In the Spring, they move them out of California into the staging areas, and from there out into the orchards. Then when the orchards are through they haul them to the Summer yards."

Bach says state regulations often tangle beekeepers' efforts to locate hives on public land. "Especially where the state managers are concerned, they have a whole set of mandates that they have to follow on how they use that land. So bees, if it is going to be, have to fit into those mandates. If it doesn't fit, it doesn't get allowed," Bach says. Again, he emphasizes the importance of pleasant demeanor and negotiating skills. "You've got to make

started complaining there were too many bees in the area. It turned out somebody else brought in 600 hives and set them on a parcel of land three-quarters of a mile away."

The beekeeper on private land stayed put while the state land manager offered the other beekeeper an alternative, less desirable location, Bach says. How the bees will affect wildlife in the area is another consideration.

Washington state fish and wildlife officials won't permit beekeeping when elk are calving, and consequently, the gates to some areas remain locked until after June 1. "State managers don't want anybody in the vicinity of calving elk because it upsets the process. When the elk head for the high country, they can allow bees in on the lowlands."

Bach generally discourages beekeepers from making use of public

Continued on Next Page

land for apiaries, and says the bureaucratic interaction it entails is a headache.

"Most people, they'd rather find private land nearby," he says.

The agency's Web page says it controls 30,000 acres of surface land east of the Mississippi, mostly in small, isolated parcels scattered throughout 31 states. But according to Kathy Rodine in the Springfield, Virginia, BLM office, the agency only has scattered tracts in Florida, Louisiana and Minnesota. For more information, Rodine suggested beekeepers contact the bureau's Jackson, Mississippi, office about eastern state locations.

Since the original 13 colonies that became the first states predate the federal government, there is almost no public land under BLM control in New England, Rodine says.

Getting started

How does one go about getting permission to place bees on BLM land, or, for that matter, finding out

where BLM lands are located?

"Call the office nearest you," says Quick, the land specialist in the bureau's Washington, D.C., office. "If you're in the Western states, sometimes it may be easiest just to look at our Web site to get filtered toward the regional office nearest you, or just check with your state office."

The Internet is a good place to start. The bureau's Web page is www.blm.gov. A listing of all the state and regional offices with phone numbers can be obtained there. The national office in Washington, D.C., can also help locate the field office nearest you. The phone number is (202) 452-5125.

The bureau has also recently placed a map of BLM properties on its Web page. Parcels east of the Mississippi are not shown. The map can be viewed in three sizes. When I first contacted the BLM Washington office and asked about maps, none were available on the Internet. Quick was surprised when told of this and said he would see what could be done. He called within a

week and said maps had been placed on the bureau's Web page. I was impressed with the Washington office's response and willingness to help, but found some of the local offices did not return phone calls, and some employees were cagey, evasive and unwilling to talk. A common tactic of evasive employees was to refer me to another BLM office or worker, or to state agencies, rather than trying to find the answers to questions themselves. Persistence may be necessary in working with this agency.

On the bright side, employees in the Montana BLM field offices were helpful and offered suggestions on good sites near agricultural areas. Beekeepers need to fill out a "form 2920" to obtain permission to keep bees on the agency's land. The form must be obtained from a local office. **BC**

John A. Mitchell is a contributing editor to Bee Culture magazine. He is a radio producer and garden magazine writer living in Cambridge, Massachusetts.

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MANAGING VARMINTS AND BEARS



Nicholas Calderone

If you are a new beekeeper, you need to be aware of the many predators that enjoy feeding on your bees. Most of these predators are described in several excellent chapters in the third edition of *Honey Bee Pests, Predators & Diseases* (1997). I strongly recommend that you own a copy – and read it. Today, I want to talk about ways to control the most troubling predators in the north-eastern US – varmints and black bears.

Common varmints include skunks and raccoons. A family of skunks can seriously damage all of the colonies in a large apiary if permitted to do so. These nocturnal creatures scratch near the hive entrance, on the ground, on the alighting board and on the bottom board. The scratching brings bees out of the entrance where they are quickly gobbled up. After a few nights of feasting, the ground in front of the hive usually becomes bare and dug out, with clear indications of scratching. Scratch marks in the grass or dirt in front of a hive should alert you to the presence of skunks. It is also common to see animal droppings and small clumps of chewed up bee remnants in front of the hive. In addition to depleting your colonies of bees, skunks and raccoons leave the surviving bees in a very bad mood, and the increased stinging alone should motivate you to deal with the problem.

Bear damage is a bit more dramatic. Bears can destroy entire apiaries, including bees and equipment. Bear damage tends to be seasonal in the northeast, with peak activity in the spring and fall, but it can occur at anytime bears are active. Bears are also nocturnal.

CULTURAL CONTROLS

APIARY SELECTION Bear management

begins with the selection of an apiary site. Generally, the higher the density of people, the lower the density of bears. If you select remote sites or sites near forests and mountains, you are more likely to be in bear territory. Don't let bears scare you away from a good apiary site, just be sure to protect your bees if you put them in a high risk area. Skunks and raccoons, on the other hand, are present nearly everywhere, and they are not deterred by the presence of humans. That means you will need to be on the alert for varmint damage wherever you put your bees.

APIARY MANAGEMENT Visit your apiaries often. Bears often return night after night, so if you catch damage early, you can take preventative measures to protect the rest of your bees and equipment. The same advice applies to varmints.

HUNTING In cases where other control measures fail to stop predators from damaging your bees, you may need to hunt them. Contact the state agency responsible for regulating hunting in your area to deter-

mine the appropriate action.

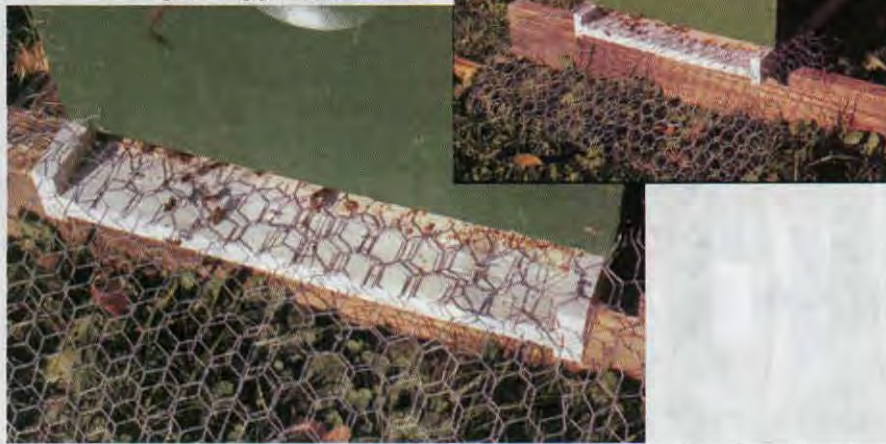
CHEMICAL CONTROLS

There are no effective chemical measures for protecting bees from bears or varmints. Beekeepers often lace an egg with a dash of strychnine and leave it in the apiary for skunk control. This is illegal and unnecessary.

MECHANICAL CONTROLS

BARRIERS You can control skunks and raccoons by stapling poultry netting in front of a hive. I cut the wire mesh 20" wide and 36" long. I double it over and place it up against the front of the hive, with a couple of inches overhanging on each side. Then, I fix it in place with several ½" staples. The theory is simple. The skunk gets its claws caught on the wire as it scratches, becomes discouraged, and goes looking for easier prey. I prefer this method to some others I have tried, like the board with 100 nails coming up through from the bottom. That method will work, but it poses some danger to your feet, should you accidentally

Poultry netting for skunk control.



Continued on Next Page
23

step on it at night or after it has been hidden by an overgrowth of grass.

TRAPS Cage traps can be effective for catching skunks and raccoons. The trapped animals must be relocated. As with hunting, be sure to

long as the bear does not encounter it while running through the woods, in which case, it will likely run right through it. Beekeepers often place strips of bacon on the hot wires to catch the bear's attention and bring it to the fence more slowly. You can set up a temporary bear fence, which is quick and easy, or a permanent

one, which is not so quick or easy. I suggest that you use a temporary fence for a new yard. It is fast and inexpensive, about \$200.00 per fence. If the yard proves to be a good honey producer, you can invest in a more substantial fence.

You can make a temporary fence from round fiberglass fence rods, some polywire or ribbon wire, insulators, a fence energizer and a battery. Round fence poles are not as rigid as the T-type poles, but with round posts, you do not have to worry about their orientation when you put them into the ground because the insulators will swivel on them to whatever position you require. Since fiberglass posts are not very substantial, I recommend putting one in every five feet. I also recommend

Bear fence layout.

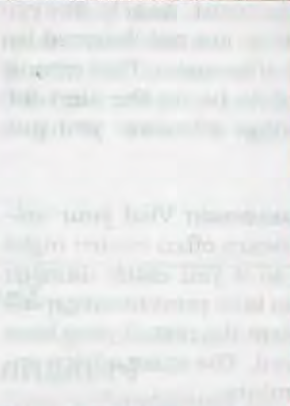


Keep the wire to the outside for strength.

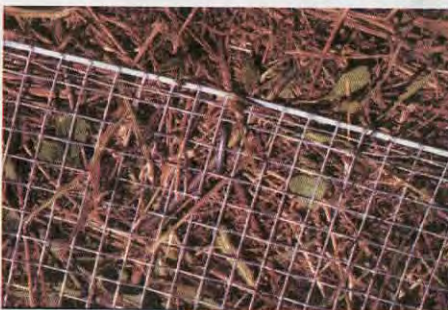
contact the state agency responsible for regulating trapping in your area to determine the appropriate action.

SKUNK FENCE For small apiaries, you can use a non-electric fence for varmint control. A three-foot high wire mesh fence will keep skunks and raccoons out. Be sure to extend the fence six inches beneath the ground surface to keep skunks from digging under it.

ELECTRIC FENCE The electric fence is very effective for bear control, so



Grounding setup.



Keep netting on the outside of the fence for good grounding in dry areas.



three or four wires. The first one should run six inches above the ground, the rest should be placed at 12" intervals above the bottom one. Turn the insulators so that the wire runs on the *outside* of the poles – this will give the fence more strength. Use a heavy duty, deep-cycle marine battery. It will tolerate repeated cycles of charging and discharging. Select an energizer appropriate to your needs – you are running bees, not cattle – a 10-mile energizer is fine.

An old super with a couple of 2 x 2's nailed to the bottom to keep it off the ground will provide a good housing for your battery and energizer. Be sure to waterproof or paint the outside of the super, especially the bottom. Use an old outer cover to cover the super. Pass the hot and ground wires from the energizer to the fence through one or two holes drilled in the side of the super. Fit the holes with short pieces of snug fitting, flexible plastic tubing and run the wires through the tubing. Place the super inside the perimeter of the fence.

Use *black*, 12-gauge wire and a ground post clamp to connect your energizer to a metal ground rod. Use *red*, 12-gauge wire to connect the energizer to the fence hot wires. Always connect the hot wires on the fence posts with a strip of wire to ensure that they are all hot. Depending on your soil type and moisture conditions, you might want to run chickenwire or wide-mesh hardware cloth *on the ground* around the outside of your fence and connect it to the ground post. This will ensure a good contact under all conditions. Keep the mesh about four inches away from the fence. Use long stakes to fix it to the ground.

A solar-powered energizer is an alternative to a battery-powered energizer. It consists of a solar panel, a battery and some electronics, all of which are usually contained in some sort of housing. The fence connects to leads coming out of the housing. Solar fences have advantages and disadvantages. On the positive side, you do not have to visit your apiaries as often to replace batteries, or worry about them running down if you forget them. On the negative side, the solar unit is somewhat more expensive, highly visible and prone to theft. I recommend

painting your unit with a camouflage design and mounting it as low as possible. The *Red Snapp'r*® model from Mann Lake is self-contained and comes with a 6-volt gel battery. The battery must be replaced every year or two, but the replacement cost is modest. Mount the unit on a post with the collecting surface facing south and in clear view of the sun.

Purchase a voltmeter for measuring the voltage running through your fence. Whether you use a battery- or solar-powered energizer, be sure that you measure at least 5,000 volts between the fence and the ground. Check the literature on the energizer before purchasing it to make sure you are getting adequate voltage. **EC**

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

PARTS FOR A 25' x 15' fence with 3 wires:

- 240' polywire
- 16, 5' round fiberglass fence poles
- 48, insulators (be sure to select the proper insulators for your type of post and wire)
- 3, insulated gate handles
- portable battery-powered fence energizer (10 mile service)
- 2, deep cycle marine battery (heavy

duty with voltage to match fence energizer)

- 1, 3/4" x 6' grounding rod
- 1, ground post clamp
- 10' No. 12 insulated wire – black
- 10' No. 12 insulated wire – red
- 1, voltage tester
- 1, home made equipment box
- 6", 3/8" or 1/2" flexible plastic tubing
- 80', 1" chick wire 3' wide, or, 1/2" hardware cloth (optional)
- 20, long stakes for holding down wire mesh

REFERENCES AND RECOMMENDED BOOKS:

Honey Bee Pests, Predators and Diseases. 3rd edition (R.A. Morse and K. Flottum eds.). The A. I. Root Company, Medina, OH

Check out the following websites. They contain lots of useful information on protecting your bees from bears.

<http://www.colostate.edu/Depts/CoopExt/PUBS/NATRES/06519.html>

http://www.umass.edu/umext/bookstore/black_bears/status.htm

<http://dep.state.ct.us/burnatr/wildlife/factshts/bear.htm>

http://maarec.cas.psu.edu/bkCD/Bee_Diseases/disease_index.html

<http://www.agric.gov.ab.ca/agdex/600/1600002.html>

TIPS FOR BEAR FENCES

1. Install the fence before a bear starts to feed on your bees.
2. Use at least 5' of ground rod in the ground - the deeper you ground the fence, the better it will work during dry spells.
3. To avoid grounding out your battery, keep the grass mowed around the fence.
4. Do not use an energizer with a capacity that is greater than what is needed – you are running bees, not cattle – a 10 mile energizer is fine.
5. Check your fence each time you visit your apiary – adjust the distances between the wires if needed – keep an eye out for short circuits.
6. Measure the fence voltage each time you visit the apiary.
7. Purchase two batteries for each fence - keep the second one charged and switch it with the run-down battery when you visit your apiary, that way you can avoid an extra trip and potentially dangerous 'down time' when the fence is not protecting your bees because you are recharging your battery.
8. For protection in dry areas, fix chicken wire or hardware cloth to the ground along the outside of the fence perimeter and connect it to the ground post.
9. Do not leave garbage in the vicinity of your apiaries.
10. Do not locate your apiary beneath overhanging branches that may fall on your fence.



Making A Hive Call

(Install two Apistan™ strips and call me in eight weeks.)

It's presently the middle of July and the month has been typical; thunderstorms, heat, and gloriously blue days with freely punctuated white clouds. Though I have written extensively about the comings and goings of the BC Bee Yard evolution, we do have other hives that require maintenance and care. I want to spend some time talking to you about two of those hives that got too far off the beaten hive path.

Though we keep our 200+ hives in several locations, two hives got separated at a location that is not routinely visited. Yes, I always had the best plans to stop by, but bypassing the hives - just one more time - could always be justified. *Life is allocated just so much time and energy.*

In past articles, I have droned on and on about the ideal hive in

the ideal yard managed by the principled beekeeper. For many of us, that concept is always just out of reach. Upon arriving at the location, I found the hives to look like so many other hundreds that I have seen during the years. I was even a bit surprised that both hives were still alive.

Superficially, the hives didn't look too badly. They had supers on, but had not been treated with miticides or Terramycin for at least two years. You can see the grass had grown up and there was the perfunctory evidence of nightly skunk visits. I lit my smoker and put on a veil. I was immediately hot.

Opening Neglected Hives The hives were soundly glued together and some of the corners were rotted. Through the years, burr comb had stuck frames to the equipment positioned immediately above it. The inner covers felt as through they

were nailed on. I continually smoked the bees and began to sweat even more. I was practicing minimal beekeeping. Grass was everywhere. I had no super tables on which to place removed supers and no extra hive equipment. I had a smoker, a veil, Apistan strips, and a hive tool. That's it. Though not overly aggressive, the bees were beginning to fly all about as I struggled to open the first hive.

It was hard to keep a grip on the hive tool while lifting heavy, glued supers. For more leverage and support, I was tempted to hold the hive tool with my thumb facing forward, but having painfully jammed my thumb nail (twice) many years ago, I continued to work with my thumb wrapped around the hive tool. Essentially, what happens is that the propolis seal will abruptly break allowing the hive tool to forcefully slip into the newly formed crack. Your thumbnail is what immediately stops the hive tool's progression into the crack. The pain that follows is far worse than any bee sting.

It was messy work. Bees were
Continued on Next Page



The two neglected hives in question.

The "thumbnail-jamming" position.



stuck in honey. Tall grass labored my every move and everything had to be sat directly on the ground. This is enjoyable beekeeping?

Anticipation Even though the work was hot and not enjoyable, I must admit that I was eager to find what the hives contained. Except for excessive burr comb in the supers, both hives were remarkably clean. After removing supers, I was able to finally see the brood chamber. Sweat was puddling on my glasses and I quickly reviewed the symptoms of heat prostration. I decided that my symptoms were directly related to age and not so much to the heat.

The brood chambers all had ten frames. It is absolutely miserable to get the first frame out when they are all so soundly glued in. Pry from the side of the frame – never from the end. Prying from the frame ends will possibly break off the thin upper edge of the brood box.

By now, the place was a wreck. Bees were all over – flying and walking. Equipment was scattered everywhere. In essence, I was trying to perform an entire year's worth of management tasks in one trip.

The First Hive The first hive was obviously queenless. There was no brood – of any stage – anywhere. There were no other signs of disease, but there were expectedly signs of *Varroa*. The colony's population was still good. To pick up some extra bee population, my first management decision was to swap the position of



A recently evacuated queen cell.

the hives and give the queenless colony a frame of brood comb from the other colony. I left the first colony and moved to the second.

The Second Hive The second hive was piled high with full supers. In years past, I would have loved this larder of surplus honey, but on this particular day, I dreaded having to remove them – but I slugged through it and got to the brood nest of the second colony. Here I found the first major set back – the colony had recently swarmed and had no young larvae. The first hive would, for the time being, have to remain queenless. I found several recently opened queen cells in colony #2.

I didn't take even one second to search for a virgin queen. Not in this mess and what would I do if I found her? I performed a check for American foulbrood and happily found none. The swarm was a recent one and had escaped without notice. I

made the decision to assume that this colony, too, was queenless – just to be safe.

The second colony had several frames of very old, dark comb. This comb is rock-solid to handle, but at some earlier time, suffered both a wax moth and mouse attack. Beekeepers frequently say, "Let the bees repair that." However, as you can see the repair job is not always what you would expect from professional bees.

These gaps in the old frame distorted bee space. On the facing frame, bees had drawn out excessively deep honey cells – which I had to mangle when pulling out the frame. Neatness counts.

The population of the second colony was good and capped brood abounded. With the timely addition of a queen, this colony could easily be strong enough to survive the next winter. Having no other equipment and not wanting to sacrifice the capped brood, I put the cruddy frame back into position.

On another frame in colony #2, I noticed a wax moth phenomenon worthy of note – *Galleriasis*. This occurs as wax moth larvae tunnel along just beneath the surface of capped brood. Nurse bees, sensing a larva's presence, will open the cells in an attempt to remove the intruder. I suspect they rarely catch the moth larva this way. The case I found was not severe. I've seen open brood patches as large as the palm of my hand in other hives. Such hives are usually weak and suffering from other problems and are usually too far gone to salvage. There is noth-

Bears didn't do this, but one hot beekeeper did.



An old frame showing poorly repaired wax moth damage.





A minor case of *Galleriasis* seen in Hive #2.



An improvised *Varroa* sticky board being inserted into Colony #2 . . . and what I found on it later.

ing to be done about this situation other than to note it and work to keep the hive strong enough to stay ahead of the moths' ravages.

The *Varroa* Harassment Program

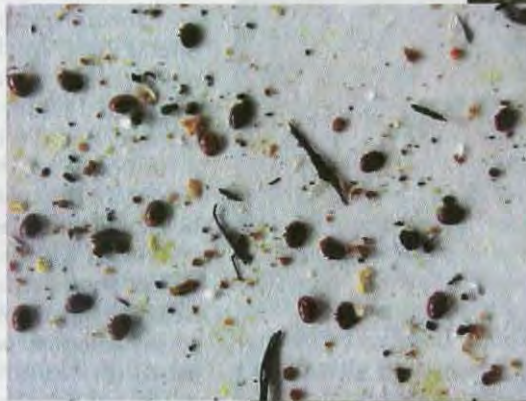
Earlier, I pined about my paucity of equipment to do this job and even went so far as to list the bit of equipment that I took with me. At this late point, I must admit that I also took two pieces of white corrugated board to monitor the *Varroa* population. Yes, *Varroa* was definitely in the hive. I was not attempting to practice science, but just to get an estimate of what the *Varroa* population was in these untreated hives. It seems the mites were having a major party.

After removing all the supers, I installed four Apistan® strips in each of the hives – two per brood body. After repositioning the hives and reassembling them, I slipped the corrugated boards on top of the bottom board. This is a standard procedure.

Previously, I lightly sprayed the boards with a spray adhesive to keep as many of the mites on the board as possible.

A few years ago, I would have been shocked at the overnight mite drop, but it has become commonplace to see large mite populations in untreated hives. I wasn't surprised. The first hive had about half the mites as the second hive – but the first hive only had about half the adult bee population. Both hives were in desperate need of mite treatments. I didn't put on grease patties for tracheal mites, but that needs to be done, too.

I closed up the both colonies and policed up the area. By the next morning, when I checked the *Varroa* boards, most of the bees had left the



The finished project.



supers that I had stacked nearby. I took those to the extracting room.

Prognosis? Time passes so quickly. It was only 10-15 years ago that I was frustrated to see the colonies most distant from me, and most distant from my management schemes, always prospered more than the colonies nearer to me. That is not the case any more. These two colonies would have definitely died without my intervention. Beekeep-

ers clearly have more responsibility than just a few years ago. These two hives should survive, once queens are installed, but their condition reinforces the new fact that "let-alone" beekeeping is dead. *Take care of your hives or they will die.* ☐

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A SWISS BEEHOUSE

Visit A Beehouse With Class

Alan Harman



Johannes Dornbierer with his beehouse.

The bees of Staad are giving 69-year-old Swiss apiarist Johannes Dornbierer the best of times. The 16 hives in his beehouse in the little community overlooking Lake Konstanz about an hour east of Zurich in Kanton St. Gallen are producing tax-free honey. Dornbierer has been beekeeping for 52 years. He started as a teenager when his father died young and he took over the beekeeping operation his father had started in about 1918. He said through an interpreter that beekeeping is on a roll. "Prices are very high – the highest in Europe and

range from 16 to 25 Swiss francs a kilogram," he said. "I sell all my honey locally. It is a profitable business." (The U.S. dollar is worth about 1.63 Swiss francs.)

"Income from honey is tax-free. That was introduced after a drop in the number of beekeepers and government moved to boost the industry." Union of the Swiss-German Beekeeping Association official Berchtold Lehnherr said there now are about 22,000 beekeepers in the country, but only about 10 can be classified as being commercial operators – operating 200 or more hives. In total there are about 280,000 hives.

Swiss beekeepers belong to one of three language-based organizations and are united through the Swiss Beekeeping Union. Switzerland has a bee density of seven colonies per square kilometer, one of the highest in the world. Annual production nationwide ranges up to 4,000 tons. Dornbierer said yields in this scenic region in the northeast corner of Switzerland range from 350 kilograms in a good year to 85 kilograms in the worst years.

His bees make their first flights in January. "In February and March they work on little flowers," he said. "Then as



Bees in the hive.



Inside the beehouse.

Lake Konstanz water front.



spring takes hold they move on to fruit trees."

Dornbierer said he collects his first honey by the end of April and then again by end of July. "In a good year I will get three harvests of honey," he said.

There has been a beehouse at the same location for more than 80 years. He replaced the original beehouse, built by his father, about 10 years ago, building the new one himself. It is a neat structure 13 feet long by 11 feet wide and 12 feet high. By law it is located at least 100 yards from the nearest house. In all, about 80 percent of Swiss beehives are kept in beehouses

When Dornbierer built it, the new beehouse was a statement of faith in the future of a industry under siege. At the time he was down to just four colonies as his bees died under the onslaught of invading *Varroa* mites.

Varroa reached Switzerland in 1984 and within five years had spread to practically all colonies in the country. "It started slowly, and it came from the east," Dornbierer said. "Russian beekeepers had bought mite-infected bees from India, and the mites immediately began moving west." The mites recently completed the westward invasion, becoming established in Ireland.

Dornbierer had bad news for New Zealand beekeepers now fighting to come to terms with *Varroa* – they will fail in any attempt to eradicate it. "You just have to learn to live with *Varroa*," he said.

As a mite control he uses a commercial chemical product called Ameisensaure® which he said acts the same way ant saliva does by irritating the skin. The chemical is placed in a container at the front of the hive and then set on fire. "A steam rises and kills the mites and they fall off the bees," Dornbierer said. "If I didn't do this, all the bees would eventually die." Despite this, he said, some years he loses half his bees to *Varroa*. Dornbierer said replacement bees for the *Varroa* casualties can be bought through the Swiss Beekeeping Association or in deals between friends.

The Swiss Bee Research Center in Bern – dating back to 1907 – has a full-time program running through 2003 aimed at optimizing alternative methods for the control of the pyrethroid-resistant *Varroa* mites. It has tested more than 150 essential oils for their suitability to control *Varroa*.

Dornbierer breeds his own queens and regularly builds up his bee numbers then splits them, with the new colonies housed in a miniature beehouse designed for this. The bees are overwintered in the beehouse and fed a water and sugar diet. Temperatures in the region near the foothills of the Swiss Alps can plunge well below freezing, but the beehouse is never heated and the bees cluster to create warmth. "If heated they would get out of rhythm and go out in search of flowers in mid Winter," he said.

While most Swiss beekeepers use beehouses – advertised as costing \$SF600 a colony to build – some still maintain individual hives. "They are usually the ones who travel with their bees and follow the flowers," Dornbierer said.

"There is no payment for pollination services. In fact, beekeepers have to get farmers' permission to let the bees on to their land."

Dornbierer said lawn mowers now are more of a threat to bees than the chemicals and pesticides used

by the farmers. "It was a real problem 30 years ago, but the stuff they use now doesn't harm the bees," he said. "The biggest problem is the high-speed lawn mowers. The line moves so fast the bees don't have time to get away, and a lot are killed."

Switzerland has annual restrictions on bee movements in large areas of the country because of a very contagious plant disease. This year bee movements from the zone were restricted from April 1 to June 30. Exemptions are for beehouses more than 1,280 meters above sea level and colonies that are locked in for a minimum two days.

Dornbierer lives in a glorious section of Switzerland. The 205-square-mile lake below his beehouse is also bordered by Germany and Austria and is the biggest reserve of drinking water in Europe. Some four million people in the area around the lake rely on it. There are strictly enforced environmental controls, and the result is that swans build magnificent big nests on the water's edge and thousands of birds make the lake home. Many more thousands of birds stop over in their annual migrations in search of the sun. Islands have been created to encourage this.

The narrow corridor between the lake and the foothills of the Swiss Alps is a major route through to Austria and Germany, but a careful mix of environment and industry has been maintained. There is lush and colorful growth everywhere, including on the balconies of houses and apartment buildings where full-size flowering trees can often be seen growing. There is also a 110 km/hr autobahn and a twin railway line that carries almost 200 passenger and freight trains a day.

International travelers tend to spend a day in the area before moving on, but there is a highly organized tourist section with boat cruises operating out of all three countries. These include a restored 100-year-old paddle wheeler that cruises out of Austria. Cruises range from pure sightseeing to dining cruises that feature a specialty meal such as spaghetti or schnitzel. One highly popular cruise features ice cream. Locals simply refer to the colorful vessel as the ice cream boat.

The lake is home to perch, lake trout, rainbow trout, pike and sea trout but catching them is expensive. St. Gallen residents pay \$SF180 a year for a fishing license. Swiss citizens not from St. Gallen have to pay double that, and international visitors pay triple price. A special license is also needed to operate a boat on the lake.

Little lakeside pubs have jetties where boaters tie up for meals and refreshment. Border controls on the lake are nonexistent, and boat owners can land in another county for a drink and meal.

A couple of years ago a wily boat owner worked out that the lake was more than six miles wide and thus, with a national territorial limit of three miles, the center of the lake was international water. He began operating duty-free charters, selling liquor and cigarettes in the middle of the lake until authorities ended that business.

"He got away with it for a year though," one local said with some pride. ☐

Alan Harman is a freelance writer and frequent contributor from Australia.

MANAGING 100

Yard Management

Rick Green

Introduction

It is not necessary to be efficient when managing a few hives. For the past five years I have managed 100 hives. It has caused me to revise how I keep bees. In this series I will share with you what I have learned during this growth:

Article I- Yard Management

Article II- Production and the Honey House

Article III- Marketing, Selling and Business Stuff

Article IV- Comments and Questions from Readers

I invite and in fact encourage you to send in comments and questions that will be addressed in the final article. Depending on your definition I am a small commercial beekeeper, or a large sideliner. I enjoy beekeeping, but I am focused on making money. The challenge to become efficient has not diminished my love of this business, but it has added a new dimension. I am willing to share my hard-won secrets because I am constantly improving the business and therefore expect to remain competitive. Plus, I expect to learn from you in the give-and-take of your comments and questions.

I still work a straight job, five days a week from 3-11 p.m., which leaves mornings and two days a week to operate the business. I produced five tons of honey last year, much cream, pollen and comb, and I do a farmer's market each Saturday. Most of my sales are wholesale except for visitors to my home. I also do presentations and sell bees.

Equipment - Trucks, Woodenware, Frames, and the rest.

You need multiple outyards when your business grows because there is a limit to the number of hives that can be placed in one location. This means having a small pickup or trailer to move equipment. I have 10 yards with six to 20 hives in each location. I have standardized on deep hive bodies and plastic frames. Plastic seldom breaks in the extractor, slows the spread of disease, requires no assembly and is similar in cost to wood. Since I use only one size, all frames and hives bodies are interchangeable. Homemade covers and bottomboards save money and are satisfactory because the dimensions are less critical.

I buy in large quantities and combine purchases with others to take advantage of volume discounts. Occasionally, a few of us work together to assemble, glue and paint boxes. Stacks of seven bodies are easy to roller-paint, and a four-inch brush is used for touch-up near the handles.

Decide to solve the problem of keeping the smoker going for hours. Buy a big one. I use pine cones for 30-minute jobs and pack the smoker with alfalfa pellets when I want it to burn for hours. Carry extra equipment to handle swarms, for making quick splits and to add supers when needed. My veil, gloves, hive tool, fuel and matches all fit in a five-gallon bucket. A cooler with iced drinks or a few extra dollars for stopping at nearby stores is nice on hot days.

Yard Selection

A good yard is close to home and spaced two to three miles from other yards and has a plentiful supply of blossoms and water nearby. In the Saratoga region of New York state, our bloom sequence is principally willow, followed by maple, dandelion, apple, clover, purple looestrife, some buckwheat, aster and finally, goldenrod in the Fall. Know the sequence in your area, especially near the time of the major flows.

A great yard can be driven to in the Spring or on the day following a torrential rain. Face hives southeast for morning warmth, and try to find a location that provides midday shade. The closer you can get the truck or trailer to the hives the better. A U-shaped arrangement of hives is nice because you can back into the center, resulting in less carrying of equipment.

Two landowners out of 15 became greedy in the past and I had to move the hives after one year. Choose wisely to avoid wasted moves. No contract is needed with ordinary farmers who know the benefits of having honey bees on their land. In fact, contracts scare away many people. If growers want pollination, then I charge \$35 per hive, but I give two pounds of honey per hive to all others for allowing me to use their land throughout the year. For big yards I keep extra equipment stacked neatly near the hives rather than carry it home and back again later in the season.

Speedy Hive Manipulations

Reread and thoroughly under-

stand the life cycle of the honey bee so that you can quickly identify conditions and decide what to do without fumbling. Master your technique with 20 hives before you take the plunge. Travel with a commercial beekeeper. Learn to work swiftly. Look for eggs, not the queen. Make splits to cool strong hives in the Spring, and also reverse and super in the Spring. Top-super, for it has been shown to be as good as any other technique, and it is certainly a lot easier. If you are spending more than one to two minutes per hive when things are normal then you are taking too much time.

Learn to judge the strength of the hive by the quality of the rush of bees when you first lift off the cover. Smoke five hives at one time and then work them 1-2-3-4-5. Notice pollen flights and the general level of activity when you approach the hive. Weak hives without pollen flights are a signal that you must stop and examine the condition. Never lift a box off when you can temporarily rotate it backward leaving it on the one beneath. Maintain a generous upper entrance year-round, don't use queen excluders, and use 10 frames in the brood chamber, nine in the extracting supers. If all this makes sense, then you are ready. Depending on your local conditions and your preferences, you may opt for a different scheme. If you can explain the rationale for your differences, then you are ready.

Your skill grows dramatically when you work 100 hives. Finding the queen in the Spring colony becomes easy; identifying excessive drone cells of a failing queen or a laying worker becomes easy; and knowing when to unite or to split also becomes easy. You should know why to wait a day to install new queens and the difference between the behavior of workers ready to defend their hive to the end, and the guilty flights of robbers. When I began to keep bees I would pause when the covers were opened, literally breathless; now my right hand moves about its work without thought.

Nuc Boxes, Medication, Winter Prep and Apprentices

I have 16 homemade nuc boxes for making moveable splits, selling bees, keeping observation hives re-

stocked and raising queens. The boxes are a two-piece construction having a cover and a five-frame box with a single hole that is plugged as needed with wedding veil material.

I medicate early in the Spring and in early August. So far this has knocked the mites down and allows me the option of taking a Fall crop. I spare no expense and often medicate with multiple agents such as strips, formic acid, Terra and patties at the same time.

Last year I Wintered 50 hives with a Winter preparation and 50 without. No difference was observed, so now my Winter preparations are minimal. I put a rock on top, use an entrance reducer and insure that there is an upper entrance.

I have adopted the philosophy that a certain percentage of bees will die regardless of how careful I am. A commercial beekeeping operation is statistical. Unlike a thousand-dollar cow you would call a veterinarian to save, bees are more expendable and will die despite what you do. Swarming occurs regardless of what you do. Seemingly strong hives die even when well-medicated. Workers live only six weeks in the Summer. I work fast. I try not to kill any bees but when I close the covers I squash a few. In beekeeping you win some and you lose some; on average hopefully, you win many more than you lose. I believe that by working swiftly I save time and disturb the hive the least.

Regarding apprentices, use and cultivate them. They learn from you, and in exchange, you get extra hands. If they catch the fever then they may become lifelong partners. Having someone place medication in the hive while you tilt back the upper box is speedy. Having a helper use the weed whacker, while another removes covers, while you top-super is speedy. It is fun to share your craft. A good apprentice challenges you to be a better beekeeper with good questions and by making increasingly good observations. And with an apprentice, the ride between yards becomes an especially good time to share in conversation about what was done and why it was done, and this is a nice time to enjoy a cold drink together. ☐

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Homemade equipment – covers and bottomboards save money.



Inner covers, if you even use them, don't need to be fancy. A notch provides ventilation and an entrance.



My nucs – homemade and practical.

QUEEN FINDER

Peter Smith

Separating a queen from her court is easy with this device.

Beekeeping is a truly fascinating craft but at times a truly infuriating one. Instructions for many procedures start with "Find the queen": The books mostly say that this is easy, but should the queen *not* be marked and the colony be strong, then easy it certainly isn't.

Now I'm one of those unfortunate souls who can never 'find the lady,' and the whole idea of spending a long time looking through a bad-tempered colony, being buzzed and (often) stung trying to find her has built up into something of an aversion thing – resulting in more than a little procrastination. This has produced even more frustration – particularly when a complete beginner found a queen within a minute or two of opening a hive.

Some of my colonies (united swarms) were so bad that something drastic had to be done – like requeening. So, I took the bull by the horns and ordered replacement queens. Still there is the question of finding the lady – an appalling idea given the temper of the colonies involved. Fortunately they were housed away from the public gaze along the side of a remote farm track.

The new queens are due to arrive 'in a day or so.' Okay, that's it. The wicked queens have to be found. Not much time. Panic. Go and look through the hives. Eggs. Must be a queen. Two sorties through the brood

box – can't find her anywhere. Bees really nasty. But where's the queen? Give up. Depression. Close the hive, defeated. Go away and think.

Then, at about 3 o'clock in the morning, sleepless, the idea forms. Stack a floor, empty brood box, queen excluder and second empty brood box, alongside the hive of bees wherein the queen resides, the top brood box pushed a few inches back to leave an opening wide enough to take a frame. Try it out on a tame colony.

Later in the morning (much later), I set the equipment up. I took out the first frame, shook the bees into the top brood box and onto the queen excluder, and when no more were on the frame, put the frame into the lower brood box through the space left for the purpose and pushed it along the runners so that it was under the queen excluder. The second frame then followed, and the third and the fourth, then a little smoke to persuade the bees in the top box that life may be better below the excluder. Then I inverted the other frames so that the bottom brood box now contained all the frames. Another puff of smoke and most of the bees went through the excluder, except for the drones and, of course, her ladyship. At least that was the idea.

No queen. Where was she? I swept along under the edge of the brood box with a bee brush. There she was, hiding under the recess at the bottom of the brood box. Gotcha.

The queen finder box.

Place bottomboard next to the colony you'll be working in.



Add an empty super.





Put the queen finder box on top of the empty super but leave a gap in front.

Total time taken – about 10 minutes. Vast improvement.

Back to the workshop to improve the system even further. I made a box out of some spare wood. About the same size as the brood box – doesn't matter whether it's National, an MD, a Langstroth or whatever, and about 8" deep. Nailed a piece of 3" x 1/2" inside and along one side at the bottom of the box and 1/2" framing the rest of the way round. A queen excluder rests on the framing and is nailed to it. This completes the device.

On the strength of this, I ordered four more queens.

Back to the nasty bees. Set-up time for floor, brood box and 'queen finder' – about two minutes. Smoke colony, remove frames and find queen – about eight minutes. Getting better. Second hive – about the same time. Third and fourth – similar. The aversion thing has now evaporated. Now I can find queens of the unmarked and *very* nasty variety.

News must travel fast in the apiary. I set up on the fifth hive and removed the cover board, super and queen excluder. Instead of playing the usual games, the queen was on the first frame that I removed, and she surren-

Place the empty frame in the gap and slide it under the box. Use a bit of smoke to help move the bees down.




Take a frame from your colony and shake the bees into the box. Be sure to check the bottom and sides for the queen when you remove each frame.

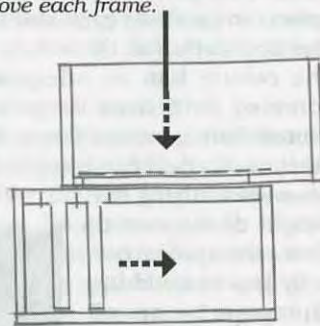
dered quietly. The sixth hive was even better – she was walking along one of the top bars and gave herself up without a struggle.

So it is possible after all. The clever ones in the beekeeping fraternity who have no trouble finding queens can sneer at the use of such a device. However, I can now find queens when I want to – so the instruction 'first find the queen' is no longer a problem.

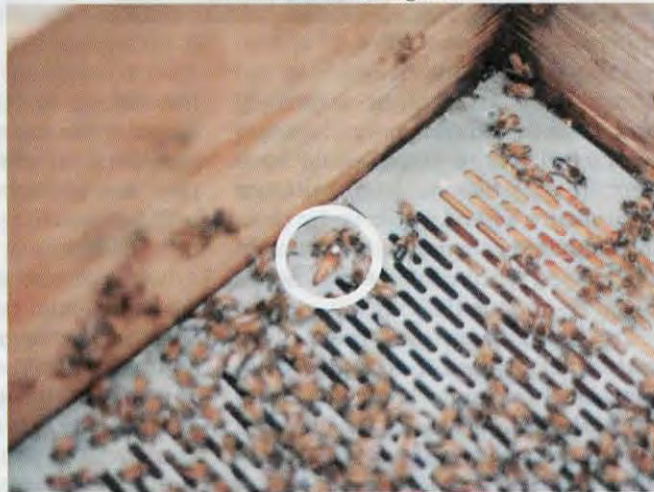
A sketch of the device is included. It takes but a few minutes to make – well, a half-hour or so – but it saves time for less gifted individuals such as myself to find queens.

Give it a go! 

Peter Smith is a hobby beekeeper from the UK.



If the queen is on a frame, you'll find her on the excluder. If not . . . check the box again.



QUEEN FUNDAMENTALS

Eric Reed

You Need To Know About Fall Requeening

The queen is the matriarch of a honey bee colony and the success and productivity of that colony is, to a great degree, dependant on her condition. Negating the effects of pests, predators, diseases and pesticides, the productivity of a colony rests solely upon the ability of a queen to produce eggs and build up the population of the colony so that the colony has an adequate work force of field bees to gather food stores during nectar flows. With the lifetime of a field bee being only about six weeks during the height of the nectar flow, the queen not only has to build up the population of the hive, but also has to continue to sustain the population by laying as many as 1,000 eggs or more a day.

We need to be aware of the viability of the queens that occupy our hives and be prepared to replace them on a planned basis rather than on an as-needed basis. In my experience you should re-queen your hives yearly for optimum honey yield, to minimize swarming and to maintain the gentle handling characteristics of your bees. I have kept queens two seasons, but that only occurs when I re-queen by uniting a split that was made earlier in the season with a colony that needs to be re-queened.

Although you may have hives with older queens that are producing and continue to lay solid sheets of worker brood, queens that are older than a year old are in an early state of demise and are beginning

to produce less of their cohesive pheromone. Swarming occurs primarily because of congestion in the brood chamber and because of a reduced amount of the queen's pheromones used to keep the colony a cohesive unit. Without a viable queen, the bees then become difficult to manage and handle and you can noticeably see a change in their disposition. The behavior is analogous to behavior you would witness from a hive that is known to be physically queenless with the exception that



the failing queen is still present. Some of the enjoyment of bee keeping goes away when you work a single hive and get stung countless times by aggressive bees and the colony ultimately has a low yield of honey!

One cause of queen failure is that the queen runs out of sperm to fertilize the eggs or she loses the ability to fertilize the eggs. The result is that you will see large populations of drones in your failing hive. The circular patterns of brood that you became accustomed to seeing

will turn into patchy or scattered patterns of brood. Bees will be continuously lost by attrition and cannot be replaced by a failing queen with other than drones. This quickly leads to a hive that is hopeless to save unless the natural process of supercedure takes place earlier in the process or we step in and re-queen.

A queenless hive that remains queenless for a long duration of time may lead to workers laying eggs in response to this abnormal and dis-

tressed condition. The queen is the only bee that is sexually developed; hence, the workers can only lay unfertilized eggs which become drones. This is the same characteristic we see when an older queen loses the capability to fertilize her eggs . . . she lays unfertilized eggs resulting in drone brood. Once a hive has laying workers, it becomes difficult, if not impossible, to re-queen and salvage the hive.

Nature cannot rely on the beekeeper to replace failing queens, so there is a process that occurs naturally referred to as supercedure. Re-queening a hive and supercedure have the same end except that re-queening is the act of a beekeeper and the latter is the act of the bees themselves. Supercedure takes place when the bees detect that the queen is failing and there are eggs or young larvae that can have queen cells built around them. We generically refer to these queen cells as supercedure cells. The supercedure cells, just

like swarm cells, are made with larvae no older than three days old, although this is not always the case. Supercedure cells are usually built in fewer numbers, generally in different places on the frame (face vs. bottom) and for a different purpose than swarm cells. They are built to replace the existing queen or to replace a missing queen versus divide the colony for swarming. If the queen dies when no brood rearing is taking place such as in the late Fall or Winter, supercedure cannot occur and the hive eventually dies off.

Many beekeepers let nature take its course and let supercedure occur. It has been said that the highest quality of queen bee comes from those that the bees make themselves and under ideal conditions, this may be true. There are some detriments to supercedure that include brood-rearing downtime, potential swarming, and defective queens that are produced from larvae older than three days. Brood rearing downtime occurs because if the queen is in a failing state, it takes 15-16 days for a queen cell to be made and have the queen emerge. It can take approximately another two weeks before the virgin queen takes a mating flight and begins egg laying. You don't want two to four weeks of downtime from brood rearing in the Spring when the bees should be building to capacity before a nectar flow.

Second, an emerging queen may live in harmony with the elder queen until she dies, kills the old queen, or the older queen may take half the colony and swarm. Swarming is undesirable because it almost certainly results in no surplus honey that can be harvested from the hive that swarmed.

Supercedure, although a natural impulse of the bees, is no guarantee that a quality queen will always be produced. The supercedure impulse can occur when the hive does not contain brood in all stages of development; hence, the bees may not have a choice but to use larvae too old to produce quality queens. If the hive is weak or the population diminished, the queen cell may not be adequately fed or possibly become chilled or overheated resulting in the queen not emerging at all or being born as defective as her mother. It is also note-

worthy to mention that because of *Varroa* mites there are almost no feral colonies of bees that exist anymore; hence, issues of genetic diversity and drone availability also become a concern if we continually allow our own queens to be produced by supercedure in the same bee yard.

Supercedure happens even in well managed and regulated bee yards, but I am not an advocate of allowing it to happen in lieu of executing a proactive hive management plan that includes *annual* requeening. The early Fall is an ideal time to re-queen your hives. Brood rearing reaches peak levels prior to and during nectar flows and tapers off or even stops leading into the winter season. Older queens will significantly reduce brood rearing after nectar flows and during the time leading up to the winter season. This leads to a population that will consist mostly of older bees going into the winter season. Young queens are vigorous and produce more brood in the Fall season after they are introduced than an older queen that has already been laying one or more seasons. Requeening in the early Fall will ensure your hives will have an adequate population of young bees necessary for wintering and hive build up in the Spring of the following year. Because a queen introduced in the Fall has not expended a significant portion of her egg supply laying during the hive build up that occurred a half year earlier, she will be ready to go to work in the Spring.

Many beekeepers re-queen in the Spring, but that can have a counteracting effect on the goal to have your colonies reach their peak strength prior to the start of the first flows of nectar in your locality. A queen introduced in a queen cage will take several days to be released and then several more days before she starts laying. You typically will have at least a week of brood rearing down time during the critical hive build up period. During this time you should be aiding hive build up with stimulation feedings, not interrupting the cycle and preventing as many as 7,000 eggs from being laid. Requeening in the Spring should occur *more than* 40 days prior to an anticipated nectar flow. This rule of thumb comes from the period of time

it takes a worker bee to emerge and develop into a foraging worker. The gestation of a worker bee is 21 days. Young bees will assume the duties of nurse bees for 20 days or so before taking to the field to gather nectar and pollen; hence, your new queen will not produce bees that will contribute to nectar gathering for 40 days. If you miss this window of opportunity and re-queen your hives too late during the hive build up period or during the nectar flow, it will be too late for you or the colony to benefit from having a viable queen. In the Northeast, requeening early enough is often hampered by the weather since temperatures can often be too cold to open your hives since the bees will still be clustered. Re-queening your colonies in the early Fall averts these problems.

As stated earlier a queen's pheromone production diminishes in the early stages of failure which can occur after even a single season of egg laying. Re-queening with a new young queen in the Fall ensures that you have a capable queen in the Spring during swarming season. If you address the other causes of swarming that include congestion and proper hive ventilation, your new Fall queen also contributes to being a deterrent to swarming.

As you begin to see school buses on the road in early September, that should trigger your natural impulse as a beekeeper to start thinking about requeening your hives. You want to know the origin of your queens as well as their respective ages and performance at any given time, so purchase marked queens or mark the queens yourself.

Events such as supercedure can take place without your knowledge, so it is important to be able to identify your queens and have knowledge of what is transpiring in the hives in your bee yard. If you integrate Fall requeening into your hive management plan, the pay offs will be strong and prosperous honey producing hives in your bee yard that are occupied by bees that are gentle and easy to handle. ☐

Eric Reed is a third generation beekeeper that maintains a small apiary in Central New Jersey. He can be reached at ereed@neek.com.

Effective Newsletter Publication

Mary Gannon

Better writing makes better newsletter articles, and here are some handy tips.

"This is a simple, declarative sentence. It is simple because it has one subject and one predicate. It is declarative because it states a fact." I don't remember exactly what grade I was in when I first heard those words – it was probably fourth or fifth – but they have stuck with me ever since – and that's a *very* long time! Now, you may ask, "What does that statement have to do with putting together a newsletter?" The answer is – everything! But more about that later.

Last month we defined "newsletter" – a document that imparts news that is of interest to its readers; "newsletter editor" – the person responsible for overseeing all the elements of the publication process; and "content" – any relevant items that could or should appear in a newsletter. This time we will attempt to help those who will actually write or edit the newsletter stories to organize their material and produce logical, coherent, interesting articles.

Let's begin this time by defining "news." News is information that is factual, new and interesting. But this is a rather generic definition that needs some elaboration when applied to a beekeeping organization's newsletter. The "factual" part of the definition is obvious; the "new" part could also be interpreted as "timely." There may be "new" processes, procedures, treatments, meetings, etc., that are available to those of us in beekeeping, but this information will have the greatest impact if it appears close to the time when it will be useful to the beekeeper. This is where the archive concept comes in. The information can be reserved for

the appropriate time and will be more meaningful to the reader. And finally, "interesting" is "relevant." There are lots of interesting things to write about, but time and space constraints dictate that you stick to items that are relevant to your group.

Okay, now you're all set to write that factual, new (timely), interesting (relevant) story. There are two major traditional formulas for writing news stories – the inverted pyramid formula and Rudyard Kipling's six questions. The inverted pyramid method organizes information in descending order from the most important fact to the least important. This method gives the reader the essence of the story and then explains it in more detail as space allows. It is very useful for two reasons: First, since the most important detail appears first, and the lesser details trail off to the end of the article, the reader can stop reading when his curiosity is satisfied and not worry about missing something important to him. Second, the inverted pyramid is an editor's dream because it allows trimming a story that is too long by simply chopping from the bottom up. As you can see, it is crucial to determine what is the most important fact you wish to get across to your readers and get that fact into your lead when you write using this method.

Another frequently used news formula, Rudyard Kipling's six questions (often shortened to the five W's) encourages the writer to include all the information the reader needs to know about the subject. Those questions – Who? What? How? Where? When? Why? – need to be answered in order to tell the

whole story.

To be sure, there are other formulas for writing news stories, and a good writer will use them. Among these methods are a chronological telling of events and the narrative or storyteller method. But you need to be careful when you use them. Telling a story in straight chronological order can quickly bore a reader ... and then ... and then ... next ... then – do you see? Both chronological and narrative writing are more difficult to edit because important details and maybe even the whole sense and flow of the story may be sacrificed for the sake of space.

And now that you have chosen which formula you wish to employ in writing your story, it's time to get started. Previously we asked the question "Where to begin?" in reference to starting a newsletter. Now we ask the question again, this time in reference to the particular story you're trying to compose. Getting started is probably the most difficult part of the process once you've done your research, gathered your information and interviewed your subjects.

There are many schools of thought on how to actually begin the writing process ... and writing *is* a process. It is not sitting down and writing something from beginning to end. Rather, the story evolves in stages – sometimes the writer will begin at the beginning, but sometimes he will start in the middle or even at the end. Some writers will begin by writing down words, phrases, fragments, names, etc. The story will form as the writer connects all these disjointed items. The important thing is to put *something*,

anything on paper. Other writers will just pick out the most important thing they want to say and begin writing it down as fast as they can, forgetting for the moment about spelling, grammar and elegant language. There is plenty of time to fix up the form once all the facts are in order. And finally, many writers will begin at the beginning, with the lead, the most important part of the story. The lead is the "hook" – the sentence that will determine whether or not the reader will continue beyond that point. The lead promises information the reader wants. It sets the tone for the entire story. It needs to be able to stand on its own as it is the essence of the story. All the rest is details. The lead is a single (simple, declarative!!!) sentence, usually fewer than 30 (often fewer than 20) words long which tells the whole story. It needs to be crisp, clear and concise all at the same time – a tall order! It might help when you're writing this most important of all sentences to think of how you would begin to tell this story to a friend.

This holds true throughout your story. Write naturally, as you would speak. If you find yourself using stilted, grandiose wording, cut it out! It also helps a lot if you can visualize the reader and see in your mind what you are trying to say at the same time. You will be able to paint a picture that will interest the reader and help him to understand what you are saying.

Following are some other rules to follow as your story continues to unfold. It is imperative that your facts are accurate – when in doubt, leave it out. Quotes and statistics will liven up a story and lend more credence to your facts. When you use quotes, be sure you attribute them to whomever spoke the words. Direct quotes personalize the writing and give a human presence to your story.

Write to inform, not to impress your reader. Be concise – communicate with the fewest words possible; use short, simple, familiar words. Why use vehicle when car will do? Vary your sentence and paragraph length. The simple, declarative sentences mentioned earlier are powerful! One-word sentences and one-sentence paragraphs will grab the reader's attention and will emphasize the points you're trying to make.

Use short, personal action verbs to create action. Keep the tense consistent and use the active voice as often as possible. The one time the passive voice is recommended is when the action is more important than the person or thing doing the acting. Avoid the heavy use of adjectives – they clutter up the story, and you will tend to editorialize more if you use them too often.

Once your story is completed, or so you think, it's time to rewrite. No author just sits down, cranks out a story and turns it in unchanged. After you have read the story several times, you will surely find any number of ways to revise it. An overview of the whole work will show you if you have been consistent, if you have been concise, if you have used a word too often, and so on. A work can always be made better. It's fortunate we have deadlines to meet or we would all be revising forever! And never, never proofread your own work. You have thought about and looked at the same words for hours, days, weeks maybe. You know what should be on the paper, and often the brain will tell the eyes what's there. Have someone else look at your finished product.

And finally, a word about reference material. The bookstores are full of volumes on writing, style, etc., but unless you plan to embark on a writing career, just a few of these works are necessary – a dictionary, a thesaurus and a good grammar or usage book. I have no specific recommendations as to which ones are the best, but the important thing is to be consistent as different reference books espouse different styles, spelling and usage. However, for you editors and writers of beekeepers' newsletters, I would recommend *Honey Bee Pests, Predators, and Diseases*, Third Edition, edited by Roger A. Morse and Kim Flottum. It's a great help for looking up the spelling of all those obscure bee words. Happy writing!

Next time, we will discuss the elements of design and layout and talk a little about your computer and its word-processing capabilities. ☐

Mary Gannon is a professional copy editor, proofreader and Newsletter consultant living in Akron, Ohio.





Fall Fairs



Ann Harman

Christmas is coming! It seems it's earlier each year. Wait a minute – I just finished with Labor Day and haven't even thought about Halloween, much less Thanksgiving or Christmas. My brain is in gear for beautiful Autumn leaves and fields of goldenrod. So why am I talking about Christmas?

This is the time of year when each weekend is filled with Fall Festivals and Fairs. If you check your local calendar of events you will find at least one per weekend from now until Thanksgiving – or even past Thanksgiving. A number of Christmas fairs are held during the first half of December. Good thing, too, for the last-minute shoppers. If you are lucky you'll find three or four or more fairs within sensible driving distance of your home.

The people who attend the Fall festivals have two things in mind. The "early birds" are actually doing some

vinced that honey and hive products are a craft. They may even think it weird that you are selling both honey and wax ornaments.

Look upon this last view as an opportunity to promote the honey bee as very versatile. She produces both honey and wax, and the beekeeper makes the finished products. If you make other products such as lip balm or hand lotion, you may need to describe how you created these from the raw materials the bees furnished you. After all, isn't that how a shawl is made from sheep's wool? And you will certainly find shawl vendors at these craft fairs.

An observation hive is definitely a crowd-getter. Even if it takes up space from your overall display, people will stop and look, especially if they have children. The queen should be marked for easy finding. And an observation hive starts conversation leading to honey sales.



Get A Head Start On Christmas Sales At Fall Fairs

Christmas shopping. Their thoughts are for something a bit different but suitable for a wide range of people. The other group has no thoughts of Christmas yet but are getting "ready for Winter." Their thoughts revolve around home and making life cozy for the brisk Autumn weather or the change of season from Summer.

Fall festivals come in several categories. Some are simple, informal affairs perhaps centered on a pumpkin patch. The range extends to the elaborate festivals that bring in vendors from many miles away. For these you may need to submit an application describing your wares, and you may even have to demonstrate what you sell. Some fairs want only local or regional products. Others welcome all vendors.

The fair organizers have varying views of honey and hive products, even if you are selling some wax candles and ornaments also. You may be put into a category of "food" and placed next to someone selling specialty breads. That, actually, is a good place to be. Or you might find yourself next to the popcorn vendor. If you are there, hand out recipes on how to make popcorn balls with honey. Some organizers need to be con-

By now you realize that Fall festivals are extremely varied. If you have never participated in one but would like to sell your good crop of honey, now is the time to get started. One project you can accomplish this year is to visit a number of these Fall festivals. At some of them you will have to pay an entrance and/or parking fee. Think of that as a fee for your education and future profits. Besides, you might find the perfect Christmas present at one of the booths. Here I should mention that at some festivals the vendors give each other a discount on their wares.

As you stroll along, take time to chat with the vendors who are not too busy. It's fair to ask them what they think of the festival, how long they have participated and whether they think it worth their while. If they should ask why you want such information, you can certainly tell them you are thinking about being a vendor next year but your wares are honey and hive products, certainly not in competition with their crafts.

Here's something else to do during your visit. Take a look at



the booths and their displays and decorations. What do you see that is appealing and attractive? Which booths have many shoppers, and which seem to be ignored? Can you figure out why? Perhaps it is high prices or perhaps it is something that has a limited audience. Or maybe the booth and its representatives are just unattractive and unfriendly.

Discover where the organizers are and seek them out. Do you have some samples of your honey and hive products with you? You should. Now is the time to bid for a place for next year. Do not hesitate to discuss booth rental fees, requirements such as space and what you can do with it. Many Fall festivals just give you space – you supply tables, table coverings, signs, chairs. However, as the Autumn turns chilly into November and December, the craft fairs that are inside a building may supply tables and chairs with your booth rental fee. The informal “pumpkin patch” affairs frequently do not charge a rental fee but may ask for a percentage of your sales. That is fine if you think the charge is reasonable.

One important question – if the festival is held outdoors – what about rain? Some cancel or postpone. Others hold the festival, rain or shine. Rain means you may need a tent or cover of some sort, so check out the various tents and shelters other vendors use. They are usually happy to share their secret source of cheap tents with you. One vendor I met recently found a source of reconditioned tents for quite a reduced price. Just ask lots of questions and take notes.

Ask the organizers how long the festival has been in existence and whether they have many repeat vendors. Ask the organizers if they are in charge of other festivals and whether those have any honey vendors. Ask them what advertising is done. You would hope for a multimedia approach ... newspaper ads and announcements, radio announcements and commercials, signs on major roads well before the date and perhaps some local television interviews. Sometimes a few simple questions open up a whole new world to you.

Now that you have decided to participate in a Fall festival, let us see what you can do to earn some money. One important thing to keep in mind is that the people visiting most festivals are prepared to spend money. It is interesting to see them come in the entrance gate with shopping bags tucked under their arms. That is a good sign. Therefore, do not under-

price your honey or hive products. You already know the costs of either the percentage or the booth rental. That will be one of your costs of business. Then price your honey accordingly, on the high side. Actually a high price indicates to the customer a high quality. Price some of the items at other booths and mentally try to calculate their costs. Some of these vendors make their living by participating in craft festivals.

Make your booth attractive with table covers. The table skirt on the front and sides should go almost to the floor to hide your empty boxes and other junk. Burlap makes an attractive skirt. But you might find some bee motif cloth in a fabric shop. The top of your table is better off with a plain, neutral-color plastic cover. Children with grubby fingers and adults with drippy drinks tend to mess up the table top. My most valuable tools at festivals are a small bucket with water, an old washcloth and a roll of paper towels. If you are allowed to give taste samples, those tools are a necessity!

Signs are important in spite of the fact that nobody reads them. Perhaps the most important sign is one that says “Local Honey,” big and loud. A number of customers are looking for that local honey for their allergies. You can decide which other signs may help – one with sizes and prices, a special “for this fair only,” this year’s harvest, get your comb honey here, stocking stuffers (for Christmas).

Arrange your containers and colors of honey in an attractive fashion. Add honey stix and honey candy, particularly if the festival is near Christmas. It is difficult to achieve the ideal eye-level position for your wares at most festivals. Although much of your honey will be on the table top, you can make some stairsteps out of

strong cardboard boxes covered with cloth or some clean, but used supers. You can position these at one end of the table for some specialty honey or something else you would like to feature.

I recently saw a clever display that would work for wax ornaments. An old louvered window shutter was used. The ornaments (which were not wax ones from a beekeeper but were made of wood or clay) were hung on the edges of the louvers. The shutter had a wooden support fastened to the back so it would stand upright. It was really something different and looked great.

What sizes and containers will sell well at a particular festival requires some experimenting. I have found that 8-oz jars, or even smaller ones, will sell if advertised as stocking stuffers. Mid-Con of Olathe, Kansas, sells some very nice

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Fairly Obvious

Ask First

- Cost For Booth
- Other Beekeepers
- Vendor's Thoughts
- Space
- Weather Options
- Repeat Vendors
- Advertising
- How Many Attend
- Parking

Decorate Well

- Observation Hive
- Table Skirt
- Plastic Covering
- Supers or Boxes
- Signs
- Hangtags
- Good Labels

Sell Lots

- Honey (several sizes & colors)
- Candles
- Ornaments
- Honey Stix
- Hand Cream
- Lip Balm
- Honey Candy
- Comb Honey
- Honey Dippers
- Gift Boxes

Take Notes

- What Sells
- What Doesn't
- Prices High Enough
- What Do People Ask For

gift boxes designed to hold two or three items. Not only that, you can also buy filler so that the glass jars do not rattle. A pair of jars or bears or a combination sells well when two different colors and flavors are presented. Squeeze bears are popular. I encourage you to use different color bear caps to match the season. Black and orange are perfect for Autumn. Red and green for Christmas. Pints and quarts may be appropriate containers for the "pumpkin patch" fairs. The little salt-and-pepper mugs sell well as pairs and as stocking stuffers. However, you will just have to have an assortment your first year, then refine your selection depending on what sells.

Honey dippers are a nice addition. You can tie these on jars with colored yarn or include them in a pair of containers. Since containers are displayed on a table, you may want to consider a security label (one that goes from the top of the lid then down the side) that can be seen on the tops of your containers. Labels on caps make a colorful display when arranged on a table. R. M. Farms in

Michigan has a number of tiny labels with various sayings or the type of honey, for example, wildflower. These are inexpensive and make the containers more interesting.

Pairs of candles can be fastened together with that crinkly paper ribbon in seasonal colors. The salt-and-pepper mugs can also be tied together. Betterbee of New York has some wooden frames that make a nice gift set for jars. You will want to include the price of those in your costs.

One trick I have used at some festivals is a two-pound jar or a quart jar with an empty squeeze bear attached as a "hangtag." To get the empty bear, the customer has to buy a two-pound jar or the quart. The bear does not come with a one-pound jar. I explain that the squeeze bear is easier to use and that it can be refilled from the large jar.

Now, this is important. Customers who are Christmas shopping will inquire just how to keep the honey purchases until Christmastime. Their instinct is to put the honey in the refrigerator. You must emphasize to them NOT to do that. However, it is important to tell them to

put the honey, whether liquid or comb, into the freezer so that it will not crystallize. Assure them that the freezer will not harm the honey but will keep it safe and sound until time for gifts. I have used signs that say simply "do not refrigerate" but still find that this statement needs explanation. Remember, if your jar of honey begins to crystallize it may be thrown out and you have lost a sale next year.

If you find a Fall festival you really enjoy and is profitable, you will find repeat customers the following year. For some reason, once customers find a favorite festival, they return year after year to select their Christmas gifts. You might not remember them - but they remember you. Cultivate your repeat customers, but offer something additional that is *different next year*.

Bring along your lawn chair and hope you spend more time selling than sitting. But above all, bring along your best smile and be sure to use it when asked for the zillionth time, "Do you get stung?" **EC**

Ann Harman is a sideline beekeeper and international marketing consultant.



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?Do You Know? Answers

- 1. True** In addition to signaling the presence of nectar and pollen, communicative dances in the broodnest can indicate the location of water and possibly propolis.
- 2. False** Foragers use the wag-tail or waggle dance to convey both direction and distance of a newly discovered food source. The round dance is performed by bees that forage less than approximately 100 meters from the hive. New foragers responding to the dance, search in all directions from the hive. The floral odor associated with the dancer's body helps them to find the food source.
- 3. True** Honey bees are able to see four different qualities of color: yellow, blue, green and ultraviolet. Flowers that depend upon bees for pollination reflect colors that the bees are able to see. In addition, many of these flowers exhibit different color patterns near the source of nectar which guides the bee directly to the reward. These color patterns that occur within flowers are called nectar guides.
- 4. False** Robbing is the stealing of nectar and honey, not pollen, by bees from other colonies. Robbing may be started in an apiary, at any time when there is no nectar flow in progress, by the beekeeper leaving combs of honey exposed or having colonies open for too long during hive manipulations.
- 5. False** The time necessary for collecting either a load of nectar or pollen is highly variable. Pollen-collecting trips are usually completed much more quickly than nectar collecting trips.
- 6. True** Honey bee workers tend to visit only one species of flower on a trip, and they continue to visit that flower for prolonged periods until it ceases to produce nectar or pollen or until a superior source becomes available.
- 7. True** Research has shown

that workers prefer to collect nectar to pollen. In two studies about 58% of foragers collected only nectar, 25% only pollen and 17% both nectar and pollen.

- 8. True** The ability of honey bees to share information about feeding sites greatly helps colonies achieve high efficiency in foraging. Whenever a bee discovers a new rich food source, she promptly recruits nestmates to it and so helps ensure that her colony's foraging force stays focused on the richest available food sources. In order to maximize their returns for the amount of energy expended, they forage on the floral sources nearest the hive that provide the greatest rewards.
- 9. True** In general terms, as the temperature increases, plants produce larger quantities of nectar and release their pollen supplies. With larger supplies of food available, foraging efficiency increases and so do the sizes of pollen and nectar loads.
- 10. B) 5.0%**
- 11. B) Octadeca-trans-2,cis-9,cis 12-trienoic acid**
- 12. Individual bees do not wander at random over a crop but usually return for several consecutive trips or days to the same localized foraging sites. These foraging areas may be a few square yards of a large field crop or one or two individual bushes or trees. Factors that affect the size of this foraging area include:**
 - Distance between plants (plant density)
 - Number of flowers per plant
 - Stage of flowering
 - Amount of nectar and pollen available
 - Weather conditions
 - Competition from other bees and pollinating insects
- 13. Foragers will clean themselves and discard this pollen in flight.**
- 14. Location of sun, perception of polarized light patterns, landmarks, and the earth's magnetic field.**
- 15. Nectar is exchanged between the dancer and recruits. More concentrated nectar sources elicit more vigorous and long lasting dances.**
- 16. When a bee enters the hive with**

a load of propolis, she is unloaded by another worker bee that bites at the sticky, gummy material, pulling or tearing off a little piece at a time. She may be freed of her load in the course of an hour, or several hours, depending on the use of propolis in the hive.

A forager loaded with nectar enters the hive and mingles with other workers on the comb. She walks about until she meets a house bee to which she gives part of her load. Occasionally she gives her entire load to a single house bee, but more often it is distributed among three or more house bees.

A forager with a pollen load enters the hive and selects a suitable cell in which she can deposit her load. The bee grasps one edge of the cell with her forelegs and arches her abdomen so that its posterior end rests on the opposite sides of the cell. The middle leg prys the pellet free from the pollen basket and it falls into the cell.

17. Solar Radiation, Soil Moisture

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

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

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

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UNCAPPING UNCAPPING

James E. Tew

The Good, The Bad, And The Ugly

To hear most beekeepers, you would think they never get a large enough honey crop, but be assured if you keep bees long enough, you will get a honey crop of some size. At that point, a different phase of beekeeping begins that has absolutely nothing to do with bee diseases, bee pests, swarming, supplemental feeding, or any other common aspect of honey bee management. You have entered the honey processing phase and uncapping combs is the first step of honey processing.

SUPERS OFF WHEN?

Ideally, all frames should be capped, but this doesn't always happen. You will have to make a judgment call when removing supers. Are the frames mostly capped (85%) or are the outside frames predominantly uncapped. Will you have enough total crop to make the overall moisture be 18.6% or less? More than 18.6% moisture and the honey is prone to ferment. Short of buying a refractometer, you can't tell what the moisture content is of your honey crop. Is enough of a nectar flow ongoing that you could consolidate the remaining uncapped frames and put them back on for finishing? It is possible to feed a colony heavy sugar syrup in order to get the bees to finish capping the crop, but there are those of you who become concerned that some of your crop is nothing more than sugar syrup honey. If the bees are just producing cappings, there is little danger of this happening.

What to do? If I only had a few supers and a few open combs, I would consolidate the open combs into one super(s) and give it back to the bees. They could finish them or not. However, please note that this is only a late spring/early summer recommendation. If you are removing a fall crop, I would suggest you remove all supers in preparation for winter. All you can do then is hold the uncapped honey all winter and put it on hives next spring. There's a good chance fermentation will occur during winter months. Other than keeping it cool, there's not much you can do about that. During most years, you won't have a great problem with uncapped combs. Run them through the extractor and forget about them.

ONLY A FEW

THE CAPPINGS SCRATCHER

Different models of capping scratchers or cappings punches are available. These gadgets are inexpensive and you should have several of them at ready reach.

Their function is simple but crude. They simply tear open the cappings allowing the honey to be slung out during extraction. If only a very small number of frames are to be uncapped, these devices may be enough to accomplish the job. However, for most of us, these devices are used for getting to those hard-to-reach cappings on selected combs.

COLD UNCAPPING KNIVES

If you are in the early stage of beekeeping and only have a few supers to uncap, the process is simple. A couple of long kitchen knives, preferably with serrated edges, will serve nicely. Many books recommend heating the knives in warm water and periodically switch them in order to be using a warm knife constantly. In reality, I cannot tell that it makes much difference if the knives are heated or not. It's work either way.

There is no standard kitchen extracting procedure. You select pans, knives, location, and procedures to fit your need. Honey is sticky, but the final product is worth the work; however, be prepared for a temporary mess.

Photographs always show nicely drawn combs, but you should expect the occasional gnarly comb. In some way, puncture all the cappings with the knife or with a cappings scratcher. No commonly available extractor has the power to sling honey through undamaged cappings.

I have no way to recommend how many frames to uncap using this simple procedure before you decide to upgrade. Are you planning to increase your colony numbers or are you happy with 2-4 colonies? Do you have time for this simple but slow procedure? You decide.

GROWING?

For some beekeepers, improved uncapping equipment is purchased when they absolutely cannot tolerate the slower kitchen knife technique. For other beekeepers, their colony numbers have increased and more processing equipment, (and less time spent uncapping) can be justified. When to upgrade uncapping equipment is strictly a personal decision. In theory only, you could use a simple large knife for any number of frames but it would be very time consuming.

NEXT?

HEATED KNIFE

Without a doubt, the most common uncapping contrivance for the advanced hobby beekeeper is the common electrically heated, hand-held knife. The electric



A collection of scratchers and punches.



The common electric uncapping knife.

knife is economical and efficient and is a considerable improvement over the simple knife.

Uncapping planes are available, but are not nearly as common as the electric knife. For most hobby beekeepers, having two or three electric knives is normal.

HAND-HELD HOT KNIVES

Either cold or hot hand-held knives will result in tired hands and arms. Though a hot knife is definitely better than a cold one, it is noticeably heavier. At first that will not matter, but 200 frames later it will. Keep your uncapping tank as low as possible as well as your extractor. Beyond that, you're just going to have to work.

Hot knives are just that – hot – but it won't take you long to realize that. The knife in the photo has a stand on which the knife can be rested, but in the heat of uncapping with stray bees flying about and sticky honey all over, the stand is frequently lost.

Hot knives are also sharp. Though I don't know of anyone who has been cut, it is possible to take a slice from a finger. The frames become heavier and heavier as you tire. While uncapping new comb is a breeze, older combs are not – even with a hot knife. It frequently requires a sawing motion. The knife can abruptly slip out of the comb bringing the sharp, hot knife near your hand. Ouch!

The knife shown has a conveniently accessible thermostat readily available. Other models are on the market that are pre-set and the operating temperature can only be changed with the arbitrary adjustment of a set-screw on the back of the knife. As this style of knife ages, the temperature control becomes less exact and can result in a knife that is either too hot or too cold. Knives that are too cold don't do the job very well, while knives that are too hot can burn both the honey (but not much) and you (any is too much). Having said that, I have never known of a honey crop to be damaged by a knife operating at too high a temperature. However the honey sizzles on the knife and your risk of burns is increased.

If the hot knives are used rapidly, they can cool to the point that they don't work as well as they should. You may be able to: increase the temperature, live with a cooler knife, or simply slow down your uncapping rate. As the day progresses, slowing down the uncapping rate may be an agreeable option.

Electric knives are a staple in the uncapping busi-

ness. Even if you grow to the point of having automatic commercial uncappers, you will still want both a capping scratcher and a hot knife nearby.

MOTOR-DRIVEN HOT KNIVES

For many years, the Walter T. Kelley Company has manufactured a stationary, double-sided, reciprocating, electrically heated knife that is excellent for the advanced hobby beekeeper. The device can be attached to the top of your uncapping tank and either side of the knife can be used. Published information states that three to five frames per minute can be uncapped. Currently selling for \$310.00, this device is a noticeable uncapping investment, but can be well worth the money if processing time is short.

COMMENTS, SUGGESTIONS AND OBSERVATIONS.

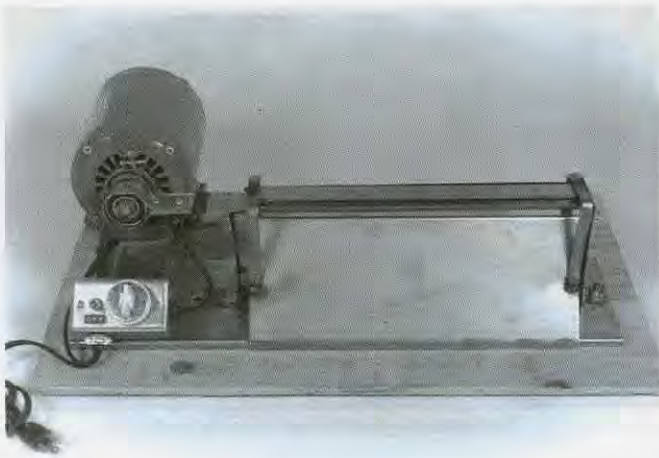
Without regard to what uncapping device you are using, uncapping honeycombs is a tiring task. The sharp edges of frames begin to wear on your fingers. Nail points and splinters abound. Your arms and back will complain about the work. Invariably the work area becomes sticky making a ready supply of hot water a good idea. Straggler bees will be in the equipment and flying near the lights in the room. The occasional sting is commonplace.

Drip boards beneath stacks of supers are always a good idea. A drip board can be nothing more than an inner cover with the hand hold closed or boards may be specially built. The board shown has a lower lip to allow a hand truck to be used to move stacks of supers around the extracting room. The primary function drip boards serve is to keep honey from dripping onto the floor. Either capped or uncapped supers should be stacked on these boards. Solid, washable floors make life much easier, and much safer.

Uncapping and extracting in a screened area is helpful in keeping robber bees at bay. Ideally, the room should be well lighted with handy electrical outlets. Ideally you can't have too many buckets and tanks for holding wax cappings, honey and water. Keep your work area clean. You are handling a food product and invariably a visitor stops by while you are at work. Make a good impression.

All frames are uncapped vertically while being held by the uppermost end bar. The knife edge easily slides along the top edge of the top bar and bottom edge of the

Continued on Next Page
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The Kelley electric vibrating hot knife.



A drip board on which to sit supers before and after uncapping.

bottom bar. Trying to uncap a frame while holding it in the normal position (horizontal) would result in the knife gouging the comb.


A FINAL CAVEAT

It has not been my intention to paint a bleak picture of the uncapping aspect of honey extraction, but from personal experience I know that life is much easier if the process is planned as opposed to making changes after the procedure is underway. Uncapping and pro-

cessing honey is not classic beekeeping but rather it is a traditional aspect of beekeeping. When all goes well, the uncapping and subsequent extracting process is rewarding and is an integral part of the annual cycle of beekeeping. **BC**

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SEPTEMBER, 2000 • ALL THE NEWS THAT FITS

HONEY BOARD VOTE THIS MONTH

The U.S. Department of Agriculture has scheduled Sept. 5-29 to conduct a referendum on proposed amendments to the Honey Research, Promotion and Information Order, according to their Aug. 3 news release.

Eligible voters will decide if the following amendments should be made to the order:

□ Change the current assessment structure. The new structure would decrease the domestic producer assessment to 3/4 cent per pound, increase the assessment on imported honey to 1-1/2 cents per pound and add an assessment of 3/4 cent per pound on domestic honey handled.

□ Add two positions for handlers who are also importers to the National Honey Board and require that at least 50 percent of the Board must be producers.

□ Give the National Honey Board the authority to develop recommendations for purity standards along with proposing inspection and monitoring systems (enforced through U.S. government agencies)

to enhance the image of honey and honey products.

□ Set aside at least eight percent of all assessments collected each year for beekeeping and production research.

The USDA will mail postage-paid ballots and voting instructions to all known eligible producers, producer-packers, handlers and importers. Most honey producers, producer-packers, handlers and importers who produced, handled or imported honey in calendar years 1998 or 1999 are eligible to vote. Those who produced, handled or imported less than 6,000 pounds of honey or honey products annually and distributed the honey directly through local retail outlets (such as roadside stands, farmers markets, etc.) will not be eligible to vote unless they paid assessments during the two-year period.

More information, including a referendum overview and Q&A, is available from the National Honey Board's Web site at www.nhb.org/ref/.

Continued on page 51

RESEARCH REVIEWED AT ARIZONA CONFERENCE

Nearly 100 researchers and others from 15 different nations attended the recent Second International Conference on Africanized Honey Bees and Bee Mites, held April 10-12, in Tucson, Arizona.

"Attendance and participation at this highly successful conference reflect worldwide concern over the impact that Africanized honey bees and bee mites are having on beekeeping and agriculture," said Dr. Eric H. Erickson, director of the USDA Agricultural Research Service's Carl Hayden Bee Research Center in Tucson.

Erickson and Dr. Robert E. Page, chair of the Department of Entomology, University of California, Davis, were co-chairs of the event.

"The goal of the conference," said Erickson, "was to bring together bee biologists and acarologists who are conducting basic or applied research on Africanized honey bees, mites that parasitize honey bees, and other areas of bee biology that relate to sustaining healthy, productive honey bee colonies."

The conference was a follow-up to a 1987 symposium on the same topic, held at Ohio State University in Columbus.

"That was more than a decade ago," noted Erickson, "and many important new developments have occurred during the intervening years. Most notable for beekeepers and bee researchers in this country have been the outbreak of Varroa

Continued on page 51

Last Minute Honey Board REFERENDUM CHANGES

In response to amendments to the Honey Research, Promotion and Consumer Information Act, the National Honey Board (the Board) submitted to the Secretary of Agriculture proposed amendments to the Honey Research, Promotion and Consumer Information Order, 7 CFR Part 1240 (2000). The Secretary published the Board's proposed rule with some changes on February 28, 2000, and the Board filed comments on the proposed rule. On August 7, 2000, the Secretary published another proposed rule. Here is the proposed rule showing changes from the Board's original proposal.

• **1240.10.** USDA has adopted the Board's proposed definition of handler-importer that it set forth in its comments.

• **1240.26.** USDA has included in the definition of research "studies on bees to advance the cost effectiveness, competitiveness, efficiency, pest and disease control, and other management aspects of beekeeping, honey production, and honey bees." This language expands on the language originally proposed by the Board.

• **1240.32(b)(12)(i).** This section requires that a qualified national organization representing handler or importer interests must notify non-members of Board nomination opportunities that the organization is certified to make. The Board suggested language permitting notification by publication. USDA has rejected that language.

• **1240.35.** USDA has adopted language, as suggested by the Board, requiring a majority for a quorum rather than a specific number of Board members. A specific number would have required an amendment if the number of Board members was increased or decreased.

• **1240.39(a)(7).** This section deals with the plans, projects and programs the Board may develop and

implement. The Board proposed that it be permitted to implement programs to identify and prevent adulterated honey. USDA deleted the "and prevent" language, denying the Board an important enforcement mechanism.

• **1240.39(b).** This section requires the Board to fund an independent evaluation of its programs every five years and make the results available to the public.

• **1240.41(c)(3).** USDA has rejected the Board's proposed language to clarify that a first handler is responsible for paying an assessment if a first handler fails to collect the assessment from a producer.

• **1240.44(b)** This section authorizes the Board to develop a program or system to inspect and monitor the purity of honey. USDA has inserted language requiring research to determine "fair and equitable test parameters" for inspection and monitoring honey.

• **1240.45(d).** USDA has inserted language that permits the Board to develop and implement a voluntary quality assurance program with USDA's approval that is independent of any inspection and monitoring program it develops.

• **1240.46.** This section authorizes the Board to develop minimum purity standards. USDA has inserted language requiring research to determine "fair and equitable test parameters between domestic and imported honey" to determine purity.

• **1240.47.** USDA rejected the Board's proposed language relating to an annual report to Congress relating to maintaining the quality of honey.

The most critical modification was the deletion of the "prevention" authority relating to adulteration. The failure to include the reporting to Congress requirement may be something the industry looks at legislatively, not the Board.

The proposed amendments to the Order along with referendum procedures have been published in the Aug. 7 Federal Register and posted on the USDA/AMS website at www.ams.usda.gov/fv/rpb.html.

How to Cast Your Vote

Step 1. Eligible producers, handlers and importers will receive appropriate ballot(s) in the mail. When you receive your ballot(s), verify that you have the correct ballot(s) – producer ballot (brown ink), handler ballot (blue ink) or importer of record ballots (green ink and black ink). If you need ballots for additional legal entities or believe you are eligible to vote but do not receive a ballot by Sept. 8, 2000, call Kathie Birdsall at USDA at 888.720.9917.

Step 2. Review the total pounds of honey or honey products produced, handled or imported, as indicated on each ballot. If the total is incorrect, make the necessary corrections. (You may be asked to submit documentation).

Step 3. In Part II of each ballot, vote either "YES" or "NO" on whether you want the amendments to be implemented. (The amendments cannot be voted on individually. Your "YES" or "NO" vote covers all votable amendments as a group).

Step 4. In Part III of each ballot, sign and date where indicated and provide your business telephone number. An unsigned ballot is considered incomplete and will not be counted.

Step 5. Mail your completed ballot(s) to the USDA in the post-paid envelope, making sure that the ballot(s) will be received on or before September 29, 2000.

mites in the United States in mid-1987, the initial detection of Africanized honey bees in Texas in 1991, and the discovery of the small hive beetle in the Southeastern United States in 1997. All of these topics were addressed during the conference."

Currently, the range of Africanized honey bees in the United States includes not only Texas but also Arizona, California, Nevada, and New Mexico. "Africanized honey bees," Erickson said, "are an urban problem because they directly impact public safety. Of course, they also are having a pronounced effect on beekeeping and the pest control industry in the American Southwest."

Varroa mites infest honey bee colonies throughout the United States, as well as in most of Mexico and parts of Canada. "Feral honey bee populations," according to Erickson "have been reduced by at least 85 percent because of *Varroa*. By some estimates that were discussed at the conference, *Varroa* mites – along with the invasion of Africanized bees and the spread of tracheal mites – have reduced the number of managed honey bee colonies in the United States by nearly half. Range expansion in North America by the extremely destructive small hive beetle is not as large a problem right now, but is still of major concern."

The 58 speakers at the program gave participants an update on the

scope of these threats to hive management and on research under way in the United States and abroad to protect feral and managed honey bee populations.

"These updates," said Erickson, "showed that research conducted to mitigate the impact of Africanized honey bees and parasitic mites has been extensive and diverse. Techniques for identifying Africanized honey bees have been vastly improved. Much has been learned about how European bee populations become Africanized. Medical treatment for victims of mass bee attacks has been refined. Many new discoveries about the developmental biology of *Varroa* mites have been made.

"Researchers at the conference," he said, "reported on field-testing of new chemical control measures for *Varroa* and on the development of *Varroa*-tolerant honey bee populations. Others noted that the impact of tracheal mites has been substantially reduced due in large part to an expanding natural population of mite-resistant honey bees. Chemical control measures for the small hive beetle, and the implementation of these tactics, were described.

"Although there have been great advances in the understanding of the biology of both Africanized honey bees and *Varroa* mites during the past decade," said Erickson, "it was apparent from the conference that numerous issues still need to be addressed. For example, effective methods for preventing and

terminating mass attacks by Africanized honey bees need to be developed. Innovative methods for requeening Africanized colonies are needed to replace existing methods that are generally time-consuming and often ineffective. New strategies for slowing or – better yet – reversing the process of Africanization need to be designed and tested.

"The exchange of information at the conference," added Erickson, "also made it apparent that more needs to be known about the role that mite-transmitted microbes may play in the varroasis syndrome. The possible impact of miticides on the health of honey bee colonies needs to be investigated. New, user-friendly strategies for *Varroa* control need to be produced, to reduce reliance on chemical control measures. And new approaches need to be created to deal with the increasingly likely possibility of intercontinental movement of honey bee pests like the small hive beetle."

Abstracts of the research papers presented at the conference will appear in the *American Bee Journal* later this year. Also this year, the A.I. Root Company plans to publish a book containing the full text of each research paper.

For information contact Dr. Eric Erickson, USDA-ARS Carl Hayden Bee Research Center, 2000 East Allen Rd., Tucson, AZ, 520.670.6380, ext. 104; fax 520.670.6493; email erick@tucson.ars.ag.gov

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CALENDAR

◆ CANADA ◆

The Royal Agricultural Winter Fair will be held November 2-11 at The Coliseum National Trade Centre, Toronto, Ontario.

The 1999 edition of the Royal recorded more than 12,000 entries for its varied livestock and agricultural competitions.

Entry details and prize books are available by contacting the Entry Department at the Royal at 416.263.3400. For information on the competition, contact John Flays at johnflays@idirect.com. The deadline is September 30.

The Ontario Beekeepers Association will hold their annual convention November 17-18 in Ottawa. Contact Pat Westlake for details at www.OntarioBee.com, info@ontariobee.com, 519.565.2622.

◆ ALABAMA ◆

The Annual AL State Bkprs Assn. Convention will be held at Doster Center in Prattville, September 15-16 at the Holiday Inn.

Speakers include Nathan Holliman, National Honey Board President; Dr. Jim Tew; Dave Green, Pollination Expert; Ken and Rufina Ward.

Contact Bob Fanning 256.883.9601, k4ub@hiwaay.net.

◆ ARKANSAS ◆

The AR Bkprs Assn will hold their annual convention at the Ramada Inn in Mountain Home, October 27 - 28.

Registration begins at 11:00 a.m. Friday with the program beginning at 1:00 p.m. Speakers include Roger Starks, Jim Higgins, Steve Bernard and Sharon Gibbons.

Reservations can be made by calling 870.425.9191. Rooms are \$45 per night for a double room.

For information contact Mike Williams, 4103 Jessica Lane, Jonesboro, AR 72401, 870.932.2817.

The Western AR and Eastern OK Beekeepers' Association will hold their annual meeting September 15 and 16 at the Continuing Education Building in Van Buren, AR. Kim Flottum is one of four featured speakers.

Contact Jerl Mitchel at 918.436.2432.

◆ MASSACHUSETTS ◆

EAS 2001 - Bees by the Sea August 6-10 at Massachusetts Maritime Academy, Buzzards Bay.

www.capecod.com/bcba/eas2001.html. See you there.

◆ NEBRASKA ◆

BEETOPIA! NE Bkprs. Assn. annual convention is November 17-18, at the Best Western Central Executive Center, Omaha.

Contact Dennis Stenner, 13401 S. 34th Street, Bellevue, NE 68123-2330, 402.293.0973, stenner@radiks.net

◆ NORTH CAROLINA ◆

NC State Beekeepers Association/SC State Beekeepers Association will hold a joint meeting in Myrtle Beach, SC March 9-10, 2001 at the Crown Reef Resort and Conference Center.

Contact Mike Hood 864.656.0346.

◆ OHIO ◆

Ohio State Beekeepers will hold their Fall meeting November 10-11.

Contact Kim Flottum 330.722.2021.

◆ TENNESSEE ◆

The Tennessee Beekeepers Association's Annual Convention will be held at the Pollard Auditorium in Oak Ridge, Friday, October 20 and Saturday, October 21. Dr. James E. Tew, OH State University; Dr. Hachiro Shimanuki, USDA Beltsville MD Research lab; and Mr. Jerry Hayes, Dadant & Sons will be among the guest speakers.

There will be workshops, honey show, auction, a honey baking contest and a banquet on Friday night. Registration fee includes lunch on days attended.

For more information contact Robert Elwood, 865.482.5276, rhelwood@email.msn.com or Barry Richards, 615.654.2459, beerich@bellsouth.net.

◆ TEXAS ◆

B. Weaver Apiaries BeeGinners Short Course will be held September 23 in Navasota.

Beginning and novice beekeepers with five or fewer hives will learn a lot from this short course. The one-day course runs from 8:30 to 5:30 at B. Weaver Apiaries, 9 miles south of Navasota. The cost is \$90 before September 1. After September 1 the cost is \$100.

For information contact B. Weaver Apiaries, 16481 CR #319, Navasota, TX 77868, 936.825.7312 (daytime), beeweaver@tca.net, <http://www.beeweaver.com>

The American Honey Producers Association Annual Convention will be held January 8-12, 2001 at the Holiday Inn Civic Center, McAllen, TX.

For reservations call 210.686.2471.

◆ WASHINGTON ◆

The Pierce County Washington Beekeepers Association will hold their convention November 2-4, at the Tacoma Days Inn. For reservations call 800.221.2680. You need to register by October 18. Hotel rooms are \$60/night.

◆ WEST VIRGINIA ◆

The 20th WV Honey Festival will be September 9-10 at the City Park in Parkersburg, WV.

WV Honey Festival, P.O. Box 2149, Parkersburg, WV 26102, 800.752.4982.

West Virginia Beekeepers Association Fall Meeting will be held September 29-30, at Cedar Lakes Conference Center, Ripley.

The main speaker will be Dewey Caron.


For information contact John Campbell, 304.478.3675

BOTTOMBOARD ... Cont. From 56

They must be attracted to our apiary from our beekeeping neighbors. We believe that some sort of "swarm" pheromone permeates our apiary, inducing swarming behavior in neighboring apiaries and attracting them to ours. Our swarm boxes are full. Bees are building comb in stacks of cardboard boxes while we frantically repair old equipment. We don't check the laying pattern of the swarm queens - no time and really not necessary as you'll see in . . .

July Our woodenware has been used up. We are desperately trying to avoid buying new equipment. So we start harvesting honey. Our queens have laid eggs up through most of the supers, so we don't have to spend much time extracting. Our bees choose the inner cover to define the top of the brood nest. I feel sorry for the "experts" who are wildly rushing from apiary to honey house and putting in long hours extracting honey that they will be selling at less than the cost of production. While (finally) checking the hives, we find several with failing or failed queens. Now some "experts" recommend renewing old comb once every three to five years. Imagine labeling every frame with a date and keeping track of them! Our method is less work and almost as accurate. The wax moths have already cleaned the mostly old comb in the failing colonies. We just throw them in a heap and spray a high-pressure hose over them to finish the job. The frames that break were probably old anyway, and those that survive can be reused. We store them with the other equipment we'll think about repairing in the Winter.

August & September Now we harvest the fruit of our minimal labor. We have healthy, populous colonies with brood in most of the supers, so we spend less time on the sticky, unpleasant job of extracting honey and more time on more profitable and enjoyable pursuits - buying lottery tickets, playing slot machines or watching *Who wants to be a millionaire?*

September Where are these September swarms coming from? Only healthy colonies swarm, so we deduce that treating colonies is once again unnecessary. Another year has come and gone. Hives are heavy with honey - no need to feed this year. Time to start thinking about equipment maintenance again, fine-tuning the *Reactive Colony Management Strategy* and dreaming of Spring. 

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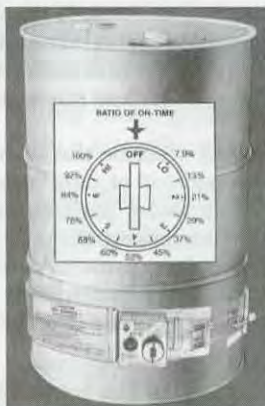
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After 30 years of research here at the Zenith Honey Bee Studios, we are ready to present our discoveries to the beekeeping world. Perhaps mankind will benefit from our small contribution. We call our new method the *Reactive Colony Management Strategy*. The current trends in colony management require more and more poking, prodding and medicating by the hive care professional, irritating the bees, disrupting their lives and making a nuisance of oneself. This is expensive, labor-intensive and can even reduce honey production.

Our system requires much less work on the part of the beekeeper. We determine the needs of our colonies by subtle clues, usually without even opening the hives. We do not need to extensively medicate our colonies with this system, which results in healthier and genetically superior bees – *Super Bees* we modestly call them. Perhaps the most revolutionary aspect of our system is that it takes advantage of the honey bee's instinctive desire to be left alone and man's instinct for laziness. Less labor, less stings, less honor, less stress for both you and your bees.

Perhaps the simplest way to describe the system is this: You have tried all your life to stay one step ahead of your bees. You repeatedly fail. It's discouraging. No wonder so many beekeepers are giving up and dropping out. In our system, the beekeeper stays one step *behind* the bees. You react to the bees rather than proact. Admit it – this has always been the natural position of the beekeeper anyway.

Let me describe a typical year using the *Reactive Colony Management Strategy*.

October We usually think of Spring as the beginning of the beekeeping year. Under our system, the real beginning is the Autumn. Specifically, we didn't have time to treat our hives for mites last Fall. Did you ever try to remove Apistan™ strips from a colony in the North in November? It is not pleasant. Bees stick to your clothes like burdocks. Well, even some "experts" say one treatment per year is enough, so we don't worry.

November through January Now is the time to think about maintaining equipment. Under our system, that's all we have to do – think about it. The garage shop is cold. Why suffer unnecessarily? We read, by a crackling fire on the hearth, of the frantic efforts and failures of the "experts" under the old systems of management and dream of Spring.

February Now, we listen to each hive, noting that approximately half have died while still heavy with honey. Most "experts" are needlessly troubled over the loss. We smile to ourselves. Everything is working according to plan. You see, the dead hives were already more susceptible to mites. The surviving hives on average have more resistance. But there is another advantage . . .

March The first warm days of Spring find all the hives, dead and alive, buzzing with activity. In fact, it's hard to tell which is which. The surviving colonies are robbing honey from the dead hives. They think there is a honey flow on – much earlier than under the archaic system. This stimulates more brood rearing for earlier, stronger hives. We treat for mites now because we have to. The colonies are still small so we can use only one Apistan™ strip for most of the colonies.

April The first pollen and nectar are coming in now to our worker-fortified hives. The hives are building up rapidly. The dead colonies have been mostly cleaned out by the bees. Some people reverse brood boxes now, but that is a lot of extra work, and we know that the queen works down naturally into the lower brood box as workers fill the upper one with honey. It's a busy time so we leave the dead hives on their stands. We systematically remove all the Apistan™ strips as per instructions on the box. Do not inspect the hives at this time. It is unnecessarily trou-

matic to the bees and a lot of extra trouble for you. We are still thinking about fixing up equipment.

May The first swarm erupts earlier than ever this year! It's time to react with our swarm control method. Swarms virtually never enter an empty hive on their own, but we've left the dead hives on their stands just in case. We catch this one and put it in one of the empty hives. While hiving that swarm, another issues from the same hive or perhaps a different one. Catching swarms is fun and a good way to replace Winter losses. Sometimes we catch the same swarm three times before it escapes. We dump the swarms right into the vacant hives.

Now we go through the brood combs on the rest of the colonies. Many are preparing to swarm. We split these hives using comb with queen cells to make splits. Splitting cures colonies of the urge to swarm . . . sometimes.

Where did all these extra Apistan™ strips come from? Here is a good study for an undergraduate entomologist: How do Apistan™ strips reproduce in a hive? There was no sign of these strips during the first systematic removal. I believe they reproduce by microscopic spores but I can't prove it.

It has been another successful Spring; we've filled all our old equipment. Some "experts" recommend adding queen excluders now. This is an unnecessary waste of time. The best queen excluder is a layer of honey above the brood nest. We let the bees choose where the top of the brood nest should be.

June Wow, what a successful year so far! Where are all these swarms coming from?

Continued on Page 52

Reactive Colony Management

Peter Sieling

BOTTOM BOARD