MAR 1996

Bee Culture

Special Section - BEARS

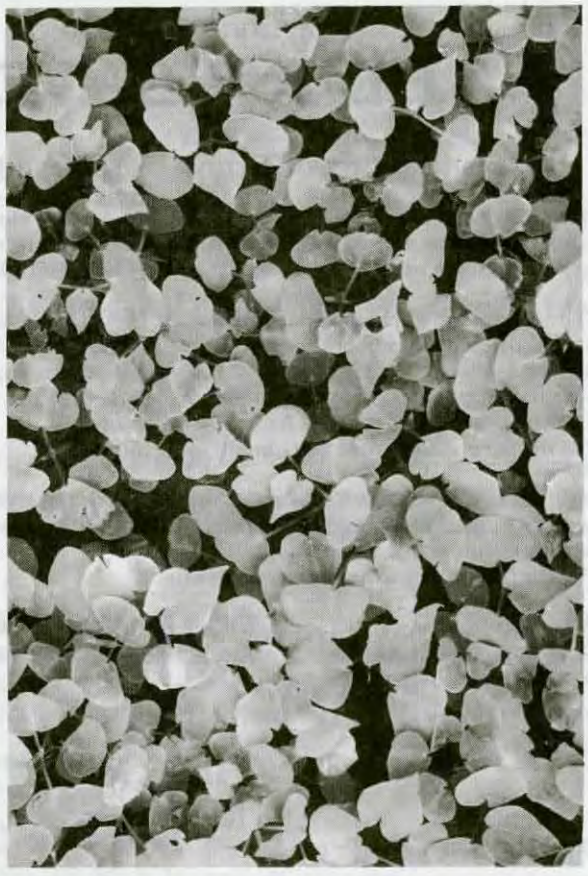
Special Section - ANNUALS

Plus - Bottom Boards, Swarm Catchers, Spring Packages, Grease Patties, Research Review, Mark Winston, Do You Know?

Bee Culture
THE MAGAZINE OF AMERICAN BEEKEEPING

MARCH 1996 VOLUME 124 NUMBER 3

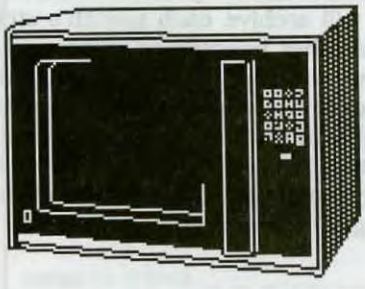
FEATURES



COVER
Growing your own bee plants isn't as difficult as it may seem. You can, with the right equipment, start plants inside under lights, or go directly to the garden. These are buckwheat seedlings.
photo by Kim Flottum

DEPARTMENTS

COLUMNS



Home Harmony, Pg. 179

JOHN ROOT
Publisher

KIM FLOTTUM
Editor

INNER COVER

One of the great things about attending a national meeting is that you get to hear, in a national sense, the good things and the bad things going on in the industry we are a part of. This year there was lots of good news, and not nearly as much bad news as I've heard in the last few years. It was, to these tired ears, a joyous time.

Certainly the price of honey has increased. Wholesale bulk, that is in barrels, is selling for something like 80¢ to 90¢ per pound. A year ago it was half of that. Reports of 60s selling for $1.00 a pound aren't uncommon. Honey producers are making some long-needed money all over the country. That's good news – for producers, for the equipment suppliers selling them new equipment, and (if I may) for magazine publishers.

The scientists in charge of solving problems seem to have solved some. Formic acid, as a control for both *Varroa* and tracheal mites looms close on the horizon. Canadian researchers are close to an acceptable delivery system, and the numbers are in for good control. Resistance and contamination, when used correctly, seem to be a non-problem, and, as an alternative (both effective and cost effective) to Apistan appears certain.

And, another *Varroa* control chemical is close by, produced and used much like an Apistan strip. It is of a different chemical family than Apistan, I'm told, so offers yet another avenue of control that increases the arsenal against this pest. It's a year or so away, but holds promise for a brighter future. Things do, indeed, look better.

•

There's a Guest Editorial again this month. A physics professor takes me to task for my comments on bee researchers, and communication. He states his well-thought-out argument with elegance and thoroughness. To the point, I think.

It is not the position of this magazine, nor this Editor, to besmirch the quality, the quantity, the value or the goals of basic research or researchers.

Nor do we do the same to those who carry out practical research. It's obvious those who carry out practical, applied research draw on the findings, related or not, of others.

The problem, as I see it, are those who do research that has practical applications to beekeepers – read "those who pay the bills," and can't be bothered to let anyone know who cares use the information.

For instance, I recently, and accidently ran across an article on how bees regulate pollen foraging, and how they determine a need for pollen in the colony. It has to do with some pretty basic stuff, but if you collect pollen for a business you could use what's in this article to convince your bees how to collect more. It was published in the journal *Behavioral and Sociobiology*, not easily found on your newsstand.

Now, used properly, this information could be "applied" by beekeepers in a management program to help, or increase the pollen collection of a colony. Would that help your operation?

This is the type of research a scientist conducted for his/her own gain as far as I'm concerned. You decide.

On the other hand, the author of this guest editorial has, with ease, explained several complicated and sophisticated scientific techniques he is involved in so that nearly any one can understand the information. Obviously, he has practiced. But, (and you really need to read his article), I go back to my original question. Why can't scientists doing applied or fundamental research with honey bees be bothered?

•

This has been the winter of my discontent. Cold, cold temperatures were here too often, and too long. I hear rumors that regions further north became uninhabitable. Only rumors though.

And snow! Way, way too much snow. My driveway hasn't been plowed this many times in the last 10 years *combined*!

Ice wrecked my eaves in January, and high winds took shingles off the garage in February. And my heating bill, like the snow, was way, way too high, all winter long.

I know, I know. It was worse where you are. But I moved here to get away from this. If Ohio can't do better next year I'm seriously thinking of relocating. What do you think of the title, "Bahama's Bee Culture"? It sounds great to me!

Kim Flottum

P.S. By the way, watch this spot for the announcement of the A.I. Root Company's full graphics World Wide Web Page. It will feature information on our candles, our church candles, our bee supplies and certainly this magazine. It is under construction and promises to be over 20 pages long, including product photos, ordering information, and, from the magazine a feature story each month. Plus, we will archive each month's story plus other beekeeping information. There will also be a resources list and links to literally thousands of other beekeeping information sources and people on the Web and gopher sites. Stay tuned for this first beekeeping magazine Web page next month!

Good News, & A Bad Winter!

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MAILBOX

Book Available

One of our books, *Ned Kelly and the City of the Bees*, was recently reviewed in your publication by Faith Andrews Bedford. Readers may purchase this book from David R. Godine, Publisher, Box 9103, Lincoln, Massachusetts 01773. The cost is $11.95 plus $4.50 shipping and handling.

Kirsten Giebutowski
Lincoln, MA

Cooling Off Wax Moth

I keep reading articles in almost every bee magazine I can get my hands on hoping that sometime or other there will be an answer to controlling this little pest – the wax moth.

Like most beekeepers, I started out with a few colonies of bees and kept growing by adding a piece of equipment here and there. I thought I had everything I needed after 50 plus years but I could not control that pesty little wax moth. Most chemicals are out-lawed. EDB was my best control. Paradichlorobenzene crystals are expensive and they do not do a good job, at least for me.

Some beekeepers stack supers outside on end or in a well-lit building. I find it's not the answer because then you have a mouse problem. Even wire caging the supers doesn't work. In the last four plus years I finally found the answer. That's when I met a man who operates five farms of fruit and vegetable growing – moving bees from one farm to another to cover the pollination and he wanted to learn beekeeping which I am still doing. I explained to him all the problems he would have with the wax moth but he said that part was no problem to him. He explained to me how he would stack all his supers on a pallet with open top and bottoms. Then he would place them in the fruit cooler with a fork lift and the temperature setting at approximately 40°F. If I had known when I started beekeeping, this item would be on my list of equipment.

Walk-in coolers can be had and most can be disassembled or built into a corner of a building, insulated and a window air conditioner added, making sure it is mouse-proof. The supers need to be spaced for air circulation. The unit need not run during the winter months or when empty, so the operating cost would be very low. Check with your refrigerator man for more details in constructing a cooler.

Name Withheld
Bridgeville, PA

Supports Joint Meetings

Your comments in the Inner Cover editorials are a service to the beekeeping industry, especially your perennial advocating of cooperation (if not unification) among the various organizations and associations.

Different segments of this industry truly have different agenda, but these could be dealt with in *separate business meetings* held in conjunction with a *joint educational program and trade show*. With the American Beekeeping Federation and the American Honey Producers having separate conventions at different times and places, many scientists and educators end up *travelling twice to give the same program!* Even if their expenses are paid, this is an imposition on their time.

Separate meeting sites are also a burden on bee supply manufacturers, dealers, and queen and package bee dealers who must take two weeks of their time and make two trips to present their products to members of both groups. These days it costs a supplier $900 to $1,500 out-of-pocket to attend and exhibit at each meeting; for those with large exhibits and several people they cost thousands. A large and informative trade show is an attraction to beekeepers, who want to see what is new and currently available, and talk to suppliers. A joint location and program for all the separate organizations would draw the best possible trade show, attracting some suppliers who at present do not think it worthwhile to spend the considerable sum it costs to exhibit.

Please keep up the good work you are doing with your magazine.

Thomas B. Ross
Massillon, OH

Thomas Ross operates Ross Rounds, Inc.

Heating Honey

Per Ann Harman's column in your pages several months ago, I am considering a honey tasting party for local service clubs in town as a public relations gesture.

Instead of using domestic honey, as she suggested, I have accumulated several jars of foreign honey, most of which are solid.

I intend to use plastic coffee stirrers as a sampling tool and would prefer the honey to be liquid. Is it possible to liquefy these honeys as I do my own honey, using a hot water bath?

I know that English rape honey and heather honey both set up quite fast. Would heating change the taste of these honeys?

Is it acceptable to reheat these honeys for another party later on without endangering the taste?

I would rather not experiment with the jars I have if there is a chance of changing the taste.

Robert Newmann
Troy, OH

Editor's Note: *Reliquefying your honey in a warm water bath will not harm or change your honey. However, keep the temperature below 100°F. Warmer temperatures will hasten darkening, drive off the volitiles that give these unique products their flavor and aroma, and if too hot, will scorch the honey, leaving a burned-like taste.*

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ARS Queens?

What is the status of ARS-Y-C1 queens? Seems real quite as I haven't heard much about them lately. I'm sure many beekeepers have been using these queens and I would like to hear about their successes or failures. Are they effective in controlling mites and are they good honey producers as compared to Italians, Carniolans, Caucasians, etc.?

Gerald L. Burchett
Editor, Kentucky Bee Line

Editor's Note: *This is a good question, and I don't have an answer. We have heard several comments – some good, some not – but not a good sample. If you have tried these bees let us know. Drop us a postcard with your supplier, where you live and a short report on production, wintering and other traits.*

Sting Reactions

I agree with Richard Taylor that C. Walli's doctor didn't know what he was talking about (Allergic?, Dec. 1995 Mailbox). But thinking that a large, red swollen reaction is an allergic reaction after a bee sting is a common misconception among physicians and patients. Sometimes these reactions can involve the entire limb and can be painful and last over a week. What is also important is the amount of time the honey bee sting stays in the skin. Usually the sting is swept off the skin immediately upon getting stung by the person brushing the bee off. If the poison sac and sting remain for a longer time, more poison is pumped in by the muscular sac (even outside of the bee), and the local reaction can be more severe.

I found this out a few years ago when I was getting started in beekeeping. The duct tape had gotten loose on the wrists of my fireplace gloves while I was in the middle of one of my hives, and a bee decided to investigate the insides of one of them. Thinking I would prevent a sting, I tried to flatten the bee inside of the glove. Of course it didn't know what I was thinking, and it gave me a present (unsolicited apitherapy!). Since I was in the middle of the hive, and the bee had already done her damage, I continued with my work. About five minutes later I took off the glove and I could still see the poison sac pumping. Within two hours, my arm was red, hot, and swollen to the elbow. My arm was still stiff 10 days later. My next sting was several weeks later on top of my head (my first "bee proof" outfit wasn't, in several places). Other than itching, I had no other reaction, nor any since. All my other stings have occurred with the sting removed immediately.

You should seek medical attention for symptoms all over your body, As Dr. Taylor had said, especially if you have welts, dizziness, swelling, trouble breathing or trouble swallowing. Otherwise ice and benadryl (diphenhydramine) should do the trick.

Gert Walter
Boxborough, MA

Looking For Electronic Contacts

I would like to communicate beekeeping ideas with other beekeepers or anyone interested in beekeeping via the WWW. My main interest is to grow from our current 200 colony operation in Northwest Ohio to a 500+ colony operation prior to retirement from the factory. Anyone interested in communicating any aspect of beekeeping contact me via email at sherry@bright.net. Or via regular mail at:

Bill Sherry
Rt. 1 20475 Schick Rd.,
Defiance, OH 43512

Editor's Note: *Try subscribing to the Bee-L by contacting the listserver at: listserv@acsc2.albany.edu. Under subject put subscription, and in the text put Subscribe Bee-L (your name).*

From there you can find (by asking) all sorts of information. Also, on the web, search for bees, honey and pollination. Then be prepared to spend some time reading. And, since you live in Ohio, you can join the Ohio Beekeepers list. To subscribe send a message to listserve@sun1.oardc. Ohio-State, edu. Under subject put subscription, and in the text put Subscribe ohbee-1 (your name).

Observation Hive Hint

When starting an observation hive for the first time, there is a special bit of logistics to have in mind. In a full-sized hive, a queen has 10 or 20 frames in which to lay eggs but in an observation hive she has only one or two. Thus in the latter there is a great excess of brood raising capability. A hive will soon become excessively overpopulated unless a frame of sealed brood can be swapped out into a full sized hive from time to time.

Also, an observation hive is often a little short of foragers which means insufficient honey and pollen to feed the nurse bees and brood. So it is handy to be able to swap frames of stores from that outside hive whenever needed. Often it is possible to make those two swaps simultaneously.

Moral of the story. Have one or two full-sized hives in good condition nearby before starting an observation hive.

Dan Hendricks
Mercer Island, WA

Queens' Land Book

Today I have received in the mail a photocopy of your review of my book "Queens' Land," that was published in the October issue of *Bee Culture* from one of my fellow beekeepers. Thank you for your enthusiastic review of my book.

When starting with bees, I did not receive the benefit of any training in beekeeping, bees were something I was interested in from an early age. In Australia it was difficult when I started expanding in beekeeping to acquire the knowledge and experience I required as none of my family had anything to do with bees.

After my venture into queen rearing took place, I was fortunate that several of the top American queen producers invited me to spend some time with them during an eight week visit to the U.S. in 1963. That experience helped me greatly in planning my future direction, just seeing what could be done with queen bee production on a large scale, as at the time not a lot of commercial queen bee

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production was taking place in our country.

It is hoped that some of my experiences will be of assistance to anyone interested in bees, and in particular to help make the keeping of bees an enjoyable life's work.

The overseas marketing of queens and bees has taken me to many countries around the world. My wife and I have met some really wonderful people during our travels. The bees have brought lots of people from overseas to stay in our home and spend time at our beekeeping workshop and bee yards. Only once did we have a language problem when an Iranian came to learn some queen rearing and stay in our home for a month, he could not speak English.

Thank you again for your enthusiastic review.

Norman Rice
Cardindale Q'LD, Australia

Watch Bee Space

I hope Richard Bonney's article in the January, 1996 issue doesn't persuade manufacturers to make one side of their inner covers flat. This produces a result the same as a migrating cover used without an inner cover. I find this often results in the top bars being propolized to the cover, requiring a lot of prying or pulling a frame wire, like a cheese cutter, between the cover and the frames. An 1/8" thick edge on one side of the inner cover insures bee space.

Dan Hendricks
Mercer Island, WA

Editor's Note: *A flat-sided inner cover will indeed cause problems if the top bars below are not a bee space away. Check this before placing a flat cover on. Conversely, if there is bee space available, and an eighth inch rim is used there will be too much space, and a plethora of burr comb will result.*

Apistan Resistance

An article on the resistance of *Varroa* mites to the active ingredient in apistan, published in May 1995 in the German Journal "Deutsches Bienenjournal," caught my attention. I thought it might be in the interest of your readers to share some of that information (I translated it to the best of my knowledge).

"Already two years ago many bee colonies in the Italian regions of Sicily and Lombardi were lost because of the resistance of *Varroa* mites to the active ingredient fluvalinate.

"In spring 1994 another region of Italy's Southern Tirol, had signs of a tolerance of *Varroa* for fluvalinate. Apistan has been in use there since 1988. When apistan was tested in colonies of that region, the effectiveness was less than 60% (compared to 95% in control hives).

"The authors foresee that the alternative for apistan will probably be formic acid, rather than one of the other chemicals allowed in Europe because of residue problems in beeswax."

Heike Perau
Portland, OR

Angels . . .

Your mother was obviously a very considerate lady because the complete version of the saying she used goes like this: "Only fools jump in where angels fear to tread" (Inner Cover, January 1996).

I guess its meaning is pretty obvious, but perhaps it shouldn't be taken in a derogatory way because nowadays few people – let alone angels – are unafraid when confronted by a hive of bees.

Laurence Hicks
Denmark

•

I am a new subscriber, although I have been reading your magazine for several years through the kindness of a friend willing to pass it along. Two items in recent issues prompt me to write.

In your January '96 issue (Inner Cover) you invited explanation of your mom's line about you, 'He goes where angels fear to tread.' Actually, this is a rewording of the line 'Fools rush in where angels fear to tread.' The original alludes to a statement by the New Testament writer Jude, who, writing of 'certain men' who had 'slipped in among' the Christian believers, said that they 'reject authority and slander celestial beings.' Jude contrasts their behavior with that of the archangel Michael, who, 'when he was disputing with the devil about the body of Moses, did not dare bring a slanderous accusation against him, but said, "The Lord rebuke you!" Jude comments that 'these men speak abusively against whatever they do not understand.'

Jude apparently believed that some folks were such materialistic fools that they not only rejected the idea of God, but also ridiculed anything supernatural, including the devil, and opened themselves to retribution from both sides of the issue. (Incidentally, Michael played it smart; he bided his time. Revelation indicates a yet-future time when a war will take place in heaven, and Michael will be victorious over the devil and cast him out of heaven to the earth just prior to the Second Coming of Christ.)

In use, this saying usually refers to clueless individuals who hasten to enter a situation without regard for the eminence of those they will encounter there. It can be a good trait if you're a journalist. Fatal, if you are one of those 'certain men.'

Secondly, in the same issue, Toge S.K. Johannson responded to your November '95 Inner Cover comments about researchers who fail to report their results to beekeepers. I missed the November issue, but got the drift in your Inner Cover remarks in the December issue. Toge thinks the problem is 'the scarcity of persons with talent and incentive to attempt to describe what is going on in terms that laypersons can relate to.'

A proposal is in order. If you can find a way to squeeze room for two more pages, why not create a new department wherein research types who are not yet ready to submit a formal paper could discuss informally what they are doing and what they are learning. Or perhaps even those who have already published a formal paper but who think they have the talent to talk with the Great Unwashed could rehash, one-on-one over an

Continued on Next Page

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open beehive, so to speak, what they have learned. As for incentive, I'll bet that in this day of budget cutbacks most researchers wouldn't mind spending a Saturday afternoon over a word processor for a C-note or whatever it is you pay for such articles.

I am not suggesting you replace Roger Morse's columns. But an opportunity to publish is an opportunity to publish. You may have to send letters of invitation to any place that has an entomology department and to all the research stations to get the ball rolling, but soon the word will get out.

Kendal Smucker
Bellefontaine, OH 43311

Editor's Note: *Well, I was raised to question authority (my generation, I think, made that a household phrase), but I don't think I've ever slandered a 'celestial' being. Let's hope the two don't go together. As for your proposal, I think it's a great idea. Any of you 'research types' interested?*

Organic Explained

I think Mr. Ross Conrad, and perhaps other readers, misunderstood my remarks concerning labeling honey as "organic," (January letters). I am all in favor of organic farming and promoting organic foods. But I think the word "organic" has no meaning as applied to honey, besides which it would give the erroneous impression that honey not so labeled might contain toxic chemicals. I think it is not possible today to succeed at beekeeping, even on a small scale, without using Apistan strips and Terramycin. Neither of these, correctly used, poses the slightest threat of contamination to honey, and yet, you cannot describe honey as "organic" if they have been used. Furthermore, how is any beekeeper going to be able to affirm that his bees have not gathered nectar from, say, an alfalfa field that has been treated with a pesticide or chemical fertilizer?

Before I felt the need to use Apistan and Terra I put a little label on each jar of honey that said: "This is natural honey, to which nothing has been added and from which nothing has been removed, and no chemicals have been used in producing or harvesting it." That, it seems to me, is much better than meaninglessly describing it as "organic."

Richard Taylor
Interlaken, NY

Bee Friendly

Congratulations on the December issue of *Bee Culture*. It's chock full of engaging, informative articles of interest, you bet!

I particularly liked the page of questions about Honey Bee Senses, by Clarence Collison, p. 675. Why? Because it reminded me of my all-time favorite article that appeared in *Bee Culture* several years ago now and that I found unforgettable (and even "New Age").

That particular article was about what honey bees themselves pefer, in the way of hive cavity shape, distance of entrance from the ground, etc. I guess I'm more bee-centered than bee-management minded. If bees could have the home they wanted, what kind of hive would they have? That question is so bee-friendly . . .

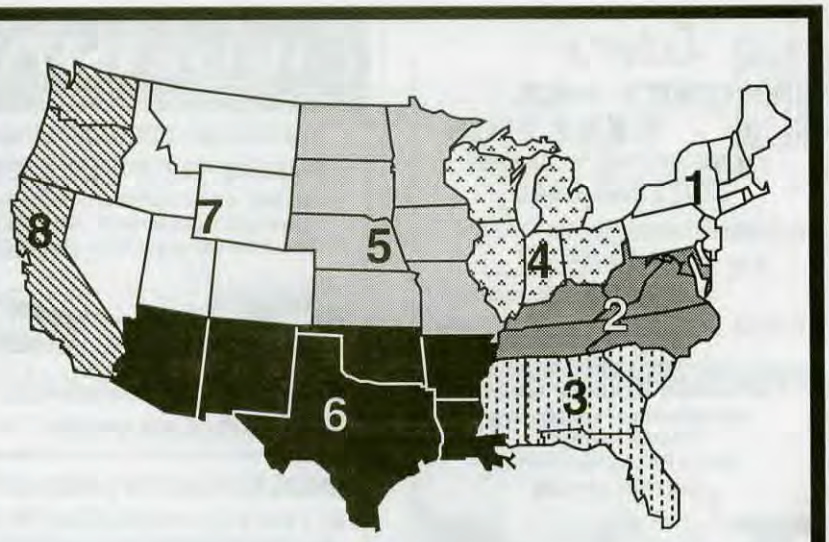
Stephen Hunt
Chicago, IL

MARCH Honey Report

MARCH 1, 1996

REPORT FEATURES

Prices shown are averages from many reporters living in a region, and reflect that region's general price structure. The Range Column lists highest and lowest prices received across all regions, from all reporters.



	Reporting Regions								Summary		History Last Month	History Last Yr.
	1	2	3	4	5	6	7	8				
Extracted honey sold bulk to Packers or Processors									Range	Avg.		
Wholesale Bulk												
60# Light	51.20	48.40	33.00	53.17	45.00	36.75	50.00	47.67	27.00-64.75	48.03	47.98	42.13
60# Amber	49.45	48.08	36.00	51.10	43.00	35.30	47.50	47.33	27.00-63.00	46.26	45.61	39.90
55 gal. Light	0.67	0.53	0.60	0.87	0.74	0.52	0.68	0.65	0.45-1.01	0.70	0.67	0.59
55 gal. Amber	0.64	0.53	0.70	0.85	0.55	0.57	0.65	0.63	0.42-0.96	0.67	0.62	0.55
Wholesale - Case Lots												
1/2# 24's	21.88	23.70	23.00	22.93	18.00	22.85	25.50	23.60	18.00-26.95	22.97	22.50	20.78
1# 24's	33.00	32.55	34.00	34.68	34.40	32.95	32.10	32.96	30.00-41.90	34.09	32.57	30.53
2# 12's	30.45	30.93	30.00	31.54	32.40	29.00	34.50	29.54	25.80-38.84	31.85	30.89	29.01
12 oz. Plas. 24's	28.69	30.03	31.84	29.25	27.44	27.00	27.95	27.13	24.00-41.90	29.61	29.02	27.26
5# 6's	30.86	32.17	36.00	33.89	29.00	28.50	31.50	30.20	21.00-41.80	32.43	31.78	29.16
Retail Honey Prices												
1/2#	1.48	1.91	1.67	1.34	1.13	1.62	1.29	1.27	0.98-3.50	1.48	1.52	1.34
12 oz. Plastic	1.79	1.90	2.50	1.66	1.71	1.74	1.75	1.87	1.29-2.50	1.85	1.74	1.59
1 lb. Glass	2.10	2.28	2.48	1.98	2.14	2.08	1.95	2.26	1.69-3.00	2.16	2.00	1.83
2 lb. Glass	3.50	3.80	3.73	3.67	3.27	3.40	3.25	3.69	2.89-4.75	3.61	3.43	3.21
3 lb. Glass	4.45	5.08	5.50	3.69	4.27	4.03	4.50	4.89	3.29-6.10	4.65	4.59	4.37
4 lb. Glass	5.77	5.90	6.50	5.50	5.50	5.39	5.45	6.73	5.09-8.15	6.11	5.62	5.87
5 lb. Glass	6.59	7.25	6.75	6.78	6.00	6.07	6.95	6.19	2.99-9.95	6.92	7.08	6.72
1# Cream	2.44	3.13	2.74	1.99	2.20	2.52	2.75	2.53	1.75-3.95	2.51	2.57	2.18
1# Comb	3.62	3.30	3.25	4.31	2.30	4.00	4.50	3.12	1.95-7.00	3.73	3.35	3.27
Round Plastic	3.02	3.00	4.00	3.08	3.26	3.70	3.26	3.09	2.59-4.00	3.20	3.05	3.05
Wax (Light)	2.06	1.82	2.45	2.42	2.35	1.60	1.90	2.20	1.00-3.95	2.11	1.88	1.89
Wax (Dark)	1.64	1.50	1.83	2.00	1.90	1.25	1.85	1.63	0.75-3.25	1.69	1.54	1.43
Poll. Fee/Col.	31.93	25.00	32.00	32.50	32.91	20.00	35.00	36.00	10.00-55.00	34.74	30.25	31.13

MARKET SHARE

Reporting prices is next to impossible anymore. Conventional wisdom says honey is selling in the $.80 range, yet some small operations still in the $.50 range. If customers want honey they will pay the going rate. If not, find new customers. Selling cheap out the back door only hurts the whole market, providing of course, you know your costs.

Region 1

Prices steady to up a bit from last month, both retail and wholesale showing some increase. Demand steady mostly, but down in isolated spots due to increased prices. Some national brands bringing prices down. Colony conditions generally good but high losses due to mites and bad winter showing up. Honey supplies limited and getting lower.

Region 2

Wholesale prices down since last month, due mostly to low supplies. Retail prices up though, especially on store shelves. Demand steady to increasing, but supplies tight and getting tighter. Colony conditions good, but late winter will tell more.

Region 3

Late freeze is the big news. How much danger to citrus bloom and vegetable crops is the question. Some losses expected, but how much? Prices down as weather warms, both retail and wholesale, but supplies so limited it doesn't matter much. Colony conditions generally strong as population building and swarming at full speed.

Region 4

Prices rising at wholesale faster than most can keep up with. Retail steady, but will rise sharply soon, reflecting rapid wholesale increases. Tough winter will tell on survival this month, but losses appear high to mites and starvation. Honey supplies tight, causing prices to increase soon.

Region 5

Reported prices steady to down a bit from last month, but unreported prices still high, especially in bulk price quantities. Retail prices doing well. Supplies low, demand still strong at retail due to weather. Colonies going through tough winter – March will tell.

Region 6

Bulk prices leveling off but retail prices coming on strong as bulk prices filter down. Demand strong at retail and price increase hasn't slowed this. Colony conditions good going into buildup, and good season predicted. Honey supplies steady, but not much left.

Region 7

Prices steady, demand steady, supplies dwindling. Colony conditions mixed as hard winter has hurt some, helped others.

Region 8

Prices steady to increasing as shortages filter to grocery shelf. Demand steady so prices will climb. Colony conditions, for locals, pretty good. For migratory, not so good in lots of cases. Attention to mites is the key. Early spring buildup for pollination underway – healthy colonies will get the big bucks this year.

Guest Editorial by Robert Greenler

Research In Bee Culture

Kim Flottum's editorial in the November *Bee Culture* was prompted by the retirement (sort of) of Roger Morse from his position as Professor of Apiculture at Cornell University. The event led the editor to comment on his perception of the contributions (and lack of contributions) to beekeeping practice by academic research scientists, Morse being an exception to his generally poor opinion of this group of people. He expressed some strong opinions on a subject that has long been of concern to me, but the thing that prompted me to organize my thoughts on paper was his December editorial, where he wrote:

"Recently, I discussed problems associated with getting information generated by public-funded academic studies into the hands of the people who not only can use the information, but are the ones who helped pay for it. I accused these people, these academic types, of arrogance, of stupidity and indifference. I see no reason to change my mind, nor have I had any, repeat any, come forward to defend their behavior. . . . I am not surprised. Disappointed, yes. Surprised, no."

I must admit to being one of these academic types whose work has received funding from public agencies, and although I agree with some of the editor's opinions in this matter, I would like to express a different point of view. Perhaps it is appropriate for me to start by mentioning two qualifications I have for joining this discussion.

I have been a small-time beekeeper for over a half-century, with a few years off in my early adult years. I don't exactly know when I started beekeeping because I can't remember just when I started going with my father to care for the 150 to 200 colonies that he kept in eight or 10 different locations in northwestern Ohio. For him, beekeeping was obviously a hobby that got out of control and became a part-time business. It fit rather well with his other business of teaching school, requiring the most time when school was out. He was an active participant in state beekeeping meetings and was one of the charter members of an Ohio honey-marketing cooperative. I went with him to work the bees as early as I can remember and by the time I was 10 or 12, I could do my share as we worked together. I would like to discuss the influence of that shared activity on my life – but that may be the subject of another article, not this one.

My second qualification for some opinions on the role of research in bee culture is that I have been involved in research over the past 40 years – not in apiculture, but in several areas in physics. Although my research activity may seem unrelated to beekeeping, I believe there are questions concerning the relevance of research to the ordinary citizen that are common to all the sciences.

In support of Kim Flottum's argument, I have often argued with my colleagues that a reasonable part of a professional scientist's obligation is an effort to explain the workings of science to nonscientists. This was a part of my motivation in starting and running a series of public programs at the University of Wisconsin - Milwaukee. The series, called *The Science Bag*, is now in its 23rd year and has had, to date, a cumulative attendance of over 105,000 people. It is significant that 54 different faculty members have contributed from one to 20 different programs to this long-running series.

A concern for sharing science with the public was also part of my motivation for writing a book, *Rainbows, Halos, and Glories*. This book discusses beautiful optical effects of the sky with a nonmathematical treatment intended to be accessible to people who are curious about the world around us, but who don't have the background of a scientist. The book is still in print 15 years after its first publication, and I take pleasure in the letters about it that arrive nearly every week. They come from people who have just discovered the book and have enjoyed it to the point of writing me a letter to tell me so – and also to share an effect, perhaps with a photo, of something interesting they have seen.

So I am very interested in sharing the insights and pleasures of science with others. On the other hand, there is an area of research that I have worked on for years with support from the National Science Foundation that I don't talk about in my *Science Bag* presentations. Although I've published dozens of papers from this work in scientific journals, I have seldom written about it in articles for the public. The reason is not an arrogance or indifference to the public and, although the public has supported this work, I do not think they have been cheated in the transaction. To explain that idea, I will try to describe the kind of research I am talking about.

It might help clarify the discussion by describing two kinds of approaches to research. The most familiar approach is that of applied research, where effort is directed toward solving a specific problem. A less-well-understood approach is that of fundamental research or basic research where the effort is invested to understand the workings of nature, rather than to solve a specific, identified problem. It is not that such research has no identified goals, but that the goals are to develop an understanding in a particular scientific area, without a precise knowledge of where that understanding will lead. The work that I will try to describe is an example of basic research.

I study the structure of molecules that are stuck on metal surfaces. My students and I have developed some techniques that can yield detailed pictures of how an isolated molecule can approach a surface, orient itself, possibly break into two fragments, and form bonds between certain atoms in the molecule and certain metal atoms on the surface. As new molecules arrive, we can understand how they interact with those already attached and either arrange themselves in patterns on the surface or react with the fragments of molecules sitting there. The tools and tech-

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"The point of this is to question the unstated assumption behind Kim Flottum's criticism of academic research that if the results of the research can't be explained and are not useful to the person on the street, then that person, whose taxes supported the research, is being bilked."

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niques that we use to get this kind of information are not familiar to nonscientists, and a person has to have a lot of persistence to acquire sufficient background to enable him or her to understand what the experiments reveal about these molecules stuck on the surface. An obvious question is, "Who cares?"

Who cares, indeed, whether a carbon monoxide molecule attaches to a platinum atom through the carbon atom or through the oxygen atom and whether it stands up or lies down on the surface? It doesn't appear to make much difference in the life of an ordinary citizen, and despite my interest in sharing science with the public, I find it difficult to write a magazine article about this work that will catch a reader's interest. Who, then, is interested in what we find out about this molecular dance that we study?

The consumer for the information we develop may be a theoretical physicist or chemist, more skilled in mathematics than I, who constructs an abstract model to represent the effects we have discovered. Such a contribution might seem to move the science even farther away from solving problems in the real world. On the other hand, the one who reads my papers may be a catalytic chemist who is trying to develop a more efficient catalyst to make gasoline, or to produce antifreeze or countless other chemical products that we use, or to reduce noxious gases that result from incomplete combustion of fuels used in automobiles. Or the reader may be the physicist or chemical engineer who is trying to develop a catalyst that will enable us to use the energy of sunlight to split water molecules into hydrogen and oxygen. Success in that venture could conceivably enable us to use sunlight to provide hydrogen as a source of usable fuel for the energy needs of our society and offer a new approach to solving the energy problems that affect all parts of the world community. Or the reader may be the engineer who is looking at the effect of layers only one molecule thick on the performance of smaller and smaller circuits on computer chips.

The point of this personal story is to question the unstated assumption behind Kim Flottum's criticism of academic research that if the results of the research can't be explained and are not useful to the person on the street, then that person, whose taxes supported the research, is being bilked. I think that the debate of the value of basic research versus applied research is very much the same in all the sciences, but let me try to develop an example more closely related to beekeeping.

My biologist friends talk about a technique called the polymerase chain reaction (PCR). As I understand it, with this technique they can use an enzyme to mark the two ends of a particular strip that is contained in a long DNA spiral, and then replicate that strip, multiplying the quantity of that DNA up to a billion-fold in a test tube. Using this technique, from a minute sample they can produce enough identical material to allow a variety of investigations. As it has developed, these investigations have led to two types of applications. One is the now-familiar use of DNA in forensic medicine; for example, identifying the source of a small trace of blood found at the scene of a crime. The other is to identify the genetic background of an individual, whether it be plant or animal. Each individual has its own unique DNA, and the offspring carries in its DNA information about both of its parents, and their parents, and their parents. . . .

In some universities, work with this technique might be done in the same department that houses the entomologists, among which there might be someone studying the biology of bees. For a person interested in bee culture, a few years ago it would have been easy to assume that the guy playing with PCR had nothing to contribute to his interest. On the other hand, the question of the spread of the African bee into our southern states and the effect of its interbreeding with local bee populations might be of considerable interest to him. How does he view the development if the entomologist discovers that his colleague's PCR techniques could be used to trace the northern spread of African bees, and furthermore, trace the genetic influence of this stock on a local population as more and more interbreeding takes place? (See Mark Winston's discussion "Hybrid Bees" in the June 1995 *Bee Culture*.)

There is another interesting twist behind this development of the PCR technique. Where did it come from? It came from a most unlikely source. The key to the process is an enzyme that can stand high temperatures. The original enzymes used in this process came from bacteria that grew in hot springs in Yellowstone Park. Another enzyme that has some additional advantages for this technique comes from bacteria that were discovered deep in the ocean at places where the earth's molten interior comes close enough to the ocean floor to produce hot springs that spew forth mineral-rich water with temperatures up to 700°F. At great-enough depths, the pressure of the water is so high that it can be this hot without boiling. It was an amazing discovery that, under extremes of temperature and pressure, at depths to which no sunlight can penetrate, there are many living things. Around these deep-ocean hot vents there are rich colonies of life, including varieties of fish, crabs, mussels, clams, worms – all based on bacteria that can thrive in regions near the vents where the water temperature is up to 280°F. This is a life-supporting environment that is totally alien to any we knew before. These conditions are as different from what we were familiar with as the conditions we might expect to find on another planet.

The connection with the PCR technique is that bacteria found at these hot vents contain enzymes that can survive high temperatures – temperatures that would destroy most of the enzymes that we previously knew. One of the uses found for these high-temperature enzymes is to enable biologists to neatly replicate a section of DNA. This is the PCR technique that will work only at temperatures that will kill other enzymes.

Suppose, at the time this newly discovered, deep-ocean, hot-vent environment was being explored, someone, in an attempt to justify the exploration, was trying to predict the consequences of the insight that could come from the investigation. It is unthinkable that they would have suggested that it might help answer questions about the economic impact of the African bee on the U.S. honey industry. And yet, this is the kind of story that so often comes out of basic research, directed at new understanding with no clear vision as to where it will lead.

To bring the discussion back home, even the Roger Morses and Mark Winstons, who write for this journal and contribute so much to understanding and progress in bee culture, need information on which to base their work. I'm sure that they read the journals that we beekeepers can't understand. In his article "Payback Time" in the April 1995 *Bee Culture*, Mark Winston does a calculation to justify the direct value of his work to taxpayers, but he does not mention the value that he gets from people whose work is more fundamental than his own.

These scientists are part of a web of activity that spans the gamut from basic investigations, whose relevance is not obvious, to the very applied research questions aimed at solving specific problems in our everyday lives. I believe it is a mistaken short-range strategy that suggests that we can have the benefits of this web of research by eliminating all but the last step. It may well be that there is a shortage of Roger Morses and Mark Winstons – that we need more people to apply the insights of basic investigators to help solve our everyday beekeeping problems – but we should also value the essential contributions behind that last step in the research process. BC

Robert Greenler is Professor of Physics at the Univ. of WI-Milwaukee, where he has been teaching and doing research, since 1962. He has applied principles of optics to answer questions about the structures of molecules on surfaces; origins of sky displays such as rainbows, halos and sun dogs; and beautiful iridescent colors that appear in nature. He has been involved in beekeeping as long as he can remember.

Roger Morse

Research Review

"This National meeting covered many aspects of bees . . . and beekeeping!"

The December 17-21, Entomological Society meetings in Las Vegas featured more talks on honey bees and related subjects than any such meeting I have attended in many years. Simon Fraser University in British Columbia and The University of Illinois were especially well-represented and are congratulated for their stimulating contributions.

Strawberry Pollination

Joe Kovach of Cornell University reported that botrytis fruit rot in strawberries can be controlled by applying a fungal antagonist to the flowers and allowing honey bees to spread it from one flower to the next. There are now several papers showing that honey bees may be used to spread beneficial fungi, bacteria and viruses from one flower to another in different plant species. In strawberries, botrytis causes the common gray mold that may destroy maturing berries. However, the original infection starts when the flower opens, but it remains in a resting stage until the fruit begins to mature. At the present time, one or two fungicides are needed to control botrytis in strawberries, but the antagonist gives equally good control.

However, there is a bonus in using honey bees. These studies also showed that the honey bees improved strawberry pollination and increased the weight of the berries 25 to 35 percent. There are now more than a dozen papers demonstrating that honey bees are effective pollinators of strawberries, but relatively few strawberry growers rent bees for pollination. There appears to be a well-ingrained notion among growers and some researchers that cross-pollination by bees is not important in strawberries, which is not true.

The Cape Bee Invasion

One of the 26 races of honey bees in the world is the cape bee, which until recently has been confined to the southern tip of South Africa. However, the movement of colonies in and out of the cape of that country by migratory beekeepers has brought about the spread of the cape bee outside its native area. In some areas, it has largely replaced the native scutellata race. One beekeeper friend of mine in South Africa told me his 2,000 colonies dwindled to 35 as a result of the cape bee takeover.

The cape honey bee is different from the other races in that colonies slip easily into a laying worker condition. Their populations then dwindle, but remarkably, one of the laying workers produces an egg that becomes a full-fledged queen that heads the colony. When colonies of the cape bee and *scutellata* are side-by-side workers drift into each other's colonies. However, the *scutellata* queens cannot inhibit the development of the cape bee laying workers in their colonies, and soon the laying workers take over the *scutellata* colonies. Thus, when cape bee colonies are moved into a *scutellata* apiary, all of the colonies are soon cape bees.

In conversation with Dr. Robin Crewe, of South Africa I learned the problem is taking care of itself when migratory beekeepers stop carrying cape bees out of their native area. An apiary of cape bee colonies slowly dies when all of the colonies become cape bees. The cape bee cannot survive outside its native range. The question of where various races of honey bees can and cannot survive is a mystery.

This leads me to comment on Africanized honey bees, yet another race, which were mentioned several times at the meetings. No one has an explanation about why they are spreading east so slowly and the debate about how far north they will move continues.

Dr. Crewe also told me that tracheal mites were found six months ago in South Africa; they have had little or no effect on the bees in that country as yet.

Tracheal Mites

Dr. Medhat Nasr, representing the Ontario beekeepers and Guelph University, reported that honey bees infested with tracheal mites have great difficulty controlling their nest temperature when it grows cold in the Fall. This is presumably because the mites blocking their tracheae interfere with their breathing and ability to respond to changing temperatures. As a result of his study, he recommends bees in the north be packed (protected) for Winter in order to give the bees more time to adjust to temperature changes. Those beekeepers who migrate south are advised to leave the north before the temperatures drop too much. My experience is that southern bees have little difficulty with tracheal mites. Nasr's research indicates that may be because they are not exposed to the lower temperatures they experience in the north.

Jennifer Finley and her colleagues at Pennsylvania State Univer-

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RESEARCH ... Cont. From Pg. 143

sity have completed their research on the effectiveness of menthol on tracheal mites at various temperatures. (Menthol is not effective at low temperatures since it will not evaporate.) The Pennsylvanians have mapped the temperature zones in their state. Their map shows the latest dates, in average years, when beekeepers can apply menthol and it will be effective.

Apistan & Formic Acid

L.C. Birnie and Dr. Mark Winston of Simon Fraser University reported on the effects of Apistan and formic acid, which are used for *Varroa* mite control, on honey bees. They found no serious adverse effects on colonies from either material. There was no effect on brood survival or the weight of emerging bees. Formic acid did kill some adult bees. Apistan appeared to have a positive effect on worker longevity. Colony weight gains were not affected. BC

Roger Morse is Extension Specialist in Apiculture, Cornell University, Ithaca, New York.

? DO YOU KNOW ?

Spring Disease Management

Clarence Collison

Last month the questions were concerned with wintering honey bee colonies and winter/spring management. We will continue the same basic topics this month, only change the emphasis slightly towards diseases and other maladies associated with honey bee colonies. How well do you understand spring/disease management?

Please answer the following questions to determine how well you understand these important topics.

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

1. ____ Highest levels of nosema disease are typically found in the early spring.
2. ____ The symptoms of nosema disease are often confused with other conditions that afflict adult honey bees.
3. ____ Nosema disease is caused by a fungus that produces spores.
4. ____ Nosema disease is more widespread in the United States than European foulbrood, American foulbrood and sacbrood.
5. ____ The vegetative stage of Nosema *apis* is the infective stage.

Multiple Choice Questions (1 point each)

6. Gregarines and flagellates are examples of _____ found within the digestive tracts of adult bees.
   A. Protozoans
   B. Mites
   C. Viruses
   D. Fungi
   E. Bacteria
7. Nosema disease develops exclusively within the cells of the epithelium of the _____.
   A. Honey stomach (crop)
   B. Rectum
   C. Midgut (ventriculus)
   D. Malpighian tubules
   E. Intestine
8. If any medication or acaricides are used in the hive in the spring, it is essential that all treatments stop at least ____ days before the beginning of the major nectar flow so the honey crop is not contaminated.
   A. 28
   B. 35
   C. 42
   D. 14
   E. 21
9. The first intensive spring inspection which includes breaking down the brood area should not occur until the temperature has reached at least _____° F.
   A. 85
   B. 65
   C. 45
   D. 75
   E. 55
10. Name two advantages and two disadvantages of using a Miller syrup feeder. (4 points).
11. The pathogens that cause American foulbrood, chalkbrood and nosema disease produce spores. Upon finding a dead colony early in the spring, where would you look for these spores within the hive? (3 points).
12. Which one of the following treatments are not normally recommended for overwintered colonies in the spring? Menthol, Terramycin, Fumidil-B, Apistan strips (1 point).
13. Please explain why queen supersedure rates are so high in colonies suffering from nosema disease. (1 point).
14. Name two ways in which nosema disease effects adult worker bees. (2 points).
15. List three ways to build up weak colonies in the spring. (3 points).
16. Please describe the action you would take upon finding a large number of ants under the inner cover of a colony. (2 points).

ANSWERS ON PAGE 182

Mark Winston

Billions of Pounds

A billion is a big number, a very big number. There are only a few things on Earth that we measure in the billions, including the total human population, the national debt and the net worth of a very small number of billionaires. Even honey production is not measured in the billions. In 1992, for example, United States beekeepers produced only 220 million pounds of honey, slightly less than one pound for each American citizen, and considerably less than a billion. Beekeepers' colonies did pollinate about $10 billion worth of crops in North America that year, however, putting us in at least one billionaire category and providing some bragging rights at the exclusive billionaires' club.

Beekeepers today are participating in another billionaire category, however, that we shouldn't be quite so proud of. In 1993, 1.1 billion pounds of active pesticide ingredients were used in the United States, about four pounds of pesticides for every man, woman and child in America. Considering that toxic dosages of most pesticides for humans are about one-hundred-thousandth to one-millionth of a pound, that's a lot of poison. Even if pesticides were not poisons, but simply dust, that would be alot of material. A billion pounds of dust dumped on the United States each year would be alarming, so a billion pounds of poisonous dust seems catastrophic, indeed.

About three-fourths of that poison was used in agriculture, and unfortunately, beekeepers can no longer claim to be outside of the pesticide system. The common use of Apistan in our colonies has removed beekeeping from being one of the few agricultural pursuits that was pesticide-free. We are now active participants in the pesticide problem, and it certainly is a problem. The statistics concerning pesticide impact on humans alone are frightening, and indicate that our dependence on chemicals has side effects that are severe enough to bring into question whether the extent of pesticide use in our society is even cost-effective.

One estimate concerning the costs associated with detrimental side effects of pesticide use in the United States came out at $8 billion per year (by David Pimentel and colleagues from Cornell University). This bill for pesticide-related problems included public-health costs, loss of domestic animals and their products, fish losses, monitoring and cleanup expenses, and the cost of government regulations. One of the largest costs, about $790 million annually, was to treat the 10,000 pesticide-related cancer cases that appear in the U.S. each year. Worldwide, there are 20,000 deaths annually due to acute pesticide exposure, and of course it is almost impossible to put a dollar value on that data figure.

The $8 billion bill for side effects is close to the $8.5 billion spent to purchase pesticides each year in the United States. These two "costs" put together equal the $16 billion in crops that pesticides are estimated to save every year. One final statistic: in spite of using a billion pounds of pesticides annually, we lose 37 percent of our crops to pests, and this value is increasing rather than decreasing.

There is another side to this story, however. If we beekeepers suddenly stopped using Apistan, virtually every one of us would be out of business. We are in the ironic position of having to put pesticides into colonies in order to manage bees successfully. I say ironic because we traditionally have been among the most avid opponents of pesticide use, and the reputation of honey as a natural, "organic" product is not consistent with putting chemicals into hives. However, unless you're one of the lucky few who don't have *Varroa*, you have no choice; if you don't use Apistan, or perhaps formic acid if you're a Canadian beekeeper, your colonies will almost certainly die.

This dilemma is not unique to beekeeping. Every farmer faced with a pest has to decide whether to use pesticides, and growers are faced daily with decisions to either use

"Most beekeepers, and most farmers for that matter, are not horrible spray jockeys, poisoning the environment in order to make a few bucks. We use chemicals because we feel that there are no other options, and in the case of Varroa *today, there really are no other options."*

chemicals or risk their crop. Very few growers, and I'm sure very few beekeepers, are willing to take that risk, and so most of us in agriculture head to our local chemical supply house and spray, spray, spray at the first sight of pests. This reaction is not limited to farmers. City dwellers are quick to run down to their local hardware store after seeing a lowly cockroach scuttle across the kitchen floor, and buy something, anything to annihilate the pest. Farmers, at least, have the excuse that they're trying to make a living.

Most beekeepers, and most farmers for that matter, are not horrible spray jockeys, poisoning the environment in order to make a few bucks. We use chemicals because we feel that there are no other options, and in the case of *Varroa* today, there really are no other options. Given the rapid chemical dependence that has descended on the beekeeping industry, it is important for all of us to keep chemical use in perspective, and to do all we can to use the least amount of chemicals possible.

The first and obvious way to reduce chemical use is to use Apistan only when sampling determines that it is needed. Many of you have gotten into the same mindset that earlier generations of farmers developed, to use pesticides on a schedule, rather than only when sampling reveals a problem is developing. Today's farmers use monitoring systems to follow their pests' populations, and spray when the pest is reaching economic thresholds, and then only as much or as frequently as necessary to reduce the pest presence to a non-economic level.

Beekeepers should do the same with *Varroa*. Some apiaries may only need treatment once a year, others twice, and some perhaps three times. There are numerous quick and easy sampling techniques available that beekeepers can do themselves, with no scientific training necessary. If you want to be a responsible pesticide user, sample your bees and make an informed decision before treating with a pesticide.

Unfortunately, we still don't have a good sense of what mite levels justify Apistan applications. A number of rough guides have been released recently by extension workers that relate the number of mites found by various sampling methods, and advise when to treat based on these samples. These are excellent first steps, but we need more refined information to relate mite levels to economic damage thresholds, so that beekeepers can make better decisions about when to treat.

Safe use of Apistan also is highly recommended, for your own health as well as to protect the environment. It's not a bad idea to take a pesticide applicator's course, even though it's probably not required by your state or provincial officials. Simple safety rules are not that hard to follow. For example, always wear gloves when handling pesticides, and a respirator if working indoors. Take the used strips to a proper disposal center when removed from colonies, and certainly don't use them again. Finally, never store Apistan where children can gain access to it.

At one level, the obvious applies: If you need to use chemicals, use them sparingly and safely. However, most farmers in North America use pesticides sparingly and safely, but we're still spraying over a billion pounds a year of active pesticide ingredients into our environment. Beekeepers, like farmers, need to begin thinking about ways of getting off this pesticide treadmill, and for *Varroa* this won't be easy.

Alternatives to toxic pesticides for mite control may be the single area where research can contribute the most to beekeeping. The first area I would look at is the use of alternative chemicals that are non-toxic to anything but mites. Some research is going on now to examine essential oils as mite controls, substances similar to the menthol now used against tracheal mites, and we should expand this type of work. These oils might not work as effectively as Apistan, but they may keep Varroa below economic thresholds, which is the control level we should be looking for rather than total eradication.

Perhaps we also should consider more labor-intensive physical controls. For example, breaks in the brood cycle will reduce *Varroa* levels, and drone comb can be used as a "trap" to attract some mites, and then the comb can be removed and destroyed. Yes, these are expensive methods because they involve considerable labor, loss of equipment, and some reduction in colony strength when brood rearing is reduced. However, our society needs to decide how committed we are to reducing pesticide use, and if we beekeepers are truly anti-pesticide, perhaps we need to look at more expensive but environmentally cleaner methods to deal with pests. At the least, we can conduct some economically based research to compare physical and chemical control techniques to determine whether nonchemical methods are viable.

In the end, it comes down to money. If beekeepers were willing to pay a 25-cent tax on every strip of Apistan used, and devote that fund toward research, I am confident that we could develop alternative control methods for *Varroa* that would either use nontoxic chemicals, or avoid chemical use entirely. I estimate that such a fund would generate $500,000 annually, enough to fund numerous tests to screen alternative chemicals and examine the biological efficacy and economics of numerous control techniques. This "tax" would disappear after two or three years, because it wouldn't take very long to solve this problem if these kinds of funds were available, especially if a panel of beekeepers and scientists were overseeing the work.

I suggest this idea with no expectation that it will happen, because there probably isn't a viable way to collect funds in this way, and most of you would grouse about yet another bill. Companies selling pesticides certainly would not cooperate in overseeing a "tax" collection that would put them out of business, and we beekeepers are too independent-minded to arrange something like this on our own. Nonetheless, think about it for a minute: If each of you gave a quarter for every Apistan strip you used, and beekeepers decided what projects would get the money, you could develop methods to control *Varroa* that would not involve putting toxins into your hives within three years. You could then withdraw from the "billion pounder" pesticide club. How about it, presidents of beekeeping organizations: Why not take up the challenge of making this work? Maybe, just maybe, it would be worth it. BC

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Bears have been around for several million years. In that time many forms of the basic bear have come and gone. The demise of some bear species resulted from competition with other bear species, shifts in food supplies, or major changes in the environment.

Throughout history people have been influenced by the presence of bears. Early man roamed the same countryside with these animals and competed with them for food and shelter. Stories passed from generation to generation make it quite clear that pre-historic people treated bears with fear, but also with a great deal of respect.

In all parts of the world where people have lived near bears, the animals have sparked their imagination and emotion. People in many cultures share a belief that bears possess wisdom and power, and among native cultures, few animals have been honored with as much ritual attention. Hunting customs, ceremonial feasts, the wearing of bear hides and costumes, and the depiction of bears in art, song, story, and dance signify the bear's importance to native peoples throughout the world.

Bears and Native Americans lived together on the North American continent for thousands of years. Both walked the same trails, fished the same streams, dug tubers from the same fields, and harvested the same fruits, berries, seeds, and nuts.

When the first European settlers came to North America, their perception of the new land, its riches and opportunities differed sharply from those of Native American peoples. They were driven by their biblical charge – to be fruitful, multiply, and subdue the earth. They considered themselves locked in a desperate struggle against the harsh forces of nature.

Black bears were one of many natural obstacles the settlers encountered. Accounts of those times describe both the real and perceived dangers of bears, as well as the damage they undoubtedly did to crops, food stores, and livestock. The settlers killed many bears to protect themselves, as well as for hides, meat, and sport.

Bears and humans shared similar habitat preferences. The fertile valleys that provided the best habitat for bears were also the areas where crops and livestock could be raised most successfully. These areas also produced the best timber, and later were most suitable for dams, roads, and human settlements. The collision course between bears and American settlers was inevitable. As explorers and pioneers pushed westward, the grizzly bear was feared, hated, and exterminated in great numbers.

For bears to survive in today's world they must contend with humans, and if decisions are framed as the needs of humans versus the needs of bears, humans will undoubtedly prevail. In earlier times, mutual respect and fear created an equilibrium. Unjustified fear, fueled by myth and sensationalist media coverage, has recently combined with modern firearms to upset the balance. Few people are prepared to coexist with bears, and bears that come near humans are often termed "problem bears" even before they cause any disturbance.

Bears have been successful through evolutionary time because of a number of behavioral traits. A highly variable diet, rapid learning skills, a curious nature, wide dispersal of young, large home range, low population density, and ferocious defense of offspring were critical for bears to survive through time. Now these behaviors often bring bears into conflict with humans. Conflicts often require relocation of the bear, and finding a suitable release site is often difficult.

Their curiosity and ability to digest a varied diet allow them to substitute crops for natural foods, and they are quick to exploit new food sources. If people do not kill bears, their garbage often does. Bears sometimes get into human refuse and poison themselves by consuming engine oil, tin cans, batteries, or antifreeze.

Loss of habitat is critical to bears because they require vast areas to support populations large enough to prevent inbreeding and maintain genetic variability. Most forested areas are not large enough, or the right shape, to maintain viable populations, and often result in increased contact with humans near the edges.

Careful planning and management of occupied habitat will provide opportunities for timber harvest, hunting, and other compatible activities while keeping the area in a forested condition. Bears are very capable of adapting to new environments as long as their basic needs are met. If consideration is given to these needs, it is possible for people to live with bears and guarantee their future. In reality, bears cannot survive unless people are willing to contribute to management programs and to consider bear needs when harvesting timber, participating in outdoor recreational activities, and disposing of their garbage.

People need to be better educated about bears if they are expected to value them and ensure their future. Scientists know what needs to be done to conserve bears and their habitat, but the challenge is to garner enough public support so that the necessary conservation programs are implemented.

When bears and humans first began their long relationship, bears were more common than humans. Presently, humans far outnumber bears and can out compete any species in their demand for resources. But humanity also has the knowledge and skills to balance its needs with those of other living creatures. The challenge will be to fully utilize these skills in order to assure a future for the bear. BC

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BEAR ON PATROL

Joann Olstrom

Monday, June 19, I was up prowling the house in the dark – one of those can't stay asleep kind of nights. After hearing strange sounds on the drive, I awakened Bob, my husband. "I think there's a raccoon going through some stuff on the drive." I'd looked – without my glasses.

Bob checked and told me I'd better get my glasses; it was a bear, not a raccoon.

A BIG BEAR! On his four feet, his back was taller than the flatbed on our one-ton – over 37 inches.

I suggested we call 911, since we didn't want to turn on the lights to find the police phone number. An officer, no gun, appeared shortly – at which time the bear decided it was no longer wise to continue licking the frame of honey he had harvested from a stack of bee equipment in the process of being readied to go to a beeyard in the morning.

After ambling off to the brush past our neighbors, Bear went down the creek bed across the way on his midnight circuit of other yards and neighborhoods, raiding bird feeders, terrorizing family dogs and startling homeowners who happened to look out windows.

The police were busy answering bear calls – ours was the third or fourth of that evening. Some bear had even strolled during broad daylight earlier that afternoon into a yard where children were playing out Decker Point way. Perhaps it was lonesome and wanted to play tag.

Tuesday morning was spent moving a few nucs and swarms upriver from the back patio. Our six-foot "house hive" was left and "bear-i-caded" with aluminum ladders, farm gates and a little electricity.

By Friday evening, His Lordship was getting more brazen and again came right up nearly to our front door, at which point Bob, alerted by barking dogs, went out, hollered and snapped off a noisemaker. Defiant, Bear merely turned, glowered and finally trotted off down the street.

Bob went out to straighten up the mess. Hearing weird noises in back, I looked out the bedroom window. (Had my glasses on.) There – not more than six or eight feet away was Bear! Startled, I involuntarily let out a low, guttural "YYYYuuuuhhh!" Bear was apparently unnerved, too, and leaped up the hill, stopping under the trees. So I hollered, "Get out of here, you bear!" Amazingly, he did!

The next evening, he even stood up on his back feet, along the fat side of the truck bed, towering, snuffling. My apprehension level increased. This was the nearest and largest bear I'd ever seen. Neighbors were keeping pets in and a closer watch on the kids. We all slept lightly at night.

Sunday, John, of Fish and Game, brought the live trap, after emptying another bear from another part of town. Parked it up at the end of our street, about 100 feet from our house. Since Bob was the only man about at the time, he got the lesson on how to padlock it after the bear got in. It's an extra safety measure to take the strain off the self-closing latch.

A North Bend High School metal shop class had built the trap – a fine one, heavy duty mesh, a trip plate where the dinner rested, locks front and back and even an emergency game-man escape mechanism in case the door slammed shut with bear and game man both inside during the ear-tagging which follows tranquilizing of bears. It had happened once, far from here, with a grizzly! The man survived only because he had a pocket knife and managed to cut the bear's throat before it came to. I'm not sure I would have gone into a bear-occupied cage for a million dollars.

Then, until Wednesday evening, the prowler disappeared. Someone heard shooting over the hills where loggers were working. We surmised that Bear had gone to the "Big Beehive in the Sky."

But just before midnight Wednesday, Casey, the next door cocker spaniel, alerted the neighborhood. Guess who was in our yards again? As Bear padded up the drive, Bob rolled the slider window back and forth, making a little growling noise. Bear decided to leave and strolled up toward the trap – his usual way in or out of the neighborhood.

Before long, he got a whiff of the delicious meal spread for his benefit – honey, apples, raw beefsteak, chicken and fat, bacon grease, dog biscuits and ripe fish – a repast truly worth his investigation.

SLAM! We had him. Now came the fun part – locking the cage. Bob went with loaded gun and I, trembling, with the flashlight. Even went back three times to make sure it was properly locked, too, each time accompanied by Mr. 30.06 Springfield.

I was so wound up I couldn't sleep. It was like one foot on the gas pedal with the car in neutral. So I mentally composed Bear's story.

Of course, Bear raised Cain all night with his banging and thumping, eventually breaking open the front grill of the trap. Fortunately, there were bars behind the grill and he was still stuck inside. Bob noticed

Bear's claws were worn down and bloody from all the effort.

By 6:00, when neighbors started assembling, Bear had sort of given up and decided to nap. Grandkids and grandparents, moms and dads with teens – all stood close and brave with cameras – probably none of us ever being this close to a real live Smokey Bear. Nothing like a little wildlife to get neighbors together and visiting. Here we all stood, seeing him in his ultimate disgrace – getting caught, adding insult to his injured dignity.

This bear has changed my perspective on these animals. Before, I thought if I ever came upon bears in my beeyards, I'd take the machete and chase 'em off, screaming and shouting as I did it. I'd often been there after the destruction, and at those times, agreed with another beekeeper friend who announced that "The only good bear was a rug!" Now, there's no way I'd go on a bear chase.

A bear is an awful (as in terrible), awe-full animal. "Awesome" as kids used to say, Bear moved with power and fluid gracefulness. He was enormous – not as big as a grizzly or kodiac – but huge nevertheless. Not afraid. Defiant. Persistent.

Bob estimated 450 pounds, but Fish and Game man John said probably 500.

Curled up in his trap cage, he looked a lot like the big cuddly Teddys sold in toy stores.

But underneath that appealing "Aren't I cute look?" is a strong, unpredictable, wild tornado. I've talked to folks who have "clocked" bears on the road at 34 mph.

None of us, standing on the street at dusk watching Bear watch us, could have scattered fast enough had he decided to charge that 100 feet or so on Saturday evening.

I can't finish the photo story because I was inside working and didn't hear the Fish and Game truck come to get Bear. And because I'd grizzled at my husband earlier that morning for putting his coffee filter in my cup (he knows I can't stand the smell of coffee grounds), he did not call me when John came. See if I hold the flashlight for him next time a bear comes!

Fish and Game says, "It takes $500-$1,000 to trap and move a bear to another river drainage so the bear can't find his way back. Bears are tranquilized and ear-tagged just before they are released in a new habitat." A returning tagged bear is destroyed.

Reedsport dump (Sanitary Landfill) had recently caught and transported 24 bears before electrically fencing the area. The dump is a few miles out of town, about four miles from our neighborhood. This bear may have been a leftover.

Parents, kids and dogs in our neighborhood can relax now. I'm glad he's gone and hope he finds a happy home far away from people. And I hope he doesn't come back. As much as bears can make me – the beekeeper – angry, I don't really want to kill them. BC

The Fish and Game person used honey, apples, raw meat, and chicken for bait in the trap.

The bait worked. Bear was trapped. The openings in the grill are about 8" square. That is one Big Paw!

RAINY NIGHT BEAR

Bruce Burney

The rain had been coming down hard every day for a week, but I knew that my bees were safe and dry, facing away from the usual direction of wind and rain. During a letup one day, I had checked all my drains and walked by my two hives. I had even pressed my ear against the sides, hearing that low, reassuring hum when I tapped my finger lightly against each one. The next night, the wind blew a gale and rain came down in sheets. The following morning, I had a feeling I needed to check things again. We live on the tree-covered side of a high hill, and runoff water sometimes has a mind of its own.

Shortly after daylight it was still raining, so I donned my rain gear. As I passed my storage shed, I could not believe the scene before me. Amid the rain and a blanket of oak leaves on the ground, three supers were scattered around the hive stand, and the fourth had rolled 30 feet down the hillside. Frames were scattered everywhere with the centers eaten out of most of them. My instantaneous thought was BEAR! But how could it be a bear? Certainly, we do live in a rural area, but no one had ever seen a bear in this vicinity. Sure, we have numerous deer, and there was a supposed sighting of a mountain lion several years ago (about which I am doubtful), but a BEAR?

As the one super had tumbled down the hill, the frames spilled out, and the bear had just followed along and devastated each in turn. The few bees that still clung to them were lifeless from the cold and rain. Two more supers had been swatted around the hive stand to scatter the frames, and likewise, all had the centers eaten out. To my amazement, the fourth super was partially on its side with only one frame missing, its position deflecting some of the rain. The bees were huddled together, protecting their precious brood as best they could against the driving rain. Needless to say, they were very unhappy as I lifted them up onto the one remaining whole bottom board. I breathed a prayer that the queen had survived. As I learned later, she had.

The thought occurred to me that this bear just might come back for dessert. I took the survivors eight miles to my daughter's home. A driving rain is no time to be cleaning up a mess such as I had, so I crammed everything back into the three supers and stacked it all in my nearby five-foot-square aluminum shed. My wife said later, "Why didn't you get your camera and take a picture of the disaster?" As every beekeeper knows, my first and only thought at the time was for my precious bees.

Well, that bear was no dummy. He came back the next night for an encore. He must have been to dumpster school because he didn't try to get in the door, but did his best to climb up on the roof. The shed has a flat roof, and against one side, I had some firewood stacked. He must have been quite a sight standing on his hind legs with firewood flying in all directions, and forepaws scratching away on that roof. He didn't make it.

I was so angry at that bear and so intrigued by the thought that he might come back once more I decided to give him a surprise party and perhaps get a photo of him. I rigged up a pressure-sensitive switch on the ground, connected to a buzzer in the house. Then I set up 1,000 watts of halogen lights 100 feet from the shed and beside a dirt mound which would allow me to get to the lights undetected. I set my clothes up beside our bed, just like a fireman. My wife prevailed upon me to take my rifle with me – but only for my protection. I told her, "The minute I turn those lights on, that bear will be gone before I ever have time to focus my camera." After a week without incident, I packed away the lights and alarm and salvaged what frames I could. The bear has not returned.

The original tracks indicated that the bear was just a transient passing through. Even so, when I again have two hives here, an electric fence will be a must. Without one, I know that I would be in a constant state of apprehension. If he should return, I wish to have a surprise ready for him.

I just hope he doesn't know the way to my daughter's house because she wants to keep the survivors there. Surely at dumpster school, he didn't learn how to read a road map.

There are those who have said, "Why waste your time, effort and money putting up an electric fence? That bear will never come back. Besides, even if he did, an electric fence probably wouldn't stop him." They could be right, but the memory of that scene on a cold, rainy morning will not let me do otherwise. It's one thing to read accounts of bear visits to beeyards, but it is mentally devastating when it happens to your own bees. BC

BEAR STORIES & Beekeepers & BEAR FENCES

Don Jackson

I live and keep bees in bear country. Most of my beeyards are equipped with electric fences; without them, bear would put me out of business. During the Spring, Summer and Fall seasons, I need to regularly check each fence, cut grass, remove limbs that have fallen on wires, test voltage, and recharge batteries when needed.

As usual, September was the time for removal and extraction of our Fall honey crop. It was a bit small last year, thanks to erratic weather, so the extracting was not a very big job. After the two weeks of Fall extraction, I began to revisit yards, to make sure that the storms that had raged through our area hadn't deposited limbs or trees on the wires. As I drove into one yard nine miles from home, my heart sank; one-third of the colonies were missing. Yep, it had happened again – a bear had charged through a hot fence (over 7,000 volts at the last testing) and helped himself. Equipment was scattered well out into the woods, and there remained just sticks, useful only for kindling.

It didn't take long to add up $500 worth of damage. I went home, grabbed my camera, and returned to take pictures. I also decided to take pictures of other beekeepers' experiences with bear damage. I see a lot of apiaries in my travels, and I have observed plenty of predation, and heard some real horror stories as well.

Continued on Next Page

Two yards – 48 and 40 colonies each – belonging to Larry Jagel in Clearwater County, Minnesota. Note last colony in one yard tipped over by bear the night before I arrived to inspect the bees. Losses totaled at least $10,000.

Demonstration fencing set up by Minnesota's wildlife conservation department. Though not a very strong fence, it did manage to keep bear out.

One of the worst stories was told by a former Minnesota state legislator, also a beekeeper. A few miles northeast of here, a lady had just finished taking a pie out of the oven, and she put it on the sill near an open window to cool. The family then made a quick trip to town; when they came home, a bear was standing in the living room. It had broken in through the open window, demolished the pie, torn up the kitchen cupboards, pulled curtains down in the bathroom, and was standing in the living room. In its fright, it exited through a big double-paned viewing window. Now, that all amounts to some expensive damage!

Beekeepers generally came up with some really strange stories this summer. One was of a truck loaded with freshly removed honey supers. The truck ran out of gas on the highway, so the driver went to town in another vehicle to buy fuel. When he returned, two bear had emerged from the woods and climbed onto the truck bed where they were in the process of tearing up the load of honey.

Another beekeeper related that a nuisance bear had been live-trapped by Minnesota's Division of Natural Resources. The animal was then equipped with a radio collar and released the distance of a 2½-hour drive. It took eight days for the bear to find his way back to the same area.

Yet another account was of a bear demolishing a yard of about 10 pallets of bees. That bear was found sleeping in an abandoned barn nearby. Whenever it got hungry, it just ambled over to the hives and helped itself to bees, brood and honey.

We are finding in Minnesota that bear damage is continually on the rise, and beekeepers are often at odds with the state's wildlife conservation plan. That plan was expressed to me thus: "The ideal bear population is an average of one bear per square mile." Than can be a lot of bear! One beekeeper told me that 15 of his yards had been hit by bear last year, and another had 12 locations damaged. A third beekeeper experienced predation in 17 yards in areas where bear vandalism had not been a problem previously.

The worst damage I personally observed was in two yards about 100 miles northwest of my home. The beekeeper said that both locations had electric fences which did not keep the predators out. One was of 48 colonies: When we arrived at the location on September 27, the bear had toppled the last colony during the previous night, and disoriented bees were flying everywhere. The second yard was originally 40 colonies – nothing was left but sticks and empty boxes. Since his crop in undisturbed yards was averaging 120 pounds per colony last year, we estimated the losses of honey, bees and equipment from the 88 hives at about $10,000.

What can you do about the bear problem? I am a beekeeper, and I see the problem from a beekeeper's perspective, which may just happen to be different from those who manage wildlife for the benefit of people whose livelihoods are not in jeopardy from bear predation. Some things work, others do not. This article is accompanied with the graphic evidence of bear damage, and on dealing with the problem. Three approaches have been tried in my state.

First, in Minnesota there is a law which permits a person to protect his own property by shooting a bear at the site where it is doing damage. Given the nature of bear and bees, this isn't always a very practical solution to the problem, as the damage often occurs at night. I have found that dark, stormy nights are the worst of all – I have had the worst damage then, and it's impossible to see a dark animal in the blackness. Furthermore, I have often – but not always – found that a bear may raid a beeyard, then disappear for a couple of weeks. Most of us cannot afford to stay up at night waiting for a "maybe" visitation of the predator.

A second method of "control" is used by our game-management people. They have a limited supply of live traps which can be set near areas where bear are raiding. Our local conservation officers have been very cooperative and helpful to me in this regard, but I have yet to find a bear live-trapped in this way, so I am pessimistic about this control measure. An additional difficulty with live-trapping nuisance bear is that they are removed from the area, then released where they may cause damage to someone else. Furthermore, bears are good at finding their way back to where they were originally

trapped.

Wildlife people say that bears that return to an area may likely be females – they tend to stay in a general vicinity for their entire lives. On the other hand, males may travel a great deal; beekeepers in the prairie areas of western Minnesota keep telling me that they are seeing beeyards wrecked by animals passing through, and can just about predict which yards will be hit next as they chart the movements. It is very difficult to trap or control animals continuously as they move into new territory.

Thus, our only real protection is to fence beeyards. This is also fraught with problems, but may be the only way to train the animals. Of course, the fences must be electric, good and hot to prevent damage. The fence design must also be adequate, and many beekeepers seem to fail in this regard (note photos of fences – they are not all of a good design). Then there are the maintenance problems.

Most of my beeyards are fenced ("energized" is now the popular term). Some of them are no longer adequate and need improving this spring. When the bears come out of hibernation, there is often little for them to eat, and nursing sows are especially hard on my bees and brood (protein sources for nursing mothers). Very cold springs, with late frosts that destroy natural fruit bloom that heavy bear populations will need for feed, have been a persistent difficulty since Penitubo exploded in the Philippines in 1991, affecting weather worldwide. Hot, dry spells in the summer, as in June of 1995, also limit feed availability. All this has made fencing for bear control next to impossible.

Fence designs come in a multitude of types. Sometimes a poor fence will keep a bear out of a yard if it has not yet tasted bees and bee products, which is to say that prevention is very important. On the other hand, some of the finest designs in fences will not keep a determined animal at bay; some bear will climb over anything, no matter how hot, scale trees next to a fence and hop into a yard, or dig under an energized fence to gain entry. Other bear seem to pace around a fence and keep testing it until a battery runs low or wires get shorted out, then rush in and vandalize.

Basics in a good bear-fence design include at least four wires, at least 4,000 volts, close spacing of the wires, good grounding, and a plastic or PVC gatepost for the beekeeper and his truck (some conservation officers have not yet realized the importance of the gatepost). Wires need to be tight, grass needs to be cut regularly (especially during rainy spells), limbs need to be removed after winds and storms in treed areas, batteries need to be kept charged or replaced when worn out (watch out for solar fencers – their batteries wear out too), and a voltage tester must be kept in your truck at all times to make sure the fences are continuously "energized."

My own best fences consist of five or six wires, with the alternate ones being grounded (a bear cannot stick its head between wires without contacting both a hot wire and a ground wire). These fences test 6,000 to 8,000 volts or more, using either battery-run or solar fencers (the 20-mile solar fencers are the better ones). I bought a gas-run weed trimmer which goes around with the truck when working the yards, and some of my fences have used asphalt shingles laid under the perimeters to help keep grass down (some beekeepers use herbicides but get permission if on someone's property). A piece of meat wrapped around the bottom wire may also help keep skunks out. A fence warning sign is also in order.

I've seen some terrible fence maintenance, and it is no wonder that there is bear trouble. In my travels, I have checked others' fences, finding voltage to be only in the hundreds, or even non-existent. I've seen weeds grown up through the "electric" wires higher than my head – no way is such a fence "energized." I've seen plenty of two-wire fences, with a foot or more of spacing between the wires (bear can run right through these fences, sometimes between pulsations of the fencer, and never get a shock).

If you are having bear trouble, I hope this will give you some ideas on improving your fencing skills. One thing some of us here in Minnesota have found is that the wildlife management people will not cooperate with us in dealing with bear problems unless we first put up a fence. We have also found that it is very, very important to report bear damage to the wildlife departments: If we are lax in reporting bear predation, the department doesn't let enough hunting licenses out for the bear season, and they do not know we have a problem – the old adage still holds: "The squeaky wheel gets the grease." BC

Don Jackson is a commercial beekeeper from Pequot Lakes, Minnesota.

For additional information on bear fences, call up the Alberta (Canada) Agricultural Food & Rural Development Web page at - http://www.gov.ab.ca/~agric/agdex/600/1600002.html They list other protection techniques and list fence resources.

Keith Rowe, from Cable, WI, has solved his bear problem this way. This trailer, which holds 20 colonies, has an attached bear fence. The posts are moved from the truck to the ground, outside, after the trailer is set and supports are put down. The bars, which connect the posts to the trailer, simply slide back into a recessed area under the bed of the trailer when it's time to go. The fence is solar powered.

People like bears; it's a fact. Black bears can back up traffic in Pennsylvania just by walking along a road. But when Winnie the Pooh turns into a snarling Jack the Ripper, it's not nearly so amusing. Ask any beekeeper who has had his hives wasted by Winnie.

The change in attitude toward bears often starts with a beekeeper's arrival at a beeyard where he finds overnight damage in the hundreds or even thousands of dollars. A number of hives may be broken into, and bears like to drag whole hives off into the brush where they eat brood, bees and honey in private. Black bears are very strong animals, and often very hungry, so once they have found a good place to eat, they are likely to return again and again. To bears, a beeyard is just a fortunate stroke of nature in their territory. It cannot occur to them that they are destroying a man's income and making him very much a partisan against bruins.

"It's getting so you can't keep bees commercially because of the bears," says Douglas Rose, a fourth-generation beekeeper in Northeast Pennsylvania. "They can hit between two and 10 hives in a night, and they tip over three times as many as they destroy. In the warmer weather, they may get driven off for a while if the bees are ugly, but in cooler weather, the bees stiffen up. The bears go right at 'em then . . . tipped hives mean cold bees."

Mr. Rose's records show he has lost more than 50 hives in a season to black-bear damage, and the damage is on the rise. Although he has bees out over a 6,000-square-mile area – "That's bees in seven counties and two states," he explains – he believes he is at the point where the bears will put him out of the commercial honey business. "Yes, it's the last straw," he explains. "I have only about half as many bees now as I did just a few years ago. There are a variety of reasons for this, but bear damage has more immediate impact than anything else. "My father kept bees for 40 years here, and he only had bear damage twice. He thought it was novel . . . you can put up with a little damage, but now it's gotten to be a constant thing."

Getting hit or missed by bears seems to be somewhat like fishing for smelt, where one fisherman gets his limit in 10 minutes and another standing 20 feet away can only curse his own lack of success. Although black bears have a range of up to 50 miles, they may not hit every spot within their territory, and this can set one beekeeper to cussing while a neighbor wonders what all the fuss is about. Jerald Ely, the first master beekeeper in Pennsylvania, keeps bees not very far from Douglas Rose. His is a smaller operation, which may explain why bears

don't find him so often. "I've been hit maybe four or five times over the last 15 years, and prior to that, I had 30 years clear," Mr. Ely says. He suffered so little damage he decided not to make a claim with the Pennsylvania Game Commission. In fact, Mr. Ely says bears bother him so little that he doesn't bother to fence his hives. "The fence is a pain," he says. "I wouldn't want a gate in the driveway."

Fencing against bears appears to be the second-most-effective means of protecting hives. (The most effective way, and one favored by a number of beekeepers, is shooting marauding bears, but this is often illegal and involves serious fines and legal fees if one is caught shooting bears out of season.) The Pennsylvania Game Commission administers a fund which pays for certain bear damage, and the commission also provides electric fence to beekeepers along with advice on stringing it for maximum protection.

When bears damage hives, a beekeeper has to apply to the game commission for compensation within 10 days of discovering the damage, according to Barry Hambley, a law enforcement supervisor with the commission, who is seen as an expert on bear damage. "A wildlife conservation officer (WCO) looks over the damage," Mr. Hambley said. "He is trained to identify bear or skunk damage, or whatever. The apiary must be within 300 yards of a domicile to qualify. Within a matter of days, the WCO makes his report to Harrisburg (headquarters of the Pennsylvania Game Commission), and they process the claim as effectively as they can. A beekeeper can probably have his claim paid in 30 days."

Supervisor Hambley said payment is made based on the beekeeper's estimate of loss. "Usually, we pay the damage claimed, and for loss of bees, and, although it's not required, we will replace honey lost according to the established price," he explained.

Bear damages are compensated through the Wildlife Fund in Pennsylvania, a $50,000 pot set up by law to help beekeepers and replenished as necessary. The fund is not usually paid out each year, but as bear damage increases and beekeepers become aware of their eligibility for compensation, payments may have to be increased. Pennsylvania state Sen. Roger Madigan (R-23) said he would support additional funding as it is needed. A member of the Game and Fish Committee in the state Senate, Sen. Madigan said, "I would give it strong consideration. Beekeepers have had major problems, and I would support an increase in hunting-license fees if the fund becomes inadequate. We may have to beef it up to ease the impact on beekeepers."

The game commission also advocates putting electric fences around hives to avoid bear damage. Barry Hambley said his offices will provide electric wire for individual sites of at least 10 hives, although the beekeeper must provide his own battery. "We will provide whatever it takes to surround the hives," Mr. Hambley said, "and the apiarist enters into a maintenance agreement. The fence – the metal parts, the wire – usually lasts about 10 years." Mr. Hambley said he was the first officer to erect such an electric fence, in Bradford County, Pennsylvania, in the early 1970s, and he called the acceptance and success rate of the program "excellent." "We may trap and remove a marauding bear first, but the ultimate protection is the wire," Mr. Hambley said.

Not all beekeepers agree with Mr. Hambley's description of the program. Douglas Rose says he has seen bears go through electrified fences, and on occasion, dig under them. Even putting bacon on the wire to encourage bears to get shocked on their sensitive noses doesn't always work. And, he says, the game commission's schedule and the schedule kept by beekeepers just don't work well together. "If he (the WCO) says 'be there' at 2:00, you better be there then, or you're up the creek. Sometimes you just can't be there. Too bad for you. They cater to hobbyists.

"As for the fence, well, the commisssion gives you the wire and the insulators, but when I asked the WCO about gate handles, he said, "Just climb over it!' Right, with 90 pounds of honey in my hand. I found it was easier just to go out and buy the damn fence. I need the fence today, not in four months after they can requisition it."

Master Beekeeper Jerald Ely believes the problem is that the game commission is not prepared. "I believe they just do not understand beekeeping," he said, adding, "I agreed to talk to them about keeping bees, to help out if I could, and then I never heard back. I could not believe their rigidness and complete non-understanding."

It is more likely that the Pennsylvania Game Commission, which must cover huge forested areas with few personnel, is just understaffed. Along with enforcing game laws and policing gamelands, WCOs must help manage growing herds of deer, flocks of turkeys, and . . . bears. There is a program for trapping marauding bears, but beekeepers say by the time a WCO arrives on the scene, the bear is long gone. When they are able to trap a bear, the solution may only be temporary; as Officer Hambley explained, trapped bears have been released up to 100 miles away from the trap site, only to return within a few days. On top of this, they are running out of remote areas for bear release while bruin population has grown to the point where hunters take black bear in 47 of Pennsylvania's 67 counties, and beekeepers have trouble wherever the bears are.

"It wouldn't be too much to ask the local game protector to know where hives are located before bears are released in an area," says Sen. Madigan. "We should at least encourage the trapping team to be aware. The bears are becoming civilized, if you want to call it that, more acclimated to humans, not the re-

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verse and we aren't learning to live with them."

Beekeeper Rose has worries of his own about trapping and transferring marauding black bears. "Moving them just passes the problem from my bees to yours," he says. "I hear more and more beekeepers say the only solution is shooting them."

This is a drastic solution that is gaining some currency of late. Pennsylvania farmers are allowed to shoot wild animals taking their crops. For example, deer grazing on alfalfa, or even bear tearing up a fall cornfield, may be legal targets for farmers. The problem for beekeepers is that they are not seen as farmers, and often not as people taking a substantial portion of their livelihoods from honey. There is no special logic to this, and a man who has had a good chunk of his annual income wrecked in a single night is unlikely to look fondly on the bear who did it, especially when that bear is likely to return again and again until a beeyard is destroyed, all before a wildlife conservation officer can free up the time to trap the animal. As handsome an animal as a black bear may be, his good looks just won't come before a beekeeper's family, and Pennsylvania courts are beginning to support the apiarist's position.

"The game commission has lost cases in court lately against men killing bears to protect livelihood," Barry Hambley says. "We try to assist beekeepers to avoid that by doing other things first."

Of course, a problem with shooting bears is that the beekeeper is rarely on hand when a bear comes by. Damage usually is done at night, and even during the day, few beekeepers can afford to sit at one beeyard for days on end waiting for a particular bear to show up. In addition, many beekeepers are not hunters, and might only succeed in wounding a bear and condemning it to a slow and painful death. However, serious bear hunters know their business, and the idea is being floated to seek their help in limiting the bear population.

The hunters are willing. Bill Benedict, a Pennsylvania resident who belongs to a group of bear-hunting aficionados who consider themselves self-styled Bear Busters, said his group would be happy to help beekeepers with their problem animals. "We would certainly be willing to help with our time and expertise," Mr. Benedict said. "We have a good crew, dedicated to bear hunting, and we don't give up. I hear there are some beekeepers gut-shooting bears and leaving them to rot, and that's just wrong. We eat the meat, or give it to somebody who wants it, and we do a good job hunting. Let's do it legally."

Hunting may be what protects beekeepers from bad bears, although it is probably hunting which caused the problem in the first place. Despite the fact that honey production in Pennsylvania accounts for close to three quarters of a million dollars in income, black bears get reams and reels of more positive attention than do beekeepers. Bear hunters, tourists and photographers spend money over most of the commonwealth to get near a bear for one reason or another, and they count it time richly rewarded when they succeed. Parents happily point out bears to their kids, and give them a Teddy at Christmas. Honey is sold in jolly little bear jars. People like bears.

So, it is very hard to build a grudge against your Christmas present, and bears win the public-relations fight over beekeepers hands down. Pennsylvania may have to expand its bear-hunting season, or treat honey like any other crop that a farmer can protect. Many agree that the rights of a beekeeper to defend his livelihood ought to be at least as important as the rights of a wild animal, and maybe even more important. BC

Brian Gafney is a newspaper columnist, freelance magazine writer, beekeeper and bear watcher from Great Bend, PA.

For information on Bear Conservation Programs, contact The Bear Den at - http://www2.portage.net/~dmiddlet/bears/index.html on the web. They cover all bear species, programs and problems.

Richard Bonney

The Basis Of It All

"The Bottom Line On Hive Bottoms"

Everything starts with a basis, a foundation. Bee hives are no exception, and for hives, that foundation is two-part – a bottom board, fairly conventional, and a hive stand, often less conventional. We don't always think of them together, but they are a logical grouping, and the one must fit the other.

One reason new beekeepers especially don't think of them together is that when offered for sale, beginner outfits and standard hives rarely include a hive stand. It becomes an afterthought. The bottom board, on the other hand, is one of the acknowledged components of a standard hive when we set out to buy or otherwise acquire a hive, and in design and construction, there is not a great amount of variation. Hive stands, though, are something else.

Over the years I have seen a variety of hive stands, some good, some less so. An obvious one is the style found in many equipment catalogs, the one with the slanted landing board. Others include an old tire still mounted on a rim, a discarded pallet, several bricks or concrete blocks, a pair of railroad ties, and of course, bare ground. I won't quarrel with anyone's choice of stand other than to point out some generic difficulties.

Because a hive is taller than it is wide, and often quite tall, it is a fundamentally unstable structure. A broad, level base helps ensure stability. Many hive stands are just dropped on the ground and wherever they fall is accepted as close enough to level. And that location may be O.K. when the hive is new – still small and light. Hives do grow, however, and gain weight, and the stands and their underlying supports do tend to sink into the ground over time. Bricks or anything similar will disappear. I once used bricks under my hive stands to keep them from direct contact with the ground, but I found that after three or four years, the bricks had sunk so that the tops became flush with the surface of the ground. A wooden bottom board resting on these bricks would then be in contact with the ground. Furthermore, hard spots or soft spots in the ground can make for irregular sinking, with the hive tilting as a result.

Unprotected wood in direct contact with the ground will rot, whether it be hive stand or bottom board. Paint alone is not enough protection. Given time, the rot can work its way up through a stand and into the bottom board. Since it is working from underneath, it is often undiscovered until some critical moment.

A large stand can cause or allow vibration, to the detriment of the beekeeper. A pallet, for instance, is usually 3 to 4 feet square. One, or sometimes two hives will fit nicely, but usually the beekeeper must step onto the pallet in order to be close enough to work. The vibrations from stepping on and off several times while working the hive are probably going to stir up the bees, especially if the stand is not firmly placed. If there are multiple hives on the same stand, all the

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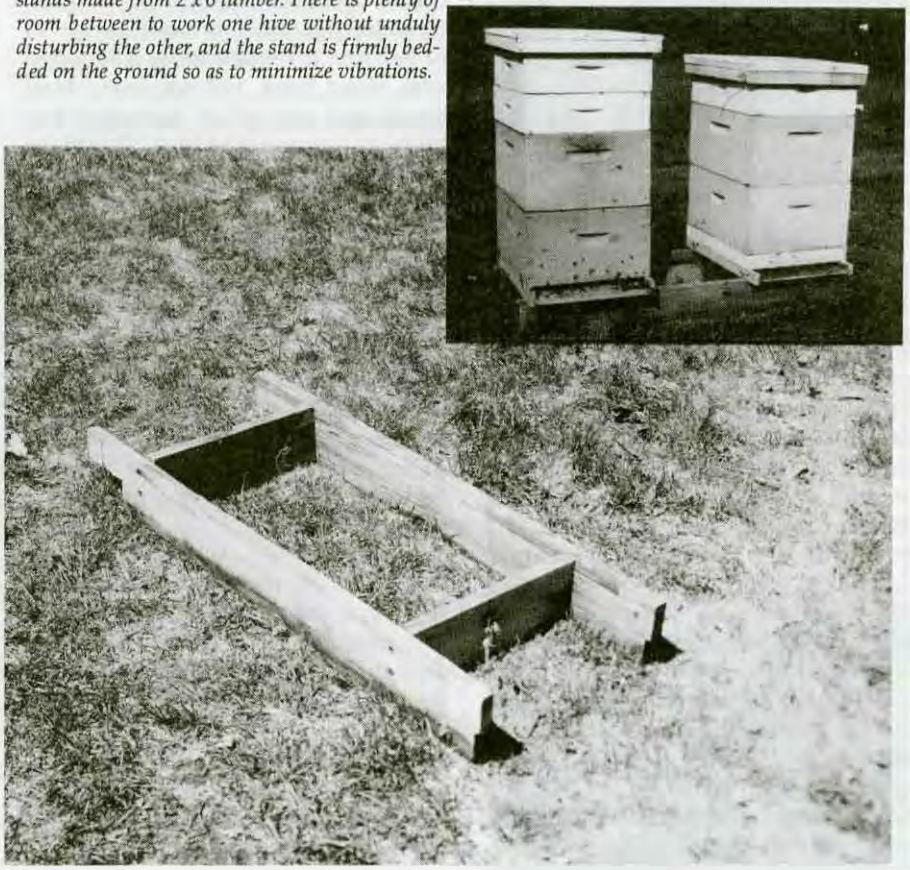


These hives are well off the ground on 4-foot-wide stands made from 2 x 6 lumber. There is plenty of room between to work one hive without unduly disturbing the other, and the stand is firmly bedded on the ground so as to minimize vibrations.

This bottom board was painted before assembly and the joints are tight. With care it will last a long time.

This bottom board has had a hard life. It was resting on a rotten hive stand and as the rot moved up, insects moved in. The board had not been painted for a long time.

THE BASIS OF IT ALL ... Cont. From Pg. 161

bees become upset and they will tell you about it. Their comments will be pointed and barbed. A long, narrow stand with many hives side by side will give progressively more upset bees as you work your way to the far end.

Over the years I have used many different stands, but I have finally settled on one I like. It is a design that meets most of the difficulties just mentioned. First, my stands are made of 2 x 6-inch treated lumber. Such lumber lasts a long time, even in direct contact with the ground. I would not use treated lumber in constructing a hive, but I see no problem using it for a stand. The bees have minimal contact with the stand.

The stand itself is four feet long, 19 inches wide front to back, and not quite six inches high, reflecting the actual dimensions of a 2 x 6 – about 1-1/2 x 5-1/2 inches.

Because the hive stand is of treated wood, it can go directly on the ground so it has a large area of contact with plenty of stability. It is small areas of contact that sink the fastest. The four-foot length will accommodate either one hive, in the middle, or two hives, one at each end. Either configuration works well, and even with two hives there is plenty of room between them for working. Furthermore, you can step up closely to the hives to work them without stepping on the stand.

Originally, I used 2 x 4-inch stock for my stands, but I decided that the extra two inches in height was worthwhile. The bottom board is lifted just a little higher off the potentially damp ground, mowing the grass is a little easier under the landing board overhang, and I don't have to bend over quite so far when working the hive. (Every little bit helps.)

With a good hive stand in place, we can next think about the bottom board. This is the hive component that takes the most abuse – from the bees, from other insects, from rodents, from the elements, and from the beekeeper. Although the bees do propolize the bottom board and try to keep it clean, they also drop large amounts of debris on it. To their credit, weather permitting, they do try to keep it clean, but bottoms tend to become a repository of discarded wax, dead bees, old cocoons, dead mites and any other material that finds its way into the hive. This frass and debris often becomes a home for other insects. A study done a few years ago on a particular hive in the Southwest showed that the yearly accumulation of such debris averaged around 12 pounds. The bees do a good job of cleaning out the mess in the active season, but it becomes a beekeeper's chore in the spring if the bees have been confined. If this debris is not cleaned out, it may absorb moisture to the detriment of the underlying wood, and perhaps to the bees as well.

Although there are some variations in bottom-board design, reversible boards are the most common, and that design is fairly well-standardized. Dimensions are governed by the hive body. For a ten-frame body, the bottom is 16-1/4 inches wide by about 22 inches long and 1-3/4 to 2 inches high. For an eight-frame hive or a jumbo hive, the bottom would be correspondingly narrower or wider. This design allows the board to be placed so the bees have a two-inch-wide landing platform and a 3/4-inch-high entrance across the front of the hive, or when the board is turned upside down, a 3/8-inch-high entrance.

This capability to reverse harks back to a time when beekeepers thought in terms of the bees heating the hive interior in the winter. Reversing to the 3/8-inch side gave less interior volume to heat. Now we understand that although the bees generate heat and keep their cluster warm, they do not heat the hive per se. There is far less concern with reversing the bottom and relatively few beekeepers seem to do it anymore. Interestingly, the difference in volume for the inside of a two-story, ten-frame hive is but .06 cubic feet out of a total of about three cubic feet.

I have no quarrel with the design of a reversible bottom, and it is in fact a strong construction. The bottom could be made simpler, however. A basic bottom board is often constructed by laying out a board or boards to the 16-1/4 by 22-inch dimension, then fastening a rim on three sides of the top. The rim height can be whatever the beekeeper chooses, keeping in mind the size of standard entrance reducers and mouse guards, and the possible need to slide in a sticky board for *Varroa* checks. The standard is 3/4 or 7/8 inch, depending on the manufacturer.

An advantage to the standard reversible boards commonly available is that the dado slots in the side rails

serve to house and protect the end grain of the cross members. End grain is a place where moisture can find entry with relative ease. Although other hive components have end grain exposed – at the corners of hive bodies and supers, for instance – moisture is less of a problem in those upper reaches.

No matter what the design of the bottom board, I strongly advocate all of the component parts receive a coat of paint or sealer *before* the board is assembled. My own experience has been that moisture *does* seep into the joints of the bottom board and the wood starts to rot. It is not possible to seal the joints permanently by painting after the board has been assembled. Pre-assembly painting can pay off in years more use.

Conventional wisdom says that no part of the interior of a bee hive should be painted, that it will disturb and upset the bees and perhaps cause them to abscond. My experience, and that of many other beekeepers, has shown otherwise. Paint that is allowed to dry thoroughly and season for a while does not ordinarily bother the bees. I am not advocating that the inside of the hive be painted routinely, but I do paint my bottom boards completely. Furthermore, I find that they need repainting frequently, especially the floor area that receives so much wear and abuse. Bottom boards are good things to have extras of, so that they can be replaced and reconditioned easily and often.

For many years, bottom boards have been made throughout from 3/4 or 7/8-inch stock. This size has served well, but I notice that one equipment dealer is now offering a bottom with 2 x 3-inch side rails and 7/8-inch cross members. The catalog mentions that these bottoms stand up better to frequent moves as happen when hives are rented out for pollination. The thicker stock can tolerate more abuse and allows for stronger joints. There is something to be said for such boards even for a stationary hive. If making your own, a 2 x 6 board ripped lengthwise would give suitable stock for the side and back rails – not quite 2 x 3, but close enough. If I were making my own bottom boards, I would seriously consider these dimensions, although I would probably stay with 3/4-inch-thick cross members. For most of us, the thicker 7/8-inch boards are not readily available.

To further extend the life of my bottom boards, I keep some extras on hand so that at spring-cleaning time, I can remove and replace any that are looking tired and worn. These can be reconditioned at my convenience. Without the extras, procrastination would very likely prevail, and the worn ones might not be replaced until too late to salvage them.

Of course, I know that none of you procrastinate.BC

Richard Bonney is Extension Entomologist in Beekeeping for the state of Massachusetts. He is a regular contributor to these pages.

Don't Hesitate The First Time

CATCHING SWARMS

Keith Rawlinson

I could hardly wait to become a beekeeper, so I read all of the books, magazines and pamphlets I could get my hands on regarding the topic of bees and beekeeping. On more than one occasion, I have read that after keeping bees long enough to gain some experience, one should consider the thrill and satisfaction of capturing swarms as a means of acquiring bees. I remember thinking that some day, when I have acquired the necessary skill and knowledge, I would love to be a "swarm catcher." The title alone sounds fearless and adventurous. Well, due to some unusual circumstances, being a swarm catcher turned out to be the very first experience I ever had with bees!

In February, I ordered two three-pound packages of bees to be delivered in the Spring, and spent the entire Winter eagerly building everything I needed to have two complete hives. By early Spring, my hives stood proudly in my backyard, looking like sturdy, ivory watchtowers just waiting for some bees. I continued my study of beekeeping as I anxiously and, I admit, rather impatiently, waited for my bees to be delivered the first week of May. I was as excited as a kid on Christmas morning at the prospect of actually being able to call myself a beekeeper, and to be involved in something only a select few seemed to have the nerve, the desire and the determination to do.

In May, I received word that the apiary from which I had ordered my bees was running terribly behind in filling orders, and that it would be at least an extra month before my bees could be delivered – an extra month? I just couldn't stand to have to wait an extra month. There had to be a way to get myself started before that.

I was so crushed that I told my sad story of disappointment to any friend who would listen. One such friend just happened to work at the county extension office and informed me that she received a barrage of calls every Spring for someone – anyone – to come rescue nervous citizens from swarms of bees which seemed to swoop down out of nowhere and take up residence on a tree, a bush or even a front porch. She asked if she could please pass along my phone number just to get all those people off her back. Since I had absolutely no experience whatsoever with bees, I was a bit apprehensive. After all, deep down inside I was totally convinced that capturing swarms was best left to – well, people who actually knew what they were doing. But, I agreed to her request and returned home.

The very next day, two calls came in from frantic people eager to have their uninvited guests removed. I decided to go directly from the first call to the second, so I informed both callers that I was on my way. I very excitedly gathered together my coveralls, veil, gloves, brush and a couple of cardboard boxes into which to put the bees and headed out.

The first call was from the owner of a golf course which had a football-sized swarm hanging ominously from a branch next to the 17th hole. He informed me that for the past couple of days, people had been playing from the 16th hole to the 18th, and were starting to complain. I told him it was no problem and within seconds, we were climbing onto a golf cart and heading out. As we were speeding toward the 17th hole, I found myself mentally rehearsing the procedure I had read on how to capture a swarm so I could convince the people who gathered to watch that I had at least some idea of what I was doing. As the owner went to get a stepladder for me, I confidently hopped off the cart and began climbing into my bee suit as if I had worn it more than just one time, trying it on for size in the store two weeks before.

I ascended the ladder to reach the bees suspended about seven feet off the ground, and used a spray bottle to glaze them lightly with sugar syrup. According to what I had read, it was simply supposed to let them fill their stomachs to help calm them, but that wasn't the way I saw it. I thought of it more as a payoff if the bees agreed not to make a total fool out of me in front of the gathering crowd waiting to be impressed by the expertise everyone but me was sure I had. I gave the bees a minute or two to eat the syrup, then opened the cardboard box and set it on the ladder under the swarm. As I reached up to take hold of the branch to which the bees were clinging, I thought about all the things the books had told me I could expect the bees to do, and hoped nervously the bees had read the same books.

I brought the branch down sharply against the rim of the box and heard the satisfying sound of several pounds of very confused bees drop with a dull thud onto the bottom. I closed the box, except for one flap left open to allow the last of the bees, now forming what seemed to me like a frenzied cloud around my head, to fly in and join the rest of their sorority. After about two minutes, most of them were in the box. I closed it up, taped it shut, and punched several small holes to allow for ventilation. I descended the ladder, and carried the buzzing box triumphantly back to the cart as thunderous applause erupted from the crowd around me. I felt like some sort of super hero, complete with costume, who had just saved the day. "Have you ever gotten stung doing this?" several people asked. I was happy that since I had never even done this before, I could honestly tell them, "Nope, not me."

I removed my suit, rode the golf cart back to my pickup truck and placed the bees into the back. As I pulled out of the parking lot, I waved to the crowd and thought to myself: "Well, at least now I can tell the people at this next swarm call that I have experience." BC

Keith Rawlinson is a hobby beekeeper from Nova, OH.

How To Make A Simple
SWARM CATCHER

Carlton Cockey

Our bee club, The Pikes Peak Bee Association, has a program for swarm control. One person is called, usually by the police, and that person calls the next one on the list of those wanting swarms. Since I moved to Colorado, I have captured as many swarms as I could get.

I have been interested in making a swarm retriever for myself, as some swarms are difficult to get with a brush and bucket. In 1993, I tried to make one with a vacuum and a hose going to a bucket with two pipes extending out of the lid. The hose goes to one pipe that is covered with wire mesh so the bees will not be sucked into the vacuum. The other pipe has a hose that will take in the bees. I tried this and was disappointed that only about 5 percent of the bees survived. I used it on a second swarm and the same result occurred. I did not use it again in 1993. In 1994, I did not use it at all. I am not mechanically inclined, so it takes time to think things through.

During the warm spell we had in January and February 1995, I was working at my desk and the thought came to me to use a larger hose to cut down the air pressure. So I hooked up a larger hose to my 1.25 horsepower shop vac. It still had too much power but I started to think about making it work. I set out a couple of frames that had not been cleaned up from extracting last year, and bees started to fly in and clean them up. I tried the same system with the same tragic results. I thought about it and came up with the idea that maybe a soft landing would help. I crumbled up some newspaper and put it in the bucket and tried again. This time I did not lose any bees, but I could see a problem getting the bees into a hive with that paper. I dumped all into a swarm bucket that has wire mesh on two sides. Then I tried plastic grocery bags and again no loss of bees, but I could see the same problem in getting them into a hive. I dumped them into another bucket. Each time I must have had about 200 bees in my experiment.

Then I stopped to think about the situation and as I stood in the kitchen, I looked at a sponge lying on the sink. That gave me an idea, and I purchased two 6 x 9 x 2 sponges and fit them into the bottom of the bucket. I then let all the bees out of the two buckets in the garage, and they flew right to the windows in the garage door. I did make a mistake by leaving my wife's car inside. That cost me a car wash job. This was the bees' second time down the tube and again I did not lose any bees. I used this method for catching a couple of swarms, but all the time I was wondering how I could catch them in the vacuum, thus eliminating the center bucket.

My simple swarm catcher is made from the top of my shop vac, a large diameter hose, and a vented pail with a sponge on the bottom. Of course, you need to be in range of an electrical outlet, but most urban swarms are.

I put a two-inch sponge in the shop vac and tried that on the next swarm. It was an improvement over the original plan in that I lost only about 40 percent of the bees instead of 95 percent. I found that the top of the shop vac fit on a 3½ gallon plastic bucket and would lock in place. With the large 2¼-inch hose the air pressure was still too much. I cut three five-inch slots in the bucket with my jigsaw. Then I cut two more slots and then two more before I felt comfortable. It worked. The bees go down the tube, and there is no damage to them.

All you need is one plastic bucket fitted with the motor of a small shop vac with the hose and tubes to reach, and the bees are yours without any loss.

This is a swarm retriever that works, and the cost is about $50. BC

Carlton Cockey is Pastor of The First Baptist Church in Simla, Colorado, and a first rate swarm catcher.

SPRING PACKAGE

Julie Sobchack

The day began with rain and a raw wind blowing from the north, but a woman we asked, a woman who should know, assured us it was a fine day for hiving our first bees.

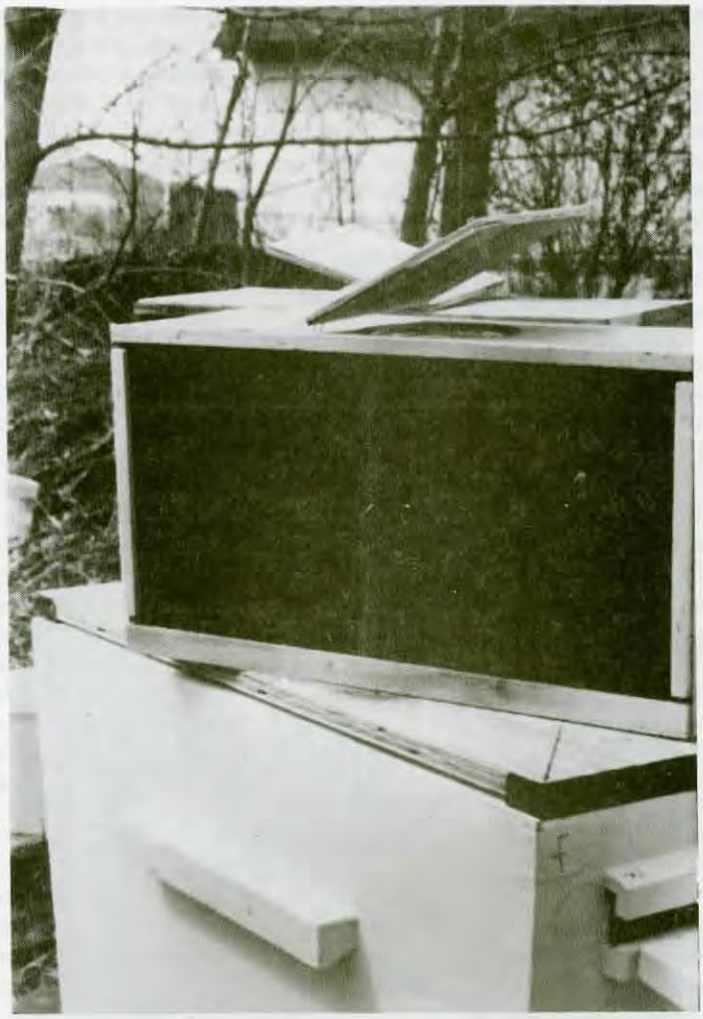
After we picked them up, we settled them in the garage with a gentle brushing of sugar syrup on the shipping cage, as per the instructions. Food and drink seemed to revive them, and they began whispering together, in a conversation we couldn't understand.

All day, the rains swept across the valley, accompanied by a snow flurry or two, and we wondered what would be best for the bees – hive them or keep them in the garage until the weather improved? Nothing in any of the manuals we read mentioned a cold, rainy day.

We finally decided, late that afternoon in a brief period of sunshine, to put them into their prepared hive. My husband's fingers were shaking as much as my own, and that's when we spilled sugar syrup into his new hat and across his veil. It wasn't exactly downhill from there, but it was the first in a string of uncomfortable moments. We suited up in hats, veils (his cleaned as best we could) and gloves.

I carried the bees from the garage. Their conversation rose in pitch, and they seemed excited. I began to wonder if my nervous fingers were transmitting messages through the shipping cage.

Manuals can tell you how to accomplish anything, but until you get your hands into it, whatever "it" is, you're never fully prepared for everything that can go wrong. We had no idea what to expect when the burlap refused to smolder, and, instead, burst into flame.



The day before, we'd practiced with all the smoker paraphernalia, and succeeded in making perfect, gentle puffs of smoke. It had seemed easy enough, but we hadn't had our gloves on then. Today, as we applied match to burlap, great clouds pillared up. Depriving the fire of oxygen only seemed to make it burn more fiercely.

We were under the impression, again from the instructions, that we should hive our bees quickly, with slow and deliberate movements. This is a real oxymoron to nervous newcomers to the ancient and revered sect of beekeeping, but we did our best through all that happened next.

We hurried to the hive, led on by the pillar of smoke, both of us almost done in by nervous excitement, and we hadn't even begun the important parts yet. Our hands were really shaking by now, and only some of it was from the cold.

Tom wet down the bees with a sprayer full of warm water, and cast a baleful eye at the lowering rain clouds blanking out our brief sunny respite. It might've been a curse he muttered under his breath; I couldn't tell.

He carefully pried the syrup can

from the carton and lifted out the queen cage. It was at that moment that a few intrepid souls, sensing freedom, crawled forth and were killed under a board we had placed over the hole. It seemed like slaughter.

Our hearts plummeted further when we saw that the queen's housing was not at all like anything we'd seen in our instructions. Her small, wooden cage was covered with mesh on one side and sealed at the bottom with a cork. The cork fit flush against the wood and looked impervious to our untrained eyes. We thought the queen would die in there. How could the workers release her?

The nail we'd brought with us to poke a hole in the candy we'd been prepared to expect was pretty ineffectual once we got it out of Tom's pocket; gloves make *many* small tasks difficult.

He jammed the nail into the cork, hoping to hook it enough to pull it out, but drove it inward instead. We could've killed our first and only queen! A quick examination showed us she was fine, but agitated. We still thought it would be impossible for the others to get her out of there; every time we tried to lower her cage into the hive, the cork fell back into the hole. Tom finally ripped the mesh off, another nearly impossible feat in thick gloves. The cork fell out, the queen remained inside, he jammed her cage between two frames and she was in!

We quickly poured the others into the hive to follow the leader, and it is with a great deal of reluctance I relate the rest.

The bees huddled together in a soft, golden ball, whispering, when we tried to help them into the hive. Those gloves again! No matter how gently we tried to persuade them, nudge them, push them, too many of them died under their keepers' well-meaning but clumsy hands. I will never forget it.

The instructions told us that once we had poured the bees into the hive, we were to take the shipping carton to the entrance and any left inside would fly out to join their sisters. We waited, but no one wanted to leave the shipping cage. Some bees were balled in front of the hive, so I got a pancake turner from the house and scooped them up onto the bottom board, near the entrance. A few, by now completely dried off from the dousing they'd received, went about in circles, searching for the others. It looked like pandemonium, and once again we were thrown into a quandary – how long do we wait before we close the entrance with grass to keep the bees from flying away?

We waited longer, hoping the outside bees would dry off and fly to the hive. None did. Finally, we stuffed the entrance with fresh spring grass, and, drained of energy, we returned to the house.

After dark, Tom went back and unblocked the entrance and poured the other bees onto the bottom board, near the entrance. We hoped for the best. I told myself over and over that for untold millennia, bees have survived in spite of humanity's meddling hand. The morning sun would reveal our success or failure.

When the first rays struck the hive, I could see a few bees going about their first day of residence in our garden, flying up and back in short bursts, and my heart lifted with them. The level of syrup had gone down. They were eating.

Day after tomorrow, when we inspect the inside of the hive for the first time after our botched attempts at installing our first packaged bees, we'll see if our enterprise succeeded. We can only hope. . . .

"It began as a dream, a wondering, bungling kind of can-we-really-do-this, soul-satisfying venture. We now feel connected to a larger natural world."

And now, the rest of the story.

In spite of a tenuous beginning, the bees settled in beautifully, foraging immediately on the early dandelions. Our initial inspection showed us that not only were they drawing comb, but the queen was laying. We saw eggs, pollen, honey – everything all the books told us would be there. And the bees!

We were awed by their gentleness; never once have they stung us. Well, once, but that was my husband's fault. He squeezed one when he was changing the syrup jar, and it responded instinctively. But only one sting in the entire summer. No one believes that the hordes (according to *The Dent Dictionary of Measurement*, they are more properly termed "a grist of bees") of laden workers streaming in and out of the hive all summer long paid no attention to us as we learned how to open and inspect our very first hive, and eventually, to collect the golden honey.

We pulled a phenomenal 75 pounds from our first hive, and could probably have taken more, but were wary (still) of removing too much from the bees' own winter stores.

What began as a dream, a wondering, bungling kind of can-we-really-do-this has become one of the most soul-satisfying ventures of our lives. We feel connected, like never before, to a larger, natural world; a world of ancient cycles and societies that will continue as they always have, if we don't interfere too much. BC

Julie Sobchack and her husband, Tom, are still learning how to keep bees, and encouraging others to do so too, from their home in Salt Lake City, Utah.

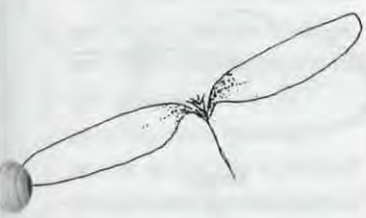
GROWING YOUR OWN

Annuals

B.A. Stringer

Most of us don't have acres and acres of unused land available to grow a crop of annual flowers for our bees. Rather, we have patches of flowers here and there, lending color, filling empty spots and feeding bees, birds and butterflies. That's what annuals do.

But buying enough nursery-grown plants to fill all those holes can be expensive. And it never fails that they don't have enough of the right plant, or the right color or they don't look



Marigold

'healthy' enough for the money they want.

So, to get enough plants, or the right kind of plants, or just plain healthy plants - you've got to grow your own. Unless, like many, that was your first choice anyway. But if you've never tried, where do you start? It doesn't take a college degree in horticulture to grow good annuals, but it does take tending to a few details.

To get a good start toward raising vigorous plants, buy good seed. Be sure your seed is fresh. Do not buy it too far in advance of planting time; for best results, allow no more than a 3-month interval, keep the seed dry and follow any special instructions for storage printed on the packets. When buying seed, look for new varieties listed as hybrids. They usually cost more, but their vigor and show make up for the increased price.

We see them and admire them in their colorful floral abundance. Annual flowers are easy to grow and provide prolific bloom for an extended period, during which many are busily worked by bees for nectar or pollen. You can extend the flowering by successive plantings, or getting even earlier blooms by Fall sowing of hardy varieties. Deadheading the plants (picking off the spent flowers) also prolongs the bloom and keeps the plants tidy. The spent flowers produce seed, which is a signal to the plant to cease flower production as its reproductive function has been fulfilled – remove those flowers and 'fool' the plant.

Annuals have a lot of growing to do in a short time and will thrive in full sun, where they can also be fully appreciated by bees. Whether started by seeds or transplants, they need adequate water to get established and will reward you with a copious display of riotous color throughout their bloom.

The Daisy Family, or *Compositae*, contains a lot of bee plants that are common components of gardens. Because nectar and pollen are produced by the central disk flowers, and not by the surrounding ray flowers (which form the showy petals), single-flowered varieties, rather than the fluffy doubles, are of most benefit to bees. Familiar to all of us, the Sunflower (*Helianthus annuus*) is an excellent all-round flower for any garden. Bees love the large field of disk flowers in a radially symmetrical pattern from which they gather nectar and pollen; people and birds love the seeds resulting from the pollination. The best multiple use will be gained from single-flowered, large-headed kinds such as "Mammoth Russian," which usually require staking to support the huge flower heads atop the sturdy stems. The heads are worked by bees from Summer through Fall until the flowers are damaged by frost. The Sunflower is the state flower of Kansas, and most cultivated varieties probably came back to us from seeds originally collected here and returned to Europe for breeding. Easily grown in most warm sunny sites, Sunflowers are a gratifying garden project for children as well.

Another Composite deserving attention is Cosmos (*Cosmos* spp), providing nectar and pollen throughout Summer and Fall. Open and branching, sometimes reaching head height, these airy plants work well as fillers in the garden to supply bloom when earlier Summer flowers

Bee Balm

STARTING

You must invest in lighting equipment and devote considerable care if starting plants indoors because there are several problems that can arise.

Home-started seedlings frequently are attacked by a fungus disease - damping-off. Those seedlings that escape the disease are weak and spindly and never become good garden plants; conditions

Golden Honey Plant

of light, temperature, and humidity found in the home may not be favorable for plant growth without careful manipulation.

Damping-off causes seeds

Continued on Next Page

GROWING

to rot and seedlings to collapse and die. The disease is carried in unsterile soil and may be present on unwashed planting containers and tools. Soil moisture and temperature

Cleome

necessary for germination of seeds also is ideal for development of damping-off. Once the disease appears in a seed container, it may travel quickly and kill all seedlings planted. This can be prevented by using sterile media and washed or new containers.

Use fiber seed flats or peat pots. These are sterile, inexpensive and easily obtainable from garden shops.

If you use wooden boxes or clay flower pots clean them well by soaking, washing and wiping with a 10% bleach solution. If, despite your precautions, this disease appears, throw out the whole mess and start over.

Hyssop

fade. Native to Mexico, Cosmos is tolerant of most soils and drought-resistant over its wide growing range in North America. Single-flowered varieties of *C. bipinnatus* come in shades of red, pink, purple and white, all with yellow centers. Cosmos will self-sow readily, attracting birds to the crescent-shaped seeds, so you can help support both birds and bees with this plant.

Nectar and pollen are also produced by the Cornflower, or Bachelor's Button (*Centaurea cyanus*), also a Composite. While this genus contains a lot of weedy plants, many of the showy garden varieties have had such humble beginnings are well. Cornflowers were simply pretty, blue-flowering weeds in cornfields before they were selectively bred to please the gardener. Grown in full sun in neutral soils, most of the common garden types grow to about 30 inches, flowering all Summer in blues, pinks, wine-red and white. A close cousin that is also a good bee plant, Sweet Sultan (*C. moschata*) grows to two feet. An excellent cut flower, it comes mostly in pale purples and reds. All of these plants should be watered at ground level rather than by overhead sprinkling to protect the flowers.

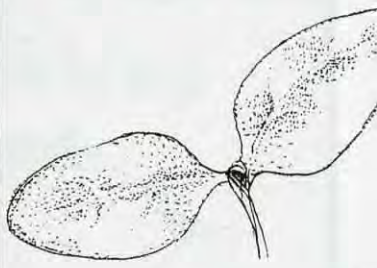
Yet another bee-useful Composite is the annual Coreopsis, *Coreopsis tinctoria*, also called Calliopsis, from which bees collect both nectar and pollen. The brownish-purple centers of these flowers are ringed by warm yellow and bronze petals, banded with contrasting colors. There

Sunflowers are a striking annual to raise each year, providing beauty, and food for birds, bees and butterflys.

The best media for starting seeds is a commercially available material blended specifically for this purpose made from peat, vermiculite and other soil amendments. There are several on the market.

Fill a pail about two thirds full and thoroughly wet the mix. Then, fill your seeding container, whether a flat, pot or tray. Make sure there is drainage from the bottom.

Make a furrow one-fourth of an inch deep in the soil mix. Sow large-seeded plants -



Borage

cosmos, zinnia, marigold, nasturtium, cornflower, sweetpea, morning-glory and the like - directly in the bottom of the furrow. Before sowing small-seeded plants, fill the furrow with vermiculite and sow them on the surface of the vermiculite.

After you have sowed the seeds according to directions, cover all furrows with a thin layer of vermiculite, then water with a fine mist. Place a sheet of plastic or glass over the seeded containers and set them where they can be kept at a temperature between 60 and 75 degrees.

The container needs no further water until after the seeds have germinated. Nor do they need light. Under no

YOUR OWN

Catnip

circumstances should the covered containers be placed in sunlight; heat buildup under the cover could kill emerging seedlings.

LIGHT

As soon as the seed has germinated, remove the cover and place the seedlings in the light. Window sills do not generally make good light sources, as the light is diffused, comes from only one direction, and the period of strong daylight varies daily. In addition, the air surrounding plants on a window sill is too dry and the temperature fluctuates.

For best results, seedlings should be raised under lighting conditions that can be closely controlled as to intensity and duration. Use a fluorescent tube as the light source. For proper intensity, place the container 6 inches below the tube. Control the duration of lighting by connecting the fixture to a timer. You generally want 12 - 14 hours of light per day. Read label instructions for more lighting information.

Lavender

are several varieties available, dwarfs or the regular three-foot-tall plants that resemble Cosmos. Again, avoid the double-flowered types if you want to provide for the bees. Calliopsis are easy to grow from seed and may reseed themselves, attracting birds. These cheery plants produce good cut flowers and are easy to naturalize, thriving in full sun with minimal watering.

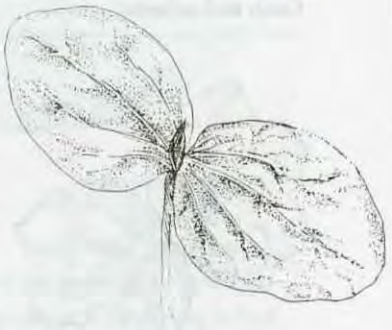
Are you familiar with Himalayan Balsam? This giant Impatiens (*Impatiens glanduliferal*) is quite different from the Summer bedding "Busy Lizzies" Impatiens. Himalayan Balsam grows a statuesque four feet tall, carrying toothed leaves on fleshy, succulent stems. It blooms for a long time, about mid-Summer to frost, and is freely worked by honey bees and bumble bees for both nectar and pollen. The clusters of large, Foxglove-like flowers have markings on the pink to purple bells, and a curved spur at the base of each flower. Nectar is secreted into this spur, filling it, and so is easily accessible. Bees walk right inside the flower, emerging dusted with the white pollen from anthers on the flower's "roof." Himalayan Balsam grows to surprising heights for an annual, so is best planted in the background, in a sunny, well-watered spot. Its common name in Britain is "Policeman's Helmet," referring to the shape of the flower. Sometimes the Impatiens group are called "Touch-Me-Not," from the ripe seedpods which snap open at a touch, reseeding prolifically.

Some common names can really give you an idea of the flower, sight unseen. Try these: Poached Eggs, Fried Eggs, Butter and Eggs or Meadow-Foam. All belong to *Limnanthes douglasii*, a California wildflower which has graduated to the garden. In their native habitat, yellowish forms appear near the coast and pinkish ones in the Sierra foothills, all producing nectar and pollen. The plants

Borage has hundreds of beautiful blue blossoms, protected from the weather, that bees just love.

WATER AND FERTILIZER

After the cover is removed from the container, the new plants must be watered frequently, and they must be fertilized. You can do both of these jobs at one time by using a solution made by mixing a soluble fertilizer with your water.



Pumpkin

When you use this solution, moisten the soil thoroughly, being careful not to wash out the seedlings when you water them. To avoid this apply the solution as a fine mist, or soak the container in a larger container filled with the solution to water from below.

FIRST TRANSPLANT

When seedlings develop two true leaves, thin those in peat pots to one seedling per pot. Transplant those in flats to other flats, filled with the same sterile material used for germinating.

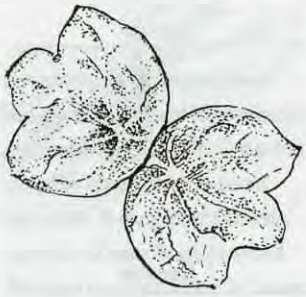
Using a knife or spatula, dig deeply under the seedlings in the flats, lifting a whole group at once. Let them fall apart and pick out individual plants from

YOUR OWN

Continued on Next Page

the group. Handle the seedlings carefully, and don't pinch them. Space the seedlings about an inch and a half apart.

Water thoroughly and replace the seedlings under fluorescent lights. Continue water and fertilizer until set outside. Before setting in their permanent location, place the seedling container outside, in the shade and protected from winds to 'harden' them off, and prepare them for transplanting. Keep well watered.

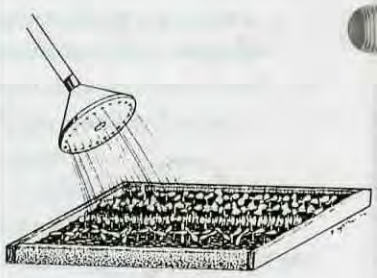


Nasturtium

SOIL PREPARATION

Satisfactory results in growing annuals depend, to a large extent, on thorough preparation of the soil where the plants are to grow. If you prepare beds for annuals as carefully as you would for bulbs or shrubs - by spading deeply, providing adequate drainage, and lightening heavy soil with sand and organic matter - the flowers grown there are almost certain to be outstanding. Water can enter well-prepared soil easily, seeds germinate readily, the plants grow deep, healthy roots, strong stems and large and abundant flowers are the result. The lesson - prepare your soil well and it will produce good plants.

To improve drainage, bed up the soil. Dig furrows along the sides of the bed and add the soil to the bed. This raises the level of the bed above the general level of the soil. Excess water seeps from the bed into the furrows. But raised beds are subject to drying so be sure to water well.



After forming the beds, or determining that drainage is satisfactory without bedding, spade the soil to a depth of 8 to 10 inches. Turn the soil over completely. At this spading, work peat moss, sand and fertilizer into the soil. Soils east of the Mississippi River may need to be limed.

For an ordinary garden soil, use a 1- to 2-inch layer of peat and sand. By adding peat and sand to the soil each year, you can eventually improve even poor subsoil to make a good garden soil. Add a complete fertilizer at this last spading. Use grade 5-10-5 at a rate of a pound and a half per 100 square feet. Add ground limestone at a rate of 5 pounds per 100 square feet if needed. When done, rake the soil smooth and it is ready for planting.

PLANTING OUTSIDE

Do not be in a rush to start seeds or to set out started plants. As a general rule, delay

are quite adaptable, preferring moist areas but managing in dry sites. Because they tend to be a bit straggly, mass them for effect in a rockery or border where their legginess can be hidden. Seed sown in Fall gives spring flowers, while early spring seedings produce Summer bloom. Sweetly scented, the flowers are also known as "Bee Flower" for, as long as the weather permits, bees are collecting nectar and bright yellow pollen. Meadow-Foam will withstand some Winter waterlogging, and this quality has led to experimental plantings in Oregon's Willamette Valley as an oilseed crop alternative to some of the present ryegrass seed acreage.

"Love-in-a-Mist" conjures up the airy appearance of *Nigella damascena* with its delicate flowers and feathery foliage. Well worked by bees for nectar and pollen, this Summer annual comes in a range of blue, white and purple in the "Persian Jewels" mixture. *Nigella* blooms quickly from seed, making a very attractive filler in the garden, and then producing interesting papery, inflated seedpods that can be used in dried arrangements. Make successive sowings in full sun or part shade to increase flowering time. A close relative, Nutmeg Plant (*Nigella sativa*), was grown by Thomas Jefferson for its spicy seeds called black cumin.

Annual Poppies produce pollen which is very attractive to honey bees. The true Poppies, *Papaver* do not produce nectar at all, but the California Poppy, *Eschscholtzia sp*, yields both nectar and pollen. Both of these Poppy genera thrive in full sun and will bloom longer if the spent flowers are picked off. Poppies should be sown in place as they resent transplanting or root disturbance.

Common weeds in European cornfields, Corn Poppies (*Papaver rhoeas*) have been bred and selected for garden use. These are the scarlet Poppies that grew in Flanders fields, and the single-flowered red selections with black petal bases are currently known as "Flanders Field" or "American Legion." Shirley Poppies were developed from a single Corn Poppy plant showing white-edged petals, found by Reverend Wilkes, of the Shirley Vicarage in England. The color selection of the large silky flowers now includes reds, pinks, white, orange and bi-colors. Pick these for fresh flowers when the buds first show color. The Poppies are most productive when planted in full sun with good drainage, and will flourish with little watering.

California Poppies, *Eschscholtzia californica*, native to California and Oregon, are actually perennials which are usually grown as annuals. The native cream-to-orange colors have been expanded to garden forms in pinks,

sowing seed outdoors or setting out started plants until after the last frost. Most seeds will not germinate well until the soil warms to about 60 degrees. If cooler, seeds will remain dormant or rot.

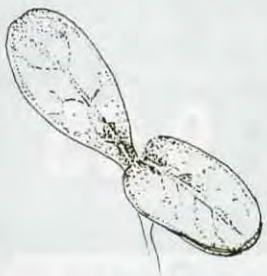
Annuals seeded directly in the garden frequently fail to germinate properly because the surface of the soil cakes and prevents entry of water. To avoid this, sow the seed in half-inch deep vermiculite-filled furrows at the recommended rate. Cover the seed with another layer of vermiculite and water with a fine mist.

To retard water evaporation, cover the just-seeded area with sheets of newspaper secured with stones or soil on the edges. Remove the paper when seedlings appear.

WATER - AGAIN

Do not rely on summer rainfall to keep your flower beds watered. Plan to irrigate them from the beginning. When you water, moisten the entire bed thoroughly, but do not water so heavily that the soil becomes soggy. After watering, allow the soil to dry moderately before watering again.

Sprinklers are not as effective as soaker hoses. Water from sprinklers wets the flowers and foliage making them susceptible to diseases. Structure of the soil may be destroyed by impact of water drops falling on its surface, and, it may crust and hinder entry. Least effective is hand held watering - few gardeners, or beekeepers, are patient enough to stand long enough to completely water a bed.



Chapman Honey Plant

red and white. A source of golden pollen and some nectar, the bright blooms are responsive to light, closing at night and on overcast days. They will reseed prolifically, attracting birds, and are an excellent choice for naturalizing on banks or along roadways. Summer watering will increase the bloom, but the plants do quite well with little extra water.

Commonly known as Rocky Mountain Bee Plant or Spider Flower, Cleome (*Cleome serrulata*) is a bee plant that excited beekeeper interest in the late 1800s when there was a surge of interest in cultivating plants for honey. In bloom from July to September, the unusual white flower clusters with protruding stamens resemble loose Bottle Brushes. Bees hover like hummingbirds around the flowers while collecting nectar and pollen. Cleome attracts bees very early in the day and is said to yield nectar even on cool, cloudy days when Clovers cease production. The white honey may look faintly greenish, and its flavor is said to improve with age. Cleome grows

Cleome, or Rocky Mountain Bee Plant is an exotic beauty that bees must hover over to work. It reseeds in abundance every year, and will become a permanent resident in your garden.

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Pepper

Using these techniques and the equipment mentioned you can start nearly any annual seeds at home. This includes many flowers and nearly all vegetables for your garden. If there is one factor that causes the most problems starting seeds indoors it is supplying enough light for the plants to grow. You are, in effect, trying to duplicate greenhouse conditions - high light, moderate humidity, warm temperatures and pest and disease control.

But with care and patience you can grow healthy, robust annuals, and grow the ones you want - exactly - rather than settle for what the nearest nursery or grocery store has to offer. This year try growing your own. BC

Article by Kim Flottum
Seedling Drawings by
Ellie Garvens

Marigolds, especially the singles are very attractive to honey bees.

ANNUALS ... Cont. From Pg. 173

well in moist soil and full sun, reaching a mature height of about three feet, and as it is a rather lanky plant, it is best at the back of a border where shorter plants may screen its base. The Spiny Spider Flower, *C. hasslerana*, is a close relative of the Rocky Mountain Bee Plant. It provides both nectar and pollen from August to frost. Flower spikes on this plant are pink and white. When grown in rich soil, this has been called "one of the very best bee plants," secreting nectar in the early morning and in the evening.

Although it may not quite meet the social standards of a cultivated, well-bred garden, Borage (*Borago officinalis*) is always alive with bees gathering nectar and white pollen throughout its Summer-long bloom. This country cousin sports rough, bristly leaves and stems, but is forgiven its coarseness when its nodding, clear blue or pinkish, starry flowers appear and flourish until frost. The nectar is protected from rain and dew, and you will see bees on these flowers first thing in the morning. Borage reseeds freely but transplants poorly because of its long taproot; move tiny seedlings at the two-leaf stage if necessary. Very low-maintenance, it tolerates poor soil and needs little water once established. The young, tender leaves are edible and taste like cucumbers, while the flowers can be candied or used as a garnish. And all Summer and Fall, your bees will be supping at their Borage banquet.

Annual flowers belong in every garden, from window boxes and patio planters to the most elaborate estate grounds. Readily available as seeds on the rack, or transplants at nurseries, their bursts of bloom spread floral cheer for gardeners and bees alike. And we've only scratched the surface. Consider the everyday annuals, too. Marigolds (singles are best) and zinnias are excellent for color and bees. Almost all of the herbs can be grown as annuals, and are attractive to bees, too. Explore the world of annuals for you, your garden and your bees. BC

B.A. Stringer grows bee plants, and writes about them from her home in Blodgett, Oregon.

WHAT KIND OF HONEY?

Do Bees Really Like Making A Pure Variety?

Brad Kurtz

First week in August, I was working the Agricultural Technical Institute (ATI) Bee Garden during the 1995 EAS "Get Together" in Wooster, Ohio. The weather was clear, about 95° in the shade. I had rushed to the garden from my day job, threw on my neon-bright green "ASK ME" hat and got myself on station. And sure as the bees were assaulting the Mountain Mint in a continuous buzzing stream, someone did, ASK ME that is. What kind of honey does it make?

Try to pass the buck while wearing an "ASK ME" hat. Try it, get yourself an "ASK ME" hat and go stand on some conspicuous corner at your local mall. I knew there were other people wearing "ASK ME" hats at the meeting and that they probably actually had answers to go with them. The attendee, the paid attendee I should add, was in his mind obviously addressing his question to a person in the know – on the inside – an authority figure. Who else but someone who had answers would wear an "ASK ME" hat?

Yes, that's right, they told me the hat would not require me to know anything except how best to plant, grow and maintain the plants in the Bee Garden. Come to think of it, I had not received my hat ahead of time. When I arrive at Jim Tew's Bee Lab, Sherry Ferrell wasn't around. My hat was sitting on her desk though, so I took it, of my own volition. Did you know that a vampire can't enter your house unless you invite it in? Sherry wasn't around purposely! She was afraid I might not take THE HAT!

So there I was, sweating in my "ASK ME" hat, a chartreuse colored "ASK ME" hat no less. Why couldn't the Higher-Ups at EAS have chosen gray or tan hats with fine print? You don't suppose Sherry and Kim Flottum, the EAS President got together and . . . were they wearing "ASK ME" hats that day? My reaction was to fumble with the hat, (I had really put the thing on), and mumble, and look thoughtful and explain that the plants featured in the Bee Garden were not found in our area in sufficient concentration or quantity to say that the bees produced excess honey from any of them. I wasn't sure at the time that that little bit of fancy stepping of mine constituted an answer, I'm sure now that it did not. It may have been better to say "I don't know." But I had an "ASK ME" hat on. I have since "hit the books" in an effort to formulate a more satisfactory response to: What kind of honey does it make?

The answer can be found in most bee plant related literature. It can readily be found that Clover honey is light in color, has a good density, with a delicate favor and aroma, and that it is the honey with which all other honeys are compared. In fact there exists a whole range of plants that have their corresponding honey's quality for color, granulation texture, and flavor published.

The questioners expected an answer from me which was similar to varietal honey descriptions found in books. And so finally, after much ado, we come to the subject of this monograph – What kind of honey do our bees make?

Some reactions I observed to my non-answer: If it isn't found in high enough concentration why is it in the Bee Garden? – or – How do we get it planted in high enough concentration? Another was a blank look, the questioner turning back to the plant asking himself or someone standing nearby, "I wonder what kind of honey it makes?" And yet another, I observed people walking up to a plant we have the Bee Garden – *Alium tuberosa*–a flowering onion and smiling discreetly to each other. Only one very nice man delicately pointed out that they say onion nectar will flavor the honey, and he's right. They do say that. I have read about bees working onion nectar and its resulting strong honey. I believe that where onions are grown on a field scale it may be possible that some onion-flavored honey could be extracted. However, I don't believe onions grown for market ever flower. I wonder if they have ever actually tasted onion-flavored honey?

It should be pointed out that common Poison Ivy, *Rhus radicans* (very common at and around our farm in Ohio) produces copious amounts of nectar and is worked vigorously by our bees. My middle son who is violently allergic to Poison Ivy and who helps with tending our hives, and with extracting has never had a reaction as a result of contact with out honey. This may seem a non-point until one reads that all parts of this species *Rhus*, as well as a couple of others including *R. vernix*, the Poison Sumac, contain a non-volatile oil called urushiol. This powerful irritant is found in a species of *Rhus* native to Eastern Asia – *R. verniciflua*. The sap of this species is used to produce a black varnish which has been know to cause a reaction to people handling finished pieces to which this varnish has been applied.

If even a small quantity of nectar could affect the quality of a finished honey – certainly Poison Ivy nectar would. Let me repeat, I said a small quantity of nectar. An average nectar load for an average field bee is 40 mg. That bee must visit hundreds, (I translate hundreds as 300 for the sake of this exercise), of flowers to collect her 40 mg. She will make up to eight trips per day, and will on average harvest 320 mg. of nectar per day. Multiply 320 mg. by the number of field bees in any given colony. This will give the total average nectar harvest per day for our average colony. There is 454,000 milligrams in one pound. Remember that the nectar being harvested may contain as much as 80 percent water. You can finish the math. The point is, even at our

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HONEY ... Cont. From Pg. 175

farm, the Poison Ivy nectar is going to run out before any honey gets made from it.

It is possible that because information has been published concerning the quality and palatability of certain varietal honeys, we assume the same is known of plants like Catmint of Anise Hyssop. Or, because a plant such as Catmint is planted in close proximity to a colony that the Catmint nectar will have an overall effect on the finished honey made by those bees. My little math example should put that notion to rest. Most information on types of pure varietal honey comes from areas where a certain plant is grown commercially on a very large scale, i.e., areas of the country whose primary industry is fruit or seed production, or where ground covers (white and sweet clover) are used in conservation areas. In many of these case pollination is part and parcel of the industry – no pollination, no crop. In the Dakota's and elsewhere where clovers are grown, however, pollination is not the goal. But, bees are kept in relation to seed producing operations, where pure varietal honey is no doubt produced.

The most striking pollination example being Alfalfa seed producing operations, located mostly in California. It can probably be stated that most pure honey crops come from areas of the west where honey production is linked to the types of agriculture practiced. In our area of Wayne County Ohio, fields devoted to hay production are seldom of use to our honey bees because alfalfa is usually, if not always, cut at the prebloom or early-bloom stage when the crop is at it's nutritional optimum. This is well before these fields become of use to honey bees. Clovers, at least here in Ohio, are declining in their agricultural use because of the difficulty in getting the hay crop to cure for baling, but when used, clover is cut at the same stage as alfalfa.

I have difficulty thinking of a nectar plant found in our area, growing by the acre, that would produce enough honey to be considered a pure varietal honey, one that would taste like anything in particular. We have growing within a 1,000 foot radius of our hives what has to be five acres of blackberry brambles. Pure blackberry honey is said to be slow to granulate, and to have a course flavor. This does not describe any honey our bees have ever produced, even though our bees work the blackberries heavily.

My wife points out, probably correctly, that the blackberry honey is maybe being used in our colonies' annual population build-up. I have to say, that I usually put on our second batch of supers during the blackberry flow – I think. . . . Anyway, our excess honey is always relatively light amber in color, with a very mild flavor – a couple of years distinctly fruity, and always granulates very quickly. I'm not sure what sort of honey the forgoing description applies to. I generally tell customers that it is weed honey.

The intent of this article is not to promote striving for a pure varietal honey. The subject really never crossed my mind until I was asked the question. It is possible, I suppose, that having a pure clover honey for sale is considered the ultimate. Is honey in the grocery store labeled as Clover Honey more money? I don't often go the grocery store, and I certainly don't buy honey. As I've pointed out earlier, our first-time honey customers always ask what kind of honey we have. This may be more of a consumer bias thing than an indication that the customer cares or even knows the difference from one honey to another. The reason for the beekeeper asking the question may be his concern for the overall effect nectar from a patch of *Allum tuberosa* would have on his honey crop. I treated this in my math example. It is my contention that a vast expanse of a preferred forage plant would be required to make it even remotely possible that the honey extracted, at any given time of the season, be affected in any way, either favorably or the reverse – again do the math.

But, if you are looking for the perfect bee plant I would like to throw out another theory. Even if you have made a large expanse of premium bee pasturage available to your bees is no guarantee they will use it to its capacity. The bees may not work an acre of Mountain Mint at the same rate as they work 50 square feet. If a total of 2,000 field bees (coming, going, and at the planting), are working a 50 square foot patch of Mountain Mint, will one million six hundred thousand field bees work one acre of Mountain Mint? I'm not sure how many hives are required to have a work force of over a million and a half field bees, but I think the point is made.

I should also say that during the EAS meeting last year, my estimate of 2,000 field bees – total – working the patch of Mountain Mint, is not out of the question. It may be also, (I'm really getting in over my head now), that when given the option, bees will balance their diet with a variety of different nectars. Nectars are known to have different chemical components. The types of sugar, as well as the percentage of sugars varies from one genus of plant to another, as do the other chemical com-

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About the ATI Bee Garden

The idea for the planting the garden came about as a result of ATI being one of the sights for the 1995 EAS Conference. After considerable debate over a location for the garden and understanding being arrived at concerning maintenance, an open area adjacent to the Bee Lab was chosen as the logical spot. The Tri-County Beekeepers Association was assigned the planting and maintenance work. The site plan was drawn by an ATI staff member. My wife, Janet and I inserted the plants needed onto the drawing and the propagation process began.

The actual site work and planting was done in September of 1994 – mostly by the women of the Tri-County Beekeepers and Sherry, from the Bee Lab (you remember her, she's the one who left the hat . . .). The garden was just short of one year old when it debuted at the EAS Conference and was well received by all who saw it.

This spring promises an even more impressive show as the plants and the planting matures. The garden features some of the better bee-attracting perennials for USDA zones 4 and 5.

Some are familiar garden plants – some not so familiar. All of the plants featured are easily obtained at smaller specialty nurseries. They are all, without exception, easy to grow and maintain and guaranteed to bring your bees to you.

20 YEARS OF GREASE PATTIES

Michael Meyer

More than 20 years ago I adopted Bill Wilson's techniques for using extender patties, and except for exceptionally stubborn cases have used it exclusively on my bees for preventing American Foulbrood. Through the years I have refined its obvious and not so obvious shortcomings into a simple and workable system. And, since several researchers have been touting the efficacy of grease patties (with and without Terramycin) for the control of tracheal mites, parasitic mite syndrome, and even *Varroa* mites, more and more people are using grease patties in their colonies. They are not, however, using them in what I consider the simplest and most efficient manner. With that as background, I'd like to share my techniques that solves many problems inherent in the original technique.

First, we'll treat this as a system and define the objectives to be reached. Next, we'll look at inherent problems with this system, and their solutions, and finally, we'll roll this into a program that will maximize benefits and minimize drawbacks to anyone who adopts this system.

OBJECTIVES

Devise a system that . . .

1) Formulates shortening, sugar, and terramycin (TM) into a reliable, workable formula for early season and late season applications;
2) Uses the same formula minus the TM for honeyflow applications;
3) Is used completely by the bees in a four to eight week period;
4) Is cost and labor efficient, and;
5) Is user friendly from a colony manipulation standpoint.

THE PROBLEMS

Problems you may encounter include, but are not limited to . . .

1) Bees do not accept the formula and it stays in the hive too long without being consumed;
2) Bees haul dried grease patty outside, and do not get the benefits;
3) Grease melts and gets all over the hive, thus hindering manipulations and killing some bees;
4) Grease gets all over you, with all of those problems.

All right, here is the system I use. The first part is the actual formula for grease patties. You will note that it is slightly different (and better in my opinion) than other formulas that have been published and this has the added benefit of decades of actual use with millions of healthy bees as the beneficiaries.

THE FORMULA

- 6 lbs. all-vegetable shortening (comes in 3 lb. cans, so this measurement is handy, i.e. two cans)
- 10 lbs. *powdered* sugar (forget granulated sugar – it lacks cohesiveness in the formula and falls to the bottom board where the bees haul it outside).
- 1-1/2 packages TM-25, or a half cup TM-100. The TM should be omitted for honey flow use.

Mix all ingredients thoroughly. The final product should be similar to frosting. The Deli Department at the local supermarket mixes a five gallon bucket for me in exchange for a jar of honey. I use a 12:20 formula for this amount. Mixing a five-gallon bucket by hand takes the better part of an hour of hard labor, so you decide what's best for you.

This formula solves problems 1, 2 and 3. It also fits objectives 1, 2 and 3. The bees accept this grease patty, licking at it slowly and passing it from bee to bee. Virtually none gets hauled outside, and it takes an average of six weeks under normal weather and hive population conditions for the patty to be completely consumed.

Next, look at the photographs of my delivery system. I cut 1/4" hardware cloth (very important size – do not deviate here) into approximately 2" by 5" rectangular pieces. The width is no larger than two top bars. I 'but-

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First, spread your frosting-like mix on the wire...

... then place it on the colony like this.

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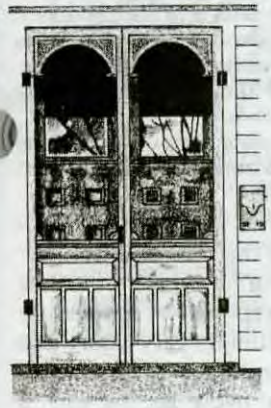
ter' these with a 3/8" thick glob of grease formula before putting them on. Ten to 30 grease rectangles can be done at a time, and carried among the hives on a piece of thin plywood. The hardware cloth with patty is placed on the top of the two middle frames, usually near the edge of the super. The lower brood chamber is used. The bees will not propolize quarter-inch hardware cloth and can work the patty from the top side or the underside from between the frames. You can move the hardware cloth with grease on it as a unit with only your hive tool. During manipulations, the cloth and grease can be placed on the edge of the brood box, on a lid, or wherever is conveniently out of the way. Later, before closing the hive, the cloth and grease may be replaced quickly and easily in their proper spot. In addition, empty wire grids may be quickly popped off the frames and placed on the plywood to be 'buttered' again. These wire grids have a 'hive life' of decades, not years.

Objectives 4 and 5 are thus reached, and problem 5 is overcome. I give three or four applications per year. . .

1) A late fall application with TM to help with early brood rearing. This patty generally lasts all winter;
2) An early spring application about the time of dividing, also with TM;
3) An early summer application *without* TM about the time of major supering.
4) A late summer application only if effects of tracheal mite infestation are observed among adult bees. This step is generally used only in first or second season.

That's the whole system from start to finish. You could make larger wire rectangles and have the grease patty last longer in the hive, or make smaller ones, so you can get more grids on your plywood carrier, but I've found the size described earlier to be about right. Experiment with this, and refine it to your own hive manipulation schedule. I hope whatever system you eventually use will encourage you to resume this as a method of foulbrood and mite control – it works for me. BC

Michael Meyer is a commercial beekeeper, and grease mixer from Springfield, MO.



Ann Harman

Home Harmony

Zap It! With Honey, Naturally.

The microwave oven is truly a great addition to our kitchens. I know of a number of people who resisted owning one, finally gave in and bought one and now won't live without it. It's true that a microwave can do many cooking tasks very well, but some foods are just not suited to that type of cooking. I think a microwave makes superior vegetables with minimal amount of water and cooking time. I also think making a scrambled egg in the microwave is sort of a dumb project - I can make one quicker in a skillet. (Yes, you can disagree with me on this point.)

I am sure that many of you have experimented with a microwave and have discovered its secrets. And I am also sure that you have produced some notable peculiar results such as exploding beans and leather-like chicken. (One of my early catastrophes kept my dogs happy chewing for an entire morning.)

One problem with giving recipes for microwaves is the difference in power found in the various models available. Since cooking times are short, one minute can make the difference between something delicious and something overcooked. Fortunately, you can sort of "sneak up" on cooking times by using a short time and testing for doneness, then adding more time as it is needed. It is nice if microwave recipes give the power of the unit, but I have not found recipes consistent in noting the power.

As a general rule, the family-size models are 900-1000 watts, mid-size are 800-900 watts and the small, compact microwaves are 600-700 watts. The higher the wattage, the faster the microwave will cook foods. If a recipe does not specify the power, you will have to rely on experience or experimentation.

In addition to food preparation, a microwave can be used to liquefy crystallized honey. Here again, caution is required. Just as in food preparation, short bursts of time at a reduced power, alternated with stirring, will be more satisfactory (and result in a cleaner microwave) than attempting to liquefy a jar of honey in a minute or two.

The best recommendation I have for any kind of microwave cooking and for adapting ordinary recipes to your microwave is to refer to the manual that came with your microwave and follow the instructions given there. In addition, it is useful if you know the power rating of your microwave.

Many honey cookbooks do not have recipes with specific microwave instructions. However, one cookbook does, and several recipes from that book are contained in this article. It is a British cookbook; therefore many recipes call for measurements by weight. So if you have a set of postal scales or diet scales, you will be able to use those recipes.

HONEY BRAISED CELERY AND CARROTS

The first recipe is a wonderful one for carrots. The addition of celery and herbs makes this dish special.

for a 700 watt microwave

1 bunch of celery, trimmed and cut into matchsticks
8 ounces carrots, cut into matchsticks
2 tablespoons butter
2 tablespoons honey
1 tablespoon water
1 tablespoon chopped chives, fresh, or 1 teaspoon dried
1 teaspoon dried marjoram
salt and pepper
1 teaspoon fresh chopped parsley

Put vegetables in a casserole dish. Dot with butter and spoon over the honey and water. Sprinkle with chives and marjoram and season with salt and pepper. Cover with plastic wrap and pierce. Cook on Full Power for 10 minutes, stirring halfway through. Stand for 5 minutes. Sprinkle with parsley before serving.

Honey Recipes For Microwave Cookery
Barbara Dalby

SPICY CHICKEN WINGS

Although we are accustomed to crisp Buffalo wings, try this recipe for a snack or a party. Marinate the wings in a plastic bag.

for a 700 watt microwave

1 pound chicken wings
6 drops Tabasco sauce
2 tablespoons honey
2 tablespoons mustard powder
1 teaspoon paprika
2 tablespoons cooking oil
1 tablespoon wine vinegar

Mix together everything except chicken wings. Separate the wings into two pieces. Then marinate for 3-4 hours or overnight in the refrigerator. Cook on Full Power for 10 minutes per pound or until done. Turn over once during cooking, making sure the chicken is coated with the sauce. Let stand 5 minutes before serving. Serves 4, or more for a party.

Honey Recipes For Microwave Cookery
Barbara Dalby

MICROWAVE GLAZED CARROTS

Orange juice is a delicious addition to carrots. This next recipe has a great combination of spices and orange juice.

microwave power not specified

2 cups thinly sliced carrots

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1 tablespoon honey
1 tablespoon butter or margarine
1-1/2 teaspoons cornstarch
1/8 teaspoon each: ginger and salt
few dashes of nutmeg
1/4 cup orange juice

Place carrots, honey and butter in shallow 1-quart casserole. Cover and microwave on high for 6 minutes. While carrots are cooking, combine the rest of the ingredients with orange juice to make a smooth sauce. Add to hot carrots. Cover and microwave for 4 minutes. Let stand, covered, for 3 minutes.

1990 American Honey Queen
Vanessa Polley

RED CABBAGE SWEET AND SOUR

If you use a microwave cookbook you can substitute honey for sugar in many of the recipes. This next recipe makes a wonderful dish for chilly weather. Honey has been substituted for sugar with outstanding results.

for mid-size, 800-900 watt microwave

1-1/2 pounds red cabbage
1 tart apple, peeled, cored and diced
1 tablespoon butter or margarine
5 tablespoons red wine vinegar
1 teaspoon salt
3 tablespoons honey

Shred cabbage and put in a 3-quart casserole. Add apple, butter and vinegar. Stir. Cover and cook on HI (max. power) for 18 to 22 minutes, or until apples and cabbage are tender. Stir twice during cooking time. Stir in salt and honey. Cover and cook on HI (max. power) for 5 minutes, or until liquid boils. 6 servings

The Kenmore Microwave Cookbook
A Rutledge Book

HONEY ACORN SQUASH

Large, lumpy things like potatoes and squash that take hours to cook in a conventional oven take only a few minutes in the microwave. Here is a nice, quick recipe for acorn squash. You can increase the quantity this recipe makes, but you will have to increase the time.
for 700 watt microwave

one 1-pound acorn squash
1/2 teaspoon salt
1/4 teaspoon mace
3 teaspoons honey

Pierce the whole squash straight through in several places with an ice pick or skewer. Place on a paper towel. Cook on HI 3 minutes. Turn the squash over and cook 2 minutes. Cut the squash in half and remove the seeds and stringy fibers. Blend the salt, mace and honey and spoon into the squash cavities. Cook one minute. Turn position of the squash. Cook one minute. Serves 2.

Mastering Microwave Cooking
Maria Luisa and Jack Denton Scott

Use honey to liven up your microwave meals the year around. Microwave cooking in the summertime makes meal preparation a pleasure since heating time is very short and you are not standing near a hot stove or conventional oven. By the way, a microwave can be used for blanching vegetables for freezing and for drying flowers - both useful summertime occupations.

Detach or Photo Copy & Return

BEE CULTURE SURVEY - March, 1996

Tell Us What You Think

1. How long have you been a subscriber? _____
2. How many of the past six issues have you read? (Circle one)
   1 2 3 4 5 6
3. How interesting were the stories in this issue? (Check one box each.)

	Extremely	very	somewhat	not at all
Inner Cover, Defending Research - Flottum	☐	☐	☐	☐
Mailbox - From Our Readers	☐	☐	☐	☐
Honey Report - Reporters	☐	☐	☐	☐
Research Review - Morse	☐	☐	☐	☐
Do You Know? - Collison	☐	☐	☐	☐
Pesticides - Winston	☐	☐	☐	☐
Bears - An Introduction	☐	☐	☐	☐
Bear On Patrol - Olstrom	☐	☐	☐	☐
Rainy Night Bear - Burney	☐	☐	☐	☐
Bear Fences - Jackson	☐	☐	☐	☐
Bears and Bees - Gafney	☐	☐	☐	☐
The Basis Of It All - Bonney	☐	☐	☐	☐
Catching Swarms - Rawlinson	☐	☐	☐	☐
Swarm Catcher - Cockey	☐	☐	☐	☐
Spring Package - Sobchack	☐	☐	☐	☐
Growing Your Own - Flottum	☐	☐	☐	☐
Annuals - Stringer	☐	☐	☐	☐
What Kind Of Honey - Kurtz	☐	☐	☐	☐
20 Years Of Grease Patties - Meyer	☐	☐	☐	☐
Bee Talk - Taylor	☐	☐	☐	☐
Questions & Answers - Taylor	☐	☐	☐	☐
Gleanings	☐	☐	☐	☐
Bottom Board - Scott	☐	☐	☐	☐

4. Which of the following statements relating to the content in this magazine best describes the way you feel?
   ☐ I got more than my money's worth.
   ☐ There's not enough for my money.
   ☐ It's about right.

Return to: Bee Culture, 623 W. Liberty St., Medina, OH 44256.

?Do You Know? Answers

1. **True** The incidence of nosema disease generally varies during the year with the highest levels of infection found in the spring.
2. **True** Nosema infected adult honey bees show no outward signs of disease, similar to adults being infested with tracheal mites. In both situations the bees are crawling about the hive entrance, with disjointed wings, unable to fly. Other conditions often confused with nosema are pesticide poisoning, starvation, dysentery and bee paralysis.
3. **False** Nosema disease is caused by a protozoan, not a fungus, that produces spores. These spores that are voided by infected honey bees remain viable for long periods. They resist refrigeration, freezing, lyophilization and exposure to microwaves.
4. **True** Nosema disease is the most widespread adult honey bee disease. It has been found in over 60% of the apiaries sampled in the United States. The incidence of American foulbrood, European foulbrood and sacbrood is at a much lower level of incidence, often running less than 5% of the colonies and in some states less than 1%.
5. **False** The spore stage of *Nosema apis* is the infective stage. Spores must be swallowed by an adult honey bee for infection to be initiated. Spores germinate quickly after entering the midgut into the vegetative stage. The epithelial cells that line the midgut are infected when the vegetative stage is introduced by way of the polar filament.
6. A) Protozoans
7. C) Midgut (ventriculus)
8. A) 28 days
9. B) 65° F.
10. Advantages- Miller-type feeders can hold large amounts of syrup, and are easily filled by just lifting the hive cover.
    Disadvantages- These feeders tend to be some distance from the bee cluster and are not as efficient as gravity type feeders that are placed directly over the cluster.
11. Chalkbrood spores would be found on the surface of mottled (black on white) or completely black mummies (dead larvae). These mummies would be found in brood cells, on the bottom board or at the hive entrance. Nosema spores would be associated with fecal material on the combs and at the hive entrance. American foulbrood spores would be found in dried-down scales within brood cells.
12. Fumidil-B
13. Queen supersedure rates are high in colonies with nosema disease because infected queens cease egg-laying and die within a few weeks of becoming infected.
14. Nosema infection affects individual honey bee workers in many ways.
    - Life span is reduced.
    - Ability of infected nurse bees to feed brood is reduced.
    - Rapid aging of the honey bee.
    - Some lose the ability to fly.
    - Become dysenteric earlier than uninfected individuals.
15. Uniting weak colonies.
    Adding combs of sealed brood to weak colonies.
    - Exchanging positions between weak and strong hives.
    - Buying booster packages and adding bees to the weak colo nies.
    - Stimulatory feeding will be ef fective on a limited basis.
16. Since ants within a colony are usually an indication of a weak colony or a colony having some type of problem, the colony should be inspected to determine if there is a problem and what corrective action should be taken. Secondly, steps should be taken to control the ants. Insecticidal treatments that will not harm the bees, mowing around and under the hive plus getting the hive up off the ground, or setting up some type of oil barrier will usually take care of an ant problem.

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

Richard Taylor

Bee Talk

"I think even the most learned sense the real truth of things only dimly, if at all."

It was 60 years ago this Spring that I got my first hive of bees. A long time! I remember what I paid for it – $4.50. I soon had another, the crude product of my own youthful carpentry. I wish I still had it, for all its wonderful remembered associations. I had to give up beekeeping when I went off to college, and then into wartime service in the Navy, but it was never far from my mind. This bee magazine was delivered to me in the far reaches of the Pacific, where my thoughts went back to my bees. When my teaching took me to New York City for a couple of years, I even had a hive of bees there, seven stories up, on the balcony.

Why this lifelong passion for beekeeping? It wasn't the money. It has always been profitable, and has gotten more so over the years, and I enjoy the income. I see it as a sign that I'm doing things right. But that's not the big thing. There are lots of better ways to make money, if that's your goal in life.

It's the sense of wonder. I guess I was born with an abundance of wonderment in my system. A colleague once chided me for my "boyish" sense of wonder, my seeming to be wide-eyed at everything. I didn't consider that insulting. On the contrary, it is this sense of wonder that has been one of the richest sources of life's joys for me.

I vividly remember the first time I came across an active hive of bees. I was overwhelmed with wonder and amazement, watching the bees coming and going on that warm Spring day. I stood there a long time, totally absorbed in this wondrous sight. I had long been enchanted by ants, lying in the yard by the hour watching them, and reading about them in books and encyclopedias. The step from ants to bees was a natural one, and a great leap. Before long, I had built and stocked an observation hive. I could only imagine what the ants were doing under the ground, but now I could actually see the bees in their hive.

This sense of wonder, which I can only think of as God-given, is not exhausted in beekeeping. Far from it! It extends to everything – the grass at my feet, the distant stars, a spider spinning its web, everything. This past Summer a mud dauber enriched my life by slowly and laboriously building her mud nest right over my desk at my cottage, and I watched her, over the long Summer, until she brought her young into the world. As a very small child, I was enchanted to see the seed that my grandmother's canary had scattered into the flower box, quite suddenly sprouting and growing. My late wife was appalled one Summer to find that I was growing hundreds of caterpillars of an exotic nocturnal moth right in our bedroom! Before long, they occupied a huge box that half filled my honey house, and I was kept busy fetching foliage for them to devour. Soon I had a couple hundred large cocoons to distribute to school teachers. Perhaps their hatching would evoke in some children the wonderment I know so well.

We all tend to assume that everyone sees things more or less as we do. They don't. I once naively assumed that all you had to do was show someone the inside of an active hive of bees, point out the remarkable things thus disclosed, and that person would forthwith want to become a beekeeper. Well, a few do, but most people have other things on their minds, and I long ago ceased encouraging everyone to take up beekeeping.

Last Fall, I responded to invitations from two nature centers to set up honey bee exhibits for their Autumn festivals. I gathered up odds and ends of beekeeping paraphernalia, some jars and combs of honey, made up some suitable explanatory signs and, most important of all, took along my observation hive, well-stocked and with a marked queen. People peered in at the bees as they came by and, upon learning that the queen was marked for easy identification, they would search her out. Then, having accomplished that, off they went! As if the only remarkable thing about what was before them was that one of the bees had a spot on her back! They, too, had other things on their minds. Mostly, I think, they were eager to learn what might be for sale at the various exhibits.

The wonders that are around you all the time, and even at your feet, are beyond measuring. There is a large, exquisitely beautiful moth, of pale green, called the Luna Moth. It is not rare, but probably most people live out their lives never seeing one, for they are nocturnal. Upon finding the cocoons of these moths, I have several times, if the emerging moth turned out to be female, tethered her at my porch with a bit of yarn, and the next morning, without fail, I have found her in the throes of love with a male. How many miles did he come? How did he find her? The answer is, of course, by a pheromone – but that hardly reduces the mystery and won-

BEE TALK ... Cont. From Pg. 181

derment of it all.

I saw my two youngest children come into the world. My oldest ones are all grown up, with grown kids of their own, and back then fathers were allowed no part in childbirth, not even to be present. But my youngest, now eight, was born on the very day I turned 68 – something I never tire of telling – and I shall never forget my state of wonderment, almost disbelief, as I saw just the top of his head appear! Moments later he noisily drew his first breath as tears of joy streamed down my cheeks. It took me a couple of days to come off this cloud of euphoria. That was, no doubt, the greatest evocation of wonder that I shall ever experience. The fact that it is a common, almost routine occurrence, somehow does not dampen the wonderment at all.

Some time afterward, I asked his mother whether it did not make her feel like some sort of god to create within her something like this; to which came the reply, "Heavens no, even mice do the same!" How perfectly true, and how beside the point! I am reminded again that the eyes and spirits through which we view the world are not the same in all of us.

Many years ago, I had an apiary on the land of an old-timer who didn't know much about bees, or anything else, and who had little regard for some of the things I honor; but I grew to like him. I was sometimes mesmerized by the stream of foul language that flowed from his tongue. Crude epithets were to him like punctuation. This colorful speech was no expression of anger; it was just his way of talking. My apiary rent was paid in the form of a bottle of whiskey that I would leave there behind one of my beehives, where he, but not his wife, would find it. Anyway, one of the hives swarmed one day, and this landlord came out to see what was going on. He watched as I dislodged the swarm in front of a hive, watched with the wonder that I know so well as the bees began to stream into the hive, and then remarked, with perfect simplicity, "And to think some folks say there ain't no Almighty!" Of course anyone with the least sophistication would point out, correctly, that what we were seeing had no theological significance whatever, but I nevertheless thought that, for once, my friend had found precisely the right words for what we were seeing.

I think that even the most learned among us sense the real truth of things only dimly, if at all. It is mostly hidden behind a vast veil of mystery. Today, snow covers everything, but before long, I shall again be standing in my apiaries, under the blue sky, and I'll again be made joyous by the sense of the life and beauty of that setting. I am not much for churches, but I know I shall find myself again muttering, for the thousandth time, one of the Psalms: "The heavens declare the glory of God, and the earth showeth forth His handiwork." BC

Richard Taylor is a philosopher and lifelong beekeeper who lives in the Finger Lakes region of New Yor. You can reach him at Box 352, Interlaken, NY 14847.

BEE TALK ... Cont. From Pg. 181

derment of it all.

I saw my two youngest children come into the world. My oldest ones are all grown up, with grown kids of their own, and back then fathers were allowed no part in childbirth, not even to be present. But my youngest, now eight, was born on the very day I turned 68 – something I never tire of telling – and I shall never forget my state of wonderment, almost disbelief, as I saw just the top of his head appear! Moments later he noisily drew his first breath as tears of joy streamed down my cheeks. It took me a couple of days to come off this cloud of euphoria. That was, no doubt, the greatest evocation of wonder that I shall ever experience. The fact that it is a common, almost routine occurrence, somehow does not dampen the wonderment at all.

Some time afterward, I asked his mother whether it did not make her feel like some sort of god to create within her something like this; to which came the reply, "Heavens no, even mice do the same!" How perfectly true, and how beside the point! I am reminded again that the eyes and spirits through which we view the world are not the same in all of us.

Many years ago, I had an apiary on the land of an old-timer who didn't know much about bees, or anything else, and who had little regard for some of the things I honor; but I grew to like him. I was sometimes mesmerized by the stream of foul language that flowed from his tongue. Crude epithets were to him like punctuation. This colorful speech was no expression of anger; it was just his way of talking. My apiary rent was paid in the form of a bottle of whiskey that I would leave there behind one of my beehives, where he, but not his wife, would find it. Anyway, one of the hives swarmed one day, and this landlord came out to see what was going on. He watched as I dislodged the swarm in front of a hive, watched with the wonder that I know so well as the bees began to stream into the hive, and then remarked, with perfect simplicity, "And to think some folks say there ain't no Almighty!" Of course anyone with the least sophistication would point out, correctly, that what we were seeing had no theological significance whatever, but I nevertheless thought that, for once, my friend had found precisely the right words for what we were seeing.

I think that even the most learned among us sense the real truth of things only dimly, if at all. It is mostly hidden behind a vast veil of mystery. Today, snow covers everything, but before long, I shall again be standing in my apiaries, under the blue sky, and I'll again be made joyous by the sense of the life and beauty of that setting. I am not much for churches, but I know I shall find myself again muttering, for the thousandth time, one of the Psalms: "The heavens declare the glory of God, and the earth showeth forth His handiwork." BC

Richard Taylor is a philosopher and lifelong beekeeper who lives in the Finger Lakes region of New Yor. You can reach him at Box 352, Interlaken, NY 14847.

Questions?

Strong Flavor?

Q **I lost a hive of bees to mites and poor ventilation, so I harvested the honey from the brood chamber. The honey has a strong, medicinal taste. I had not medicated the bees nor used much smoke. Why the strong taste?**

Mark Staples
Northampton, MA

A The fact that the honey came from the brood chamber would not, by itself, cause it to have an off-flavor unless it had a significant amount of pollen in it, which would have been visible. Sometimes one gets an off flavored honey due to an unusual floral source, and this was probably such a time.

Why White Hives?

Q **Why do beehives have to be white? I have had a lot of trouble from vandalism, kids throwing things at my hives and, once, tipping one over. Has anyone ever tried camouflaging them, using dead grass and green paint, for example? Would there be anything wrong with this?**

Oscar L. Anderson
Muskegon, MI

A The only reason for painting hives white is to protect the colonies from excessive heat when they are standing in the open sunshine. It makes no difference whatsoever how a hive is painted if it is in at least partial shade, and bees have no difficulty returning to a hive that is inconspicuous to the human eye. The best protection from vandals is concealment by shrubs, natural growth, and camouflage paint.

Needs Salt?

Q **I have read of a beekeeper who puts salt in his hives, claiming that bees need salt. Is this true?**

J.B. Barrett
Gaston, IN

A I have never heard any bee expert recommend the use of salt in hives, nor have I ever used it. I cannot imagine why it would be of any use to the bees.

More Than Enough?

Q **This is the third Winter that I have left a particular super of honey on the hive for Winter stores and the bees ignore it year after year. How come?**

Richard Weiford
Moorestown, NJ

A It is very unusual for bees not to invade their Winter stores. Evidently, they have more stores than they need. Sometimes bees are slow to use honey that has granulated, but it usually gets used eventually. Try putting that super *underneath* the brood chamberearly this Spring. The bees will probably clean it right out then.

Moving Eggs?

Q **Do worker bees move eggs?**

John E. Palmer
New Market, NH

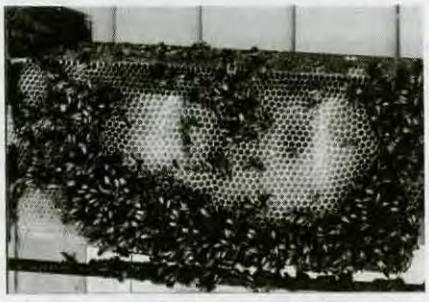
A Apparently, they do. There seems even to be evidence of workers of a queenless colony stealing eggs from another hive in order to raise a new queen. The evidence is that colonies, long queenless, have suddenly been discovered to have raised a queen. I do not know whether this has been scientifically tested.

Damaged Comb & Drone Cells

Q **This winter, mice chewed holes in some of my brood combs. Is there some way to get the bees to replace the comb with worker cells rather than drone comb?**

Peter Sieling
Bath, NY

A It has been my experience that the bees always replace such comb with drone comb. About the only way you could get them to build worker comb in those holes would be to somehow affix foundation in them. It should be added, however, that, contrary to widespread belief, the presence of considerable drone comb in a hive does not significantly reduce the honey crop.



A mouse got into the hive during winter and chewed out all the center of this comb. As usual, the bees are replacing it with drone comb.

Shallow or Bottom?

Q **I will be producing extracted and chunk honey. What are the advantages of using a hive consisting of a shallow super on the bottom and a deep on top of that?**

Steven Gilchrist
Waterloo, AL

A There are no advantages so far as getting extracted honey is concerned, but I use hives of this size for comb honey in order to get the bees to store honey in the supers sooner. With a larger hive, they tend to store the earliest and best honey down below before working in the supers. The reason the deep is on top is for ease of removing and replacing combs of brood when I make up nucs and splits.

Making New Hives

Q I have five hives, each with 10 frames. Can I make a new colony by taking one frame from each and giving it a new queen?

Ray Cashian
Asheboro, NC

A Yes, you can take one comb of brood and bees from each of the five colonies, making sure you do not get any of the queens, combine them in a new hive with four additional empty combs or frames of foundation and a new queen. The bees from the different colonies are not likely to fight, and you would thus have 9-comb hives instead of 10-comb ones, which is an improvement. Keep the five combs of brood together in the new hive; do not spread them out.

Swarming, or Absconding?

Q When a colony swarms, does it ever happen that all the bees leave?

Walter N.
Brackmann
Apple Valley, CA

A Not normally. If a hive should become completely depleted of honey, and there is a dearth of nectar and pollen in the fields so that the bees cannot even feed their brood, they sometimes throw a "hunger swarm" when all the bees leave. The other condition in which all the bees abscond is during unremitting stress such as dampness, dark and cold, and severe infestation by tracheal and/or *Varroa* mites, or other diseases.

Treating New Colonies

Q When I start up new colonies using new queens and combs of brood from my strongest established colonies, should I be treating for nosema, AFB and mites?

Andy Moore
Sweetwater, TX

A I wouldn't think it necessary to treat for nosema, but some suggest it is necessary. As for AFB, I should think you would be taking your combs of brood from colonies you are fairly sure are disease-free. A colony just getting started in the Spring is not likely to get tracheal mites. As for *Varroa*, it would be a good idea to use Apistan for this. One strip should do if you start with only three combs of brood, but be sure it is where the bees will be in constant contact with it. Then treat for *Varroa* again in September. As a precaution, if you are unsure, an extender patty of vegetable oil and terramycin will keep problems under control.

Bird Food?

Q The bees are visiting my bird feeder, which contains unshelled sunflower seeds, in great numbers this Spring. They have not done this in previous years. Why would they suddenly be interested in sunflower seeds?

Laurie Wyrenbeck
Hillsboro, NH

A Bees sometimes become desperate for pollen in early Spring, and when there is little to be found, they seek substitutes. There have been reports of their being attracted to coal dust. Cracked corn is also quite attractive to them because the dust from it strongly resembles pollen. It is less clear why they would be attracted to unshelled sunflower seeds, unless there was perhaps some dust there, too. After a mild Winter, resulting in early brood rearing and many hungry larvae before pollen sources become plentiful, the bees are apt to show an intense interest in bird feeders, sawdust or any pollen-like material. This behavior usually ceases when regular pollen sources become available.

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*Questions are welcomed. Address them to: Dr. Richard Taylor, Box 352, Interlaken, New York 14847 (**not to Medina**) and enclose a stamped envelope for a direct response.*

Answers!

Richard Taylor

Gleanings

MARCH, 1996 • ALL THE NEWS THAT FITS

IBRA CHOOSES NEW DIRECTOR

IBRA's Chairman, Professor Ingrid Williams, and IBRA's Governing Council, announce the appointment of Richard Jones BPhil Ed; MEd., as the new Director of IBRA, following Andrew Matheson's return to the Ministry of Agriculture, in New Zealand, after five years in the post.

Mr. Jones was formerly Development Director of Atlantic College, St. Donats, South Wales, (one of the International British Commonwealth Group of Atlantic Sixth Form Colleges) has been engaged on a three-year contract from February 5, 1996.

IBRA
INTERNATIONAL BEE RESEARCH ASSOCIATION

BEES GET WIRED IN U.K.

British scientists have built a radar transponder so small it can be carried by a bee in flight.

The world's smallest antenna weighs just three milligrams and is 16 millimeters high. The breakthrough in miniaturizing the device is that it does not need a battery. It picks up the operating power it needs from the incoming signal.

Entomologists said the antenna could be used to improve the knowledge about bees' foraging and pollinating habits.

This could allow beekeepers to site their hives more efficiently.

The first test flights were made last summer.

"We fitted the transponders in the morning and took them off when the bees came back to the hive at night," said Dr. Joe Riley who works at the Natural Resources Institute radar unit in Malvern, Worcester.

The trials showed the bees could fly normally with the antenna superglued to their backs but had trouble re-entering the hive.

The antenna – technically called a harmonic generating tag – was developed with a $100,000 grant from Britain's Overseas Development Agency.

"The tag reflects a harmonic of the radar signals which can be detected against strong competing echoes from the ground," Riley said.

"The insects are then tracked by a radar scanner with two dishes, one to send the signal out and one to receive it," he said.

The researchers weren't originally looking to help the beekeeping industry when they began the project.

They had been assigned the task of creating the antenna so the tsetse fly could be tracked in a program aimed at controlling the pest in Zimbabwe.

Bees were originally selected because they were good models to test the antenna.

The benefits to beekeeping were realized during the first flight tests.

MAXANT HAS REPRINTS

Maxant Industries announces the availability of two information folders for Beekeeping Associations to distribute at meetings. One is on honey processing – from uncapping to extracting, clarifying, pumping, filling and necessary equipment.

The second is on laying out a honey processing system – from design to setup to equipment.

These are available to associations only. For information contact Maxant at P.O. Box 454, Ayer, MA 01432, or call (508) 772-0576.

Got Any Survivors?

USDA BATON ROUGE LOOKING FOR RESISTANT STOCK

The USDA, ARS Honey Bee Breeding, Genetics and Physiology Laboratory in Baton Rouge, Louisiana, is seeking the help of beekeepers in a project aimed at combatting *Varroa jacobsoni*. We at the laboratory are searching U.S. honey bee germplasm for traits which contribute to resistance to, or tolerance of, *Varroa*. Beekeepers are urged to contact us if they are aware of colonies that have survived for more than a year without treatment to control *Varroa*. Many people have commented to us about colonies that they think may be resistant. Now is the time to critically evaluate these genetic resources from across the nation, as resistance may indeed have had a chance to be expressed. We ask the nation's beekeepers to check for possible "survivor" colonies as beekeeping activities are stepped up in the weeks ahead.

This project can accommodate up to 50 queens. The queens will be evaluated in 1996, and the best will be used for further stock research and development during the next two to three years. Each contributing beekeeper will be sent the results of the initial queen evaluation and a complimentary queen from the first generation of propagated material.

The chief goal of this project is to deliver an improved stock back to U.S. beekeepers. Thus, this is a unique opportunity for concerned beekeepers to contribute to the well being of their industry. Anyone wishing to contribute potentially useful queens should contact one of the principal investigators (listed below) by April 1, 1996 if possible. Queens will be needed in Baton Rouge by April 24. We ask that no queens be sent before arrangements are made with us.

Robert Danka (504-767-9294, email RDANKA@ASRR.ARSISDA.GOV); John Harbo (507/767-9288, JHARBO@ASRR.ARSUSDA.GOV); Thomas Rinderer (504/767-9281, TRINDERE@ASRR.ARSUSDA.GOV).

USDA,ARS Honey Bee Breeding, Genetics and Physiology Laboratory, 1157 Ben Hur Road, Baton Rouge, LA 70820-5502, tel. 504/767-9280, fax 504/766-9212.

Wildlife Benefits

USDA SETS ASIDE MILLIONS OF ACRES

USDA announced December 21 that 683,390 million acres of cropland were accepted into the Conservation Reserve Program as a result of the 13th sign-up held in September. The bidding and enrollment processes for the sign-up were modified to ensure that only the most environmentally sensitive lands were accepted.

Among the changes was an automatic top environmental ranking for acreage to be placed in field windbreaks, grass waterways, shallow water areas for wildlife, filterstrips and shelterbelts. In addition, bids involving filterstrips and riparian buffers received a 10% higher bid cap. As a result, 33,900 acres of filterstrips were enrolled, marking a 2,700 percent increase above the 1,227 acres enrolled in the 12th sign-up. In addition, about 75,000 acres of trees will be planted and more than 2,000 acres will be devoted to wildlife habitat.

JACKSON WINS EXCELLENCE AWARD FROM A & M

Paul W. Jackson, state entomologist for the department of entomology at Texas A&M University, received the 1995 Vice Chancellor's Award for Excellence in special services.

The award, which was given at the 1996 Texas A&M Agricultural Program Conference, is the highest given to faculty in the Texas A&M agricultural program. It was presented January 10 by Dr. Ed Hiler, vice chancellor for dean for agriculture and life sciences at Texas A&M.

Jackson, one of the few regulatory entomologists in the United States who is a staff member of a university system, has served the agriculture program for 26 years. He was cited as being on the front line of defense in the arrival of the Africanized honey bee in Texas.

Dr. James E. Tew, national program leader in apiculture, said Jackson's efforts with the Africanized honey bee is one of the many things that makes him a credit to regulatory entomology and a deserving recipient of the award.

"Not only has he survived the event," Tew said, speaking of the arrival of the Africanized bee, "he has done it with professionalism and distinction."

Through his efforts, the Africanized honey bee has had a minimal impact on beekeeping and public safety, while also ensuring the availability of honey bees for pollination.

3 Good Reasons Why
AFRICAN HONEY BEES' MOVE NORTH SLOWED

Recent studies of the spread of Africanized bees in this country show an encouraging trend. The bees are now moving northward very slowly. Ten years ago, the bees were moving north at a very steady rate of about 300 mile a year. In 1995, they moved into only two new countries in Texas.

Why is this? Dr. Bill Rubink, a U.S. Department of Agriculture scientist, discussed this issue at the American Bee Research Conference recently. He feels that there are three reasons that the bees are bogged down. One is that the Africanized bees are interbreeding much more with the more gentle strains of bees kept by beekeepers in Texas. Second, the Africanized bees are getting into cooler climates that don't suit them. They are now around Houston and Austin – not cold by Kentucky standards, but they do get frost and it's cooler there than in the tropics. A third factor seems to be *Varroa*. The feral colonies have little resistance, so they are really hit by this mite. Rubink feels that the bees will eventually get to Louisiana, where they could take a ride on Mississippi River boat traffic, but it will take longer than originally thought.

Proposals Needed
EAS FUNDS RESEARCH

The EAS Foundation for Honey Bee Research is a competitive grant program developed from donations received from beekeepers and others interested in funding research on topical problems in honey bees. Proposals are hereby solicited with awards to be announced at the 1996 annual meeting. Awards should be considered "seed money" to provide investigators the opportunity to collect preliminary data or as "add on" funds to combine with other funding sources to continue present research. Students working on degrees may find these funds especially appealing as they seek to complete graduate degrees. These grants may be used for supplies, equipment, salaries, travel or other appropriate uses.

EAS will award two grants of up to $1500 each in 1996 at the annual banquet. Awards will be determined by July 15, with funds immediately available. Deadline for application is May 24, 1996. For information contact: EAS Foundation for Honey Bee Research c/o Loretta Surprenant, EAS Secretary, Box 300A County Home Rd., Essex, NY 12936.

BEST BEEKEEPERS

Lee Heine was named Beekeeper of the Year at the 1995 annual convention of the Wisconsin Honey Producers at Sheboygan.

Lee was nominated because of his service on the promotion committee and his continued efforts in helping prepare the agenda for the WHPA and convention program. He has also been involved in the queen committee and has worked to increase the membership of WHPA. With Heine as membership chairman, the WHPA has increased its membership in the last four years from 302 in 1992 to 444 in 1995.

Heine also serves as vice president of Wisconsin Honey producers and has been an American Beekeeping Federation director for the last five years. He is presently national co-chair of membership for the American Beekeeping Federation.

The Oklahoma Beekeepers Assoc. held there fall meeting in Oklahoma City on October 21, with several members attending. At the meeting Harold St. Clair (left) of Owasso was awarded the Oklahoma beekeeper of the year. Mr. Jim Grayson of Grayson Three Bees (right) presented Mr. St. Clair the beekeeper of the year award.

Shannon and Glenda Wooten, Palo Cedro, California, were honored as the "1995 Beekeepers of the Year" at the CA State Beekeepers Assn. convention, Lake Tahoe, on November 16, 1995. These two have worked together since 1974 creating a successful business of pollinating almonds and apples, queen raising, honey production and replacement colonies for other beekeepers.

Glenda grew up within the beekeeping industry working for her parents, Homer and Lois Park, from an early age. Shannon commenced working for the Parks while still in high school.

Shannon has been president of the California Bee Breeders and the Shasta County Farm Bureau and has represented California at the American Farm Bureau and the American Beekeeping Federation.

Glenda is now the first woman president of the California State Beekeeping Association and a 4-H beekeeping leader. They are both members of a number of beekeeping organizations as well as a number of others. To all of the many organizations that Shannon and Glenda attend regularly, they bring enthusiasm for the beekeeping industry and promote good relations between beekeepers and other agricultural industries.

They do take some time to hunt, fish, snow ski, work cattle and be involved in their children's activities.

They have three children, sons, Cory, 26 and Robert, 14, and daughter, Annette, 19.

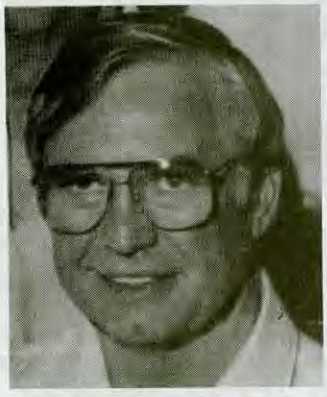
DUTCH GOLD AWARD TO ADEE

On January 12th, at the American Honey Producers Association's Annual Meeting in Corpus Christi, Texas, the recipient of the 1996 Dutch Gold Honey Bear was announced. This award is given annually to an individual in the beekeeping industry that has made a long-standing personal contribution to the industry. This year's recipient is Richard Adee of Adee Honey Farms in Bruce, South Dakota.

Richard has always been an active leader in the honey industry. He has been involved in the American Honey Producers Association since its formation in 1969 and has served as the organization's president for the past eight years. He also served on the National Honey Board for six years and was a member of the USDA-APHIS Technical Working Committee on the Africanized honey bee and parasitic mites.

Richard grew up in a family that had great ties to the beekeeping business, as his father and four uncles were beekeepers in Kansas. He began Adee Honey Farms in Bruce, SD in 1957 with the purchase of 1600 colonies of bees. In 1963 the business started its first branch operation with the purchase of another 1600 colonies, plus trucks and an extracting facility in Cedar Rapids, Nebraska. Additional expansions over the next 10 years included colonies and/or extracting facilities in Clay Center, Kansas, Larned, Kansas and Roscoe, South Dakota. At the present time, Adee Honey Farms operates between 40,000-45,000 colonies of bees and is believed to be the largest beekeeping operation in the world.

Richard saw the need to diversity into other areas of beekeeping and thus a queen and bee rearing branch was built in Woodville, MS in 1973. Most recently Adee Honey Farms expanded into the pollination business of almonds and apples in the states of California and Washington.



Richard and his wife, Alice have two sons, Bret, and Kelvin, who are actively involved in Adee Honey Farms since they graduated from college in 1984 and 1986. The Adee's daughter, Marla, represented the honey industry as the 1988-1989 South Dakota Honey Queen.

Dutch Gold Honey and the Gamber family congratulate Richard on his lifelong dedication to the beekeeping and honey industry.

The Dutch Gold Honey Bear is awarded in honor of Luella and Ralph Gamber, the founders of Dutch Gold Honey, Inc. The bronze honey bear on a walnut base, is a replica of the original model created by Woodrow Miller and W. Ralph Gamber in 1957. A $2,500.00 research grant in honor of Mr. Adee will be presented to the university of his choice.

The recipient of the annual award is chosen from nominations submitted by the Editors of *Bee Culture*, *American Bee Journal* and *Speedy Bee*. Dutch Gold Honey appreciates the time and thoughtful consideration given by these individuals to the selection process.

WHY PEOPLE BUY . . .

Not surprisingly, "Quality of Product" is the major influence in consumer buying decisions, cited by 96% of respondents in a survey conducted by public-relations firm Porter/Novelli. Other influences – positive and negative – include how a company handles complaints (85%), how a company handles a crisis when it is at fault (73%), government challenges about product safety (60%), and accusations of illegal/unethical trading practices (59%). In a parallel study, they found corporate executives underestimate the importance of such issues as fairness and equality in hiring (named among the three most important criteria by 24% of consumers, but perceived to be so by only 4% of executives).

USDA NAMES 11 MEMBERS TO NHB NOMINATIONS

The U.S. Department of Agriculture has appointed 11 members to the National Honey Nominations Committee.

Newly appointed members are: Delmar A. McCann, Laveen, AZ and Richard R. MacDougall, Reno, NV.

Reappointed members are: Gene Brandi, Los Banos, CA; Lyle Johnston, Rocky Ford, CO; Jeannine May, Harvard, IL; George W. Imirie, Jr., Rockville, MD; Bruce Stengel, Clarkfield, MN; Gary W. Rulison, Amsterdam, NY; G.C. Walker, Jr., Rogers, Texas; Roger A. Stephenson, Delta, UT; and Eleanor Toews Conlon, New Martinsville, WV.

All members will serve terms beginning January 1, 1996 and ending December 31, 1998.

The National Honey Nominations Committee recommends nominees to serve on the Honey Board under provisions of the 1986 Honey Research, Promotion and Consumer Information Order. The board administers an industry-funded, national research, promotion and consumer information program to increase domestic honey consumption and U.S. honey exports.

USDA's Agricultural Marketing Service monitors the operations of the nominations committee and the Honey Board.

U.S. STILL CHEAPEST

COST OF FOOD UP

Here are costs for a market basket of food as priced in capital cities around the world. (Calculated in U.S. dollars)*

Washington D.C.	$47.10
London, England	$54.92
Bonn, Germany	$59.56
Singapore, Malaysia	$65.69
Paris, France	$73.32
Seoul, South Korea	$79.39
Stockholm, Sweden	$102.50
Tokyo, Japan	$158.09

**Market basket includes 2.2-lbs. sirloin steak, 2.2-lbs. pork roast, 2.2-lbs. chicken, 1 dozen eggs, 2.2-lbs. butter, 2.2-lbs. cheese, 1-qt. milk, 1-qt. cooking oil, 2.2-lbs. potatoes, 2.2-lbs. apples, 2.2-lbs. oranges, 2.2-lbs. flour, 2.2-lbs. rice, 2.2-lbs. sugar and 2.2-lbs. coffee.*

Merger & Down Sizing Continues

USDA HAS NEW RESEARCH EXTENSION & EDUCATION LEADER

Bob H. Robinson has been named the administrator of the USDA's Cooperative State Research, Education, and Extension Service (CSREES). As administrator of CSREES, Robinson will oversee the agency formed by the merger of the Cooperative State Research Service and the Cooperative Extension Service during USDA's reorganization. Its primary responsibility is to provide leadership to the land-grant university system and its partners in research, higher education, and extension. Robinson comes from USDA's Economic Research Service (ERS) where he served as director of the Natural Resources and Environment Division since October 1994. He was director of ERS' Agricultural and Trade Analysis Division from 1990-94. Robinson was ERS' associate administrator from 1986-90. He started his career with ERS in 1965 as an economist. Robinson served on the faculty of Clemson University from 1972 through 1986. Born in Madison County, NC Robinson earned a B.S. degree in agricultural science from Berea College in Kentucky, a Master of Science degree in economics from NC State University, and a Ph.D. degree in agricultural economics from Clemson Univ.

SEND YOUR ASSOCIATION UPDATES FOR WHO'S WHO TODAY – TELL EVERYBODY!

Money Not Everything

CHOOSING A JOB

Studies have shown workers regard the quality of their work environment just as highly as money – if not more.

The following study can help you assess pay rates for your employees, based on whether the job you are offering has other important factors in job satisfaction.

Important Factors
In Choosing An Employer

Factor*	Rank
Open Communications	65%
Effect on personal/family life	60%
Nature of work	59%
Management quality	59%
Supervisor	58%
Gain new skills	55%
Control over work content	55%
Job security	54%
Co-worker quality	53%
Stimulating work	50%
Job location	50%
Family-supportive policies	46%
Fringe benefits	43%
Control of work schedule	38%
Advancement opportunity	37%
Salary/wages	35%
Access to decision-makers	33%
No other offers	32%
Management opportunity	25%
Size of employer	18%

*Respondents who cited the factor as "very important" in deciding whether to take a job with his or her current employer.

Source: Families and Work Institute: The Changing Workforce, 1993

Meet Smokey Dents, our regular contributor on these pages. As we stated in January, he works for a commercial operation, is married, drives a typically standard 'beekeeper' pickup and works pretty hard. He sees things most of us don't, though, or at least things most of us won't admit seeing (this month may be the exception). And, he gets himself in a jam now and then (see below!)) – not unlike most of us. He has, most times, a story to tell or a problem to solve.

Smokey Dents

Two people picked Smokey as a first name, and we'll be sending them a 'Dave' original of this cartoon. We had over 50 entries, and some were pretty clever. Those we considered included Dave Drone, Sticky, Wayne N. Wax, Andy Cappings, and Maynard. Thanks to all who sent in their thoughts. Smokey appreciates your efforts!

"This fence'll keep that *#@!%& bear out of this beeyard once and for all. Yes sir'ee Bob! I'll show him! Nobody out foxes ol' Smokey!"

HONEY WANTED

ALL TYPES OF SPECIALTY HONEY: Clover, Orange, Sage, Basswood, Alfalfa, Mint, Buckwheat, Tupelo, Tulip Poplar, Gallberry, Mangrove, Fir Honey, Honeydew, & other single source honey. We pick up anywhere. ODEM Inter. Inc., 9334 Lajeunesse, Montreal, Quebec, Canada H2M 1S4. (514) 389-4875. (TF)

FEEDING

SUGAR FOR FEEDING Granulated sugar. 1,000 lb. minimum order. Available in most U.S. locations. Please call: Bill Heerdegen, St. Simons Trading Inc. 800-621-9935. FAX (314) 625-2197.

WAX RENDERING

WAX RENDERING, SLUM RENDERED at $.49 pound or at 50% of yield. Cappings - light $.22 lb., cappings - dark $.49 lb. (414) 677-4894. Kathy, Templar Seed & Honey, W 208N16721 S. Center St., Jackson, WU 53037. (TF)

MISCELLANEOUS

RAWLEIGH PRODUCTS SALVES, flavorings, etc. Shipping worldwide. Dealers wanted. 1-800-736-1126. (TF)

VIDEOS

BEGINNING BEEKEEPING VIDEO 2 hrs! All survival essentials: building hive; installing, feeding, medicating, inspecting, managing bees; harvesting, diseases & parasites; behavior. $35. Dr. Iacobucci, 172-BC Washington, Pembroke, MA 02359 (617) 826-8888. (TF)

GET BACK TO THE BASICS of beekeeping with this professionally filmed and edited one hour 58 minute action packed video. *An Introduction to Beekeeping* gives you the basics you need in five segments, including; equipment construction, colony inspection, pests and diseases, resources and honey extraction. Send check or money order for $34.95 payable to Ed Mabesoone P.O. Box 12352 Brooksville, Florida 34601. (396)

BOOKS & NEWSLETTERS

AN EYEWITNESS ACCOUNT of Early American Beekeeping by A.I. Root. The pioneers of beekeeping as close your bookshelf. Cat. No. X1, $3.69 postpaid. The A.I. Root Co., 1-800-289-7668. (TF)

PERIODICALS

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WHAT KIND ... Cont. From Pg. 175

ponents – amino acids, proteins, etc.

Our colonies at Fox Head Farm are certainly forced to work a variety of plants because of the afore mentioned lack of a large single-genus source of nectar. And maybe even if our bees had that large single source, their foraging habits would remain unchanged.

Field bees do not deposit their nectar loads directly into a cell but rather pass it to a house bee to be eventually deposited through the normal food passing channels. In this way the "nutritional" intake of the entire hive is constantly monitored. A field bee returning with low-sugar nectar may have difficulty recruiting fellow foragers to follow her. If true, this behavior would seem to automatically restrict the gathering of low quality nectar simply from a logistical standpoint.

To say that the nectar is being judged, albeit instinctively, must be correct, for if the returning field bee with her poor nectar is detained in off-loading, a house bee would necessarily have had to "check her load."

The amount of sugar in the nectar is generally considered 'the' criteria, however, if a colony is in need of water, a more diluted nectar could actually be of value. But a nectar with other components – amino acids or proteins – could just as easily be 'accepted,' or 'rejected.' However, where there is essentially only a single nectar source – say a million acres of white sweet clover in South Dakota, the bees have no comparison.

Getting back to our question – What kind of honey does it make? What if we, at our farm, were to plant an acre of two of Mountain Mint. This little endeavor would take 20,000 plants per acre at no small cost in dollars and time. The bees swarmed to it – six hives worth of field bees packing in Mountain Mint nectar at a fever pitch. What if after all of that and the bees don't really care about the type of nectar they are taking in and they are curing Mountain Mint honey. We take it off the first week in September, as is our custom, and extract this pure varietal Mountain Mint honey and it tastes just like liver! I suppose we could market if by advertising that it "Goes real good on fresh sliced onions."

". . . and this is our planting of Mountain Mint."

"The bees sure like it. What kind of honey does it make?"

"Tastes just like calves liver. Me and the kids love it on fresh sweet onion slices!"

If after reading this, you are still dead set on producing a pure variety honey (without moving to South Dakota) and want to make a super-pasture for your bees, or a super bee garden, an acre of any of the perennials in the ATI Bee Garden would require, as I've said about, 20,000 plants – minimum. The cost for said plants would have the same number of digits to the left of the decimal point as does the number of plants required. And don't forget the fact that the honey from your super bee pasture might taste like calves liver – or who knows? – Brussel Sprouts! I think our bees at Fox Head Farm will continue to make pure weed honey.

I believe if I'm asked in the future – what kind of honey does it make? – I'll have a more satisfactory answer. I'll say, "Who knows?" And just in case I find myself in one of those "ASK ME" hats again, I'll have to make it a point to know where all the restroom facilities are located . . . I never did find out if I was correct in sending that lady to the Bee Lab – I'm sure it wasn't locked – I'm pretty sure it wasn't – and I had that hat on – I hope it wasn't an emergency . . . can't remember if she was pregnant or not . . . No! I don't think so. BC

Brad Kurtz and his wife own and operate a retail greenhouse in Marshallville, OH. They run about a half-dozen colonies, and tend bee gardens in their spare time.

Display Index

One of my great joys in 14 years of beekeeping is having friends become beekeepers. I have done it twice. Both Johnny, of Woodstock, Vermont, and Robert, of Penobscot, Maine, are, because of me, keepers of the amber flame.

I suspect we all have the conversion bug in us. That's why Seventh Day Adventists knock on my door, why my parents keep telling me I'm crazy not to move to Florida, and why Bill keeps taking me for rides on his motorcycle, hoping I'll get the bug. When we convert someone, we feel vindicated. It is as if someone says what you do is good and right and I want to do the same thing.

Getting someone interested in beekeeping is even more of an accomplishment, because, well, we all know the activity is not for everybody. When I mention beekeeping, most friends simultaneously cringe and shudder, their mouths puckering as if I had just given them lemons to bite, and they quickly change the subject. It requires a certain amount of courage and curiosity to explore the exotic world of insects and it takes a disregard for the opinions of others. Plus it's not something one gets into halfway. You can't just crack open the hive cover, and peer in. You must enter your hive, and mingle with 80,000 critters who are watching for any sign of faltering confidence. The activity is definitely not for dabblers or dilettantes. And, a beekeeper takes on responsibility. He adopts a living world, and to some extent, takes on a certain influencing role on the environment. One friend, whose hives died, leaves an empty, decaying deep super in place in his backyard, like a cemetery marker, as a reminder of his failure to live in harmony with nature. Such is the level of commitment one undertakes when getting into bees.

So when you have someone who listens to you, year after year, politely nodding his head, perhaps asking a few questions, and then one day, he calls and says he's become a beekeeper, it's shocking. The call goes something like this:

He: "Howard, guess what?"

You: "You're moving to Alaska."

He: "No, guess again."

You: "You're getting divorced? You're becoming a transvestite? You finally quit the job? You won the lottery? Your wife's pregnant? You've discovered oil on your land?"

He: "Nope. I'm a beekeeper."

You: "A beekeeper, a beekeeper! My God, you've never hinted that you wanted to become a beekeeper. All those years of me talking. So I've actually conveyed some of the real pleasure. Now you'll experience firsthand what I've been through."

When this happens, a meaningful connection is struck. There's an instant bonding. It's like reading a friend's letter, and understanding exactly what he's getting at and where he's at emotionally, so much so, you can hear him say the words and see his mouth move as you're reading the words.

After the pleasure of conversion, there's ongoing satisfaction. You have someone to talk to, to share your experiences, and to discuss your theories. On visits, there's looking in to each other's hives and trying to explain what's going on. When problems arise, there's always their advice. For me, there's been many a late-night phone call asking when to stop feeding sugar water, or how to insulate a hive during the winter, or what to do when you find a mouse nesting in the hive. Plus, you never have to think hard about gifts. On my last visit, Robert lent me *The Biology of the Honey Bee*, by Mark Winston (Harvard University Press). Last Christmas, I gave each friend a subscription to *Bee Culture*.

Every Thanksgiving, Johnny and I and our families get together, and we have a honey-tasting contest. Of course, his four kids to my one tilt the scales somewhat, but winning really doesn't matter. I have learned that honeys from different locales do have different tastes. I'm based in a flat woodland area, and he's on a mountaintop. Typically, his honey is brighter, denser than mine, and has more of a bite to it.

Robert has one hive and worried about losing it this year, despite having had a successful maiden season. However, being a high-school chemistry teacher, my friend understands the infinite permutations of science, and is not deterred. In fact, he's quite interested in the subject of why colonies die.

The bottom line is, the common interest has enhanced our friendships. Standing alongside a buddy looking at one of our hives, chatting about bees, is as fine a moment as any person could want.

Passing On The Amber Flame

Howard Scott