



APR 92

GLEANINGS IN

BEE CULTURE

INSIDE . . .

SWEET SPOTS

Finding The Best Locations

LOOKING FOR TROUBLE

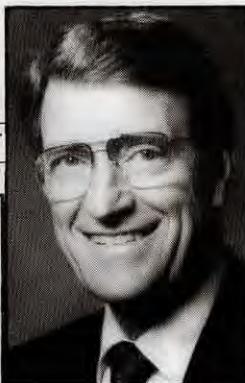
4 Ways To Find Varroa Mites

1992 WHO'S WHO IN BEEKEEPING

THE Industry Directory



JOHN ROOT



KIM FLOTTUM

THE A. I. ROOT CO., Publishers
623 W. LIBERTY STREET
MEDINA, OHIO 44256

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Photo by Kim Flottum



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CENTER SECTION

THE 1992 WHO'S WHO IN BEEKEEPING

The most complete Directory published. A 12-page removable section including Federal, State, Regional and Local beekeeping organizations, contacts and more! A Keeper!

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- **LOOKING FOR TROUBLE***Roger Morse* **222**
Varroa can wipe out a colony in a single season and if you have it you need to treat. Here are four easy ways to find out if you have it now.

- **SWEET SPOTS***Jeff Ott* **228**
Finding the perfect spot for your new or next apiary isn't easy, but here are the important points to keep in mind.



Looking For Trouble Pg. 222

INNER COVER

Two of our authors this month tackle the age-old problem of dealing with swarms. Follow either and swarms will be the exception rather than the rule in your bee yards this spring.

And that is going to be an important behavior for beekeepers to learn – and learn well.

Another writer takes a somewhat jaundiced look at an improbable run-in between a good Samaritan beekeeper, a single-minded citizen* (see page 235) and an innocent-enough swarm that's just hanging out, out on a limb.

The fundamental question that must be asked, and then answered, is, "Can you afford to go to someone's home and pick up a swarm?" A routine experience, basic, enjoyable and dangerous?

Has, or will it soon come to the point where, before a beekeeper comes over and plops a swarm in a cardboard box both parties must prove liability coverage, sign a several-page contract, determine credit ratings and have an impartial witness present to settle any dispute that arises?

If you think this situation is as improbable as what happened to our hapless beekeeper in *'Homeowner From.'* think again, friend.

A response I typically hear is "I've been doing this for 22 years. Every Cop, Fireman, Extension Agent and school Teacher within 50 miles knows me. I've rescued a hundred families held captive by a rouge swarm. I'm a hometown hero, nobody would blame me if I had a little trouble, once, picking up a swarm."

Maybe.

But if you think about it, excluding the legal hassles of contracts and liability and all the rest, do you really want to pick up a swarm anymore? What with mites and nasty foreign bees – I mean, really! Why bother?

In fact, swarm removal will probably become the domain of some bureaucratic entity designed especially to deal with those killer bee, mite-laden, perched-in-precarious-places swarms. Think about it. Untrained and (legally) unprotected volunteers don't apprehend criminals, put out fires or give emergency medical treatment. Why should volunteers sacrifice life, limb and home for a two pound swarm.

For lots of good reasons many beekeepers feel a responsibility, a duty, almost an obsession to answer a helpless homeowner's call. But maybe, just maybe it's time to re-evaluate that response.

I'm not advocating we abandon swarm collection altogether. But I'm leery of almost everybody anymore. Some attorneys are more than willing to take a case if there's a chance of collecting a fat settlement. And I own a home, a car and some insurance. I'd just as soon keep all three. That's a fairly cynical attitude I admit, but the reality is I can't afford the insurance needed to protect me from all the nasties that could go wrong when I'm 20 feet off the ground, on my ladder, on somebody else's property – it comes to about \$100 per swarm I collect each year. A hundred bucks for two pounds of bees (the mites are free, of course).

This pessimistic outlook probably isn't going to win me any fans. Nor will you be on your town's "What-A-Great-Guy" list when it's obvious you aren't in business anymore.

But if push comes to shove, tell 'em you'll be happy to drop over, for a hundred bucks, plus expenses.

There's never been a free lunch, and no longer free bees.

Continued on Page 235

Swarming And Citizens

Reader Assistance

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COMING SOON

There's more great beekeeping articles, stories and fact-filled pages coming up in *Bee Culture* than you can imagine.

May has a couple of swarm stories that everyone can identify with, but maybe not everyone can solve. Public relations, ingenuity and sometimes plain luck are needed to solve these problems.

The Annual Honey Market Report is next month, too. A whole year's worth of numbers — by region, by month and by product. See how you stack up, and maybe, where you should make some (profitable) changes.

But during the next several months there's a whole world of information just waiting to arrive at your door.

Bait hive technology is becoming more important, and we've got that covered. More equipment articles are due up, too, that even surpass the extractor, wood and uncapping series we've done.

Profiles of commercial, sideline and hobby beekeepers in the southwest, midwest, northeast and southeast are due up, along with 'out west' beekeeping. Are you buying or selling bees this year? We'll have everything you need to know in a two part series that takes the guess work out of this project.

African Honey Bee articles from Costa Rica, Brazil and Mexico give insight to what to expect here, and a quick look at Bumble bees and giant Cliff bees will increase understanding of honey bees even more.

More? Steve Taber, Roger Morse, Richard Taylor, Clarence Collison, Sue Cobey, Dewey Caron, The Weekender, O.B. Wiser, industry news and events

Bee Culture is always exciting. Don't miss even a single issue. ☐

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We encourage letters to the editor on any subject whether appearing in the magazine or not. Direct your letters to: Editor, P. O. Box 706, Medina, OH 44258. We reserve the right to edit letters for content and length, but will avoid this if possible.

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MAILBOX

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MAIL

The Editor
P.O. Box 706
Medina, OH 44256

■ Looking For Recipes

I am looking for recipes for cosmetics that use honey, beeswax or pollen. I am also trying to locate copies of *Mother Nature's Beauty Cupboard* by Donna Suwson; *A Guide To natural Cosmetics* by Connie Krochmal, or other similar books.

Jarrick Kruse
1193 Saddleridge Rd.
Moscow, IL 83843

■ Nova Scotia Corrects Story

Your news report in the January, 1992 issue of *Bee Culture* headlined "Nova Scotia Beekeepers Need Bees" contained some errors in fact which I would like to correct. It was stated that mites are now found in Nova Scotia's bees, but in fact there have been no finds of Varroa mites and only one outbreak of Tracheal mites, which was in a very isolated situation and which was promptly eradicated.

It was also stated that there is a shortage of bees for pollination of wild blueberries, yet the beekeepers of this province have consistently supplied all the demand for bees from the blueberry producers. In fact, Nova Scotia is the only province in Canada where the number of honey bee colonies has increased in the last five years. This is attributable to the prompt actions taken by the Government of Nova Scotia to close our border in order to protect our geographical isolation and prevent the introduction of Tracheal and Varroa

mites. At the same time, various encouragements allowed the Nova Scotia beekeeping industry to expand to supply the growing demand for bees for the blueberry industry.

The recent efforts undertaken by some members of the blueberry industry to open the Nova Scotia border to bee imports is a short-sighted action which is opposed by many other blueberry growers and virtually all the beekeepers in Nova Scotia. At its root is the attempt to drive down the prices paid for pollination. Perhaps the U.S. beekeepers involved in blueberry pollination should realize that they may be undercharging for this service. Canadian blueberry growers are currently paying in the \$60 - \$65 Cdn. (approx. \$51. - \$55. U.S.) range per colony rental, and the blueberry industry is still thriving at these prices.

Tom Cosman
Commercial Beekeepers Rep.
N.S. Beekeepers Association

■ Barrel Treatment?

I would like to know what kind of paint is used on the inside of food grade barrels, such as for honey. Most of it is dark red. I know about Camcote or Cambridge coatings, but if someone knows about *paint* I would like to be informed and where to get it.

Charles Rambo
Rt. 8, Box 516
Gilber, TX 75644

Ed. Note: I know there are liners used, but how are barrels reconditioned using a coating? Readers?

■ Which Bee Breed's Best

Can you recommend literature on the pros and cons on different breeds of bees.

I am interested in Carniolan, Buckfast, and Double Hybrids. Some that I have raised and studied have different advantages than others.

Dutch Holland
P.O. Box 8
Chelsea, OK 74016

■ AFB?

If, as Richard Taylor suggests (page 71), American foulbrood infected feral colonies die out, they cannot be a source of infection. Wax moth larvae in the rubbish at the bottom of the nest will invade combs as the colony weakens, and scavenger beetles consume corpses and debris to remove all trace of the corpus delecti.

For the 96% of commercial beekeepers who routinely use drugs to control AFB symptoms, the question of disease in feral or beekeeper colonies is of no importance? They have no way of knowing whether their own colonies are infected since the drugs kill the vegetative stage. But spores are not destroyed and remain a source of infection to colonies not so protected; namely the 4% of commercial and 94% of amateur beekeepers who do not use drugs. As one commercial beekeeper admonished me recently, "If you don't use drugs your bees *will* become infected!" In 40 years we have not had AFB in our isolated location, but that has changed recently. It will be interesting to see what happens.

Toge Johansson
East Berne, NY

Ed. Note: Recent evidence has pointed out that, in fact, when a feral colony dies of AFB, some residue of the infection remains, even after wax moth and other scavengers are

Continued on Next Page

MAILBOX

through. The ability of the residue to infect a new colony, or to infect robbers or other visiting bees remains unknown, but suspect.

■ U.S. Contacts Wanted

My family is eager to establish friendly relations with any family in the world with the same interests. My wife and I are 33 years old. Our son is 14. We have been engaged in beekeeping for two years already, and have 75 colonies. I think that here, in Russia, we have many old-time traditions in beekeeping and we can share our knowledge and experience if you are interested.

If interested please, write. I hope your readers can take part in this project. We'll be very grateful to any

who will write to us and offer some interesting business affairs.

You may write in English.

Alexander Tchuranov
p/o Afanasevo,
Duhovtshinski r-n,
Smolenskaja obl.,
216203, USSR

■ Mediums Are Best!

I'm one of those beekeepers who appreciates the easier handling of a medium super, not only for extracting but for winter stores as well. But one notes advice from so many sources to use two deeps for the brood chamber. I acknowledge the advantage of a deep for a brood chamber (after subtracting, for the honey arch, a much larger area is available for brood) but must we use two?

Along comes research by Furgala and Duff (*American Bee Journal*, August 1991, p. 518) which does not address this issue but from whose research the necessary data can be extracted. In seeking to discover and measure the most prolific queens,

they made thirty measurements of brood area during four years using queens from various sources. The single largest area found was 1949 square inches. This could be accommodated in 9-3/4" frames if each was only 3/4 full of brood. Conclusion: It would be an extra-ordinary queen indeed which could not be provided adequate room to lay with one deep brood chamber. Assuming, of course, that adequate stores are provided in supers, probably at least two.

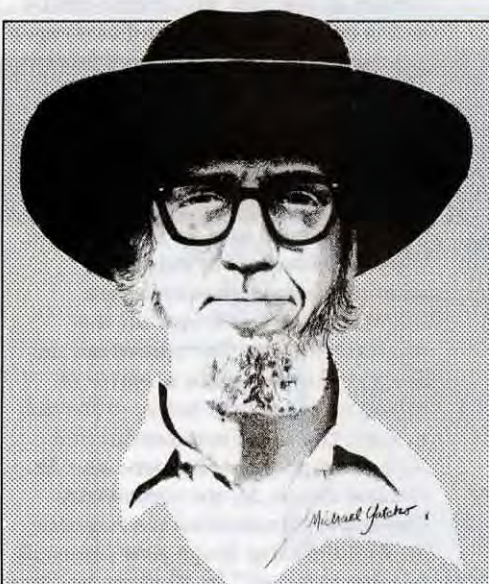
Dan Hendricks
Mercer Island, WA

■ Wire Where?

Having just ordered some 3/8" mesh galvanized hardware wire, I remembered the letter in the *Bee Culture* September issue. The following information details the purchase:

Supplier, McMaster-Carr, P.O. Box 440, New Brunswick, NJ, 08903-0440. Part number 9217T41 - Galvanized hardware cloth, 3x3 mesh. 0317 wire dia. 36 inch Roll

Continued on Page 194



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AND FINALLY, WINTER – THE BEGINNING, quietly considers the way bees and beekeepers spend that season, and prepare again for the promise of spring.

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Donald Sandstrom
Stow, MA

■ Bee Money

The new republic of Slovenia (formerly of Yugoslavia) recently issued its first paper money, including denominations of 1, 2, 5, and 10 Tolar. Each note features, on the back side, an artistic rendition of a honey bee against a background of the familiar hexagonal cells of a honey comb. Pictured is part of one side of a 2 Tolar bill.

On another note, the recent articles by Jeff Ott on uncappers, extractors, and woodenware have been, in my opinion, very useful. The sort of thing that has been needed for a long time. The information presented is information that the individual beekeeper would have a difficult time gathering on his own.

Richard Dalby
Levan, UT

Richard Dalby collects Tolars, and is an occasional contributor to the Bottom Board. He keeps bees, (and this month watches April) from his home in Levan, UT.

■ Wooden World Revisited

I just finished reading the article titled *Wooden World* in the February *Bee Culture*. It seems to contain a number of errors.

For instance top and bottom bee space are defined incorrectly, according to the Illustrated Encyclopedia of Beekeeping which Mr. Ott references, but misquotes.

And 6.4×10^{19} is not "6.4 with 19 zeroes after it" 64 with 19 zeroes after it is equal to 6.4. 6.4×10^{19} is actually 64 with 18 zeroes behind it.

The chart labeled "Inner Cover Vs. Super Interchangeability - What It Means" states that one side of all inner covers is too big (leaves too large a bee space). Of course they do! They are supposed to in their winter position. Shouldn't Mr. Ott have mentioned this instead of allowing readers to conclude that none of the covers could be reversed and remain functional?

The chart labeled "The Real World - Super Interchangeability: What It Means" seems to lead one to conclude that Brushy Mt., Dadant and Kelley make supers that cannot be properly fitted with their own respective product. They leave too big a bee space. Is This true?

On the charts labeled "The Perfect World - End Bar Length Vs. Super Width" and "The Perfect World

- End Bar Length Vs. Super Widths: What It Means" shouldn't "width" be "height" or "depth"?

All taken into consideration, though Mr. Ott's article was interesting and informative, as were his two previous articles on equipment. A great deal of research, preparation and hard work go into writing such an article. He is to be commended. On the other hand the editorial staff might consider more careful editing prior to their publications.

Harold Boretz
E. Hampton, CT

Jeff Ott Replies: I appreciate the time you took to write and point out the errors made in the article on Woodenware. In fact you are correct in every one of your observations. I hope we haven't caused any confusion. However, I'd like to reply to your fourth point. From the samples I measured it does appear that Brushy Mountain, Dadant and Kelley medium supers are not properly cut to properly fit on their own medium supers. As I pointed out in the article, a 1/32" difference is not major, and could only be a sample variation and not the norm. A difference of 1/16" is significant, however.

Jeff Ott
Hinckley, OH



Italian and Carniolan Queens

Spring Prices	<table style="width: 100%; border-collapse: collapse;"> <tr><td>1-5.....</td><td>\$9.25</td></tr> <tr><td>6-24.....</td><td>\$8.00</td></tr> <tr><td>25-99.....</td><td>\$7.00</td></tr> <tr><td>100-299.....</td><td>\$6.25</td></tr> <tr><td>300 & up....</td><td>\$5.75</td></tr> </table>	1-5.....	\$9.25	6-24.....	\$8.00	25-99.....	\$7.00	100-299.....	\$6.25	300 & up....	\$5.75	<p>Top Quality, Fertile and Guaranteed to arrive Alive and Healthy</p> <p>Preventive disease treatment Apistan shipping tabs included Shipped Postpaid. 25 or up via Express Mail</p>
1-5.....	\$9.25											
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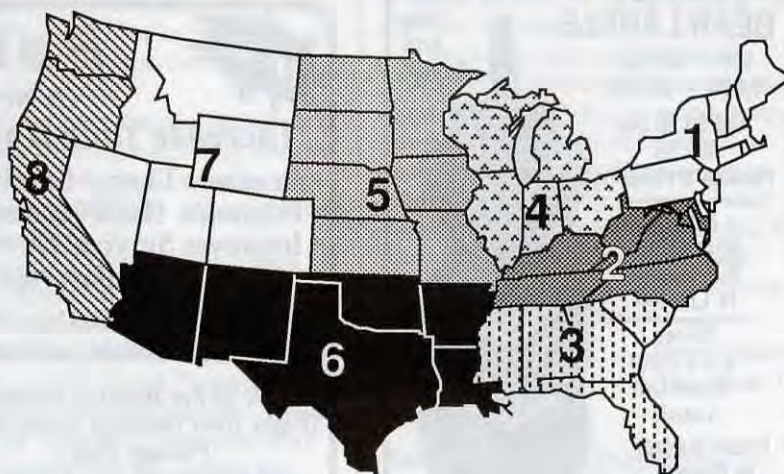
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APRIL Honey Price Report

April 1, 1992

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	
	1	2	3	4	5	6	7	8	Range	Avg.	Last Month	Last Yr.
Extracted honey sold bulk to Packers or Processors												
Wholesale Bulk												
60 # Wh.	45.72	47.69	47.41	39.13	44.14	43.02	44.91	41.68	32.40-60.00	44.25	43.57	40.36
60 # Am.	43.96	42.03	45.40	36.40	44.07	40.61	41.48	38.16	28.80-56.00	41.46	40.49	37.15
55 gal. Wh.	.640	.685	.631	.550	.590	.597	.586	.610	.45-.83	.611	.602	.50
55 gal. Am.	.582	.557	.60	.525	.580	.542	.545	.564	.43-.80	.560	.540	.47
Wholesale - Case Lots												
1/2 # 24's	20.34	23.39	22.44	18.98	16.40	20.34	21.70	22.33	15.00-26.88	20.89	21.39	-
1 # 24's	29.73	30.96	36.00	29.57	27.30	28.50	29.88	30.33	23.50-42.00	30.01	28.19	27.02
2 # 12's	26.98	30.00	34.60	27.28	24.17	27.01	28.40	31.00	21.40-40.80	28.04	27.01	25.67
12 oz. Bears 24's	27.81	28.08	30.45	27.51	24.64	25.94	27.64	28.07	21.60-33.60	27.77	25.38	-
5 # 6's	30.47	32.09	40.50	30.91	29.54	28.81	29.62	30.56	24.00-48.00	31.49	28.33	27.34
Retail Honey Prices												
1/2 #	1.10	1.33	1.37	1.26	.97	1.18	1.17	1.46	.82-1.75	1.23	1.21	1.10
12 oz. Plas.	1.52	1.57	1.65	1.54	1.35	1.49	1.50	1.62	1.01-1.99	1.51	1.51	1.42
1 #	1.70	1.78	1.93	1.85	1.56	1.73	1.80	1.94	1.37-2.34	1.75	1.72	1.70
2 #	2.71	3.10	3.43	3.30	2.72	2.95	2.93	2.19	1.29-4.29	2.90	3.00	3.02
3 #	4.12	4.09	5.10	4.25	3.69	4.05	4.27	4.36	3.50-6.19	4.19	4.04	4.10
4 #	5.23	5.10	5.15	5.65	6.05	5.16	5.13	4.90	3.65-6.99	5.30	5.10	4.75
5 #	7.14	6.74	7.40	6.65	6.58	6.62	6.27	6.54	4.59-9.99	6.78	6.28	5.82
1 # Cream	2.12	2.28	2.01	1.88	1.65	2.04	1.97	2.17	1.09-2.95	1.99	2.16	1.84
1 # Comb	3.05	2.42	2.66	3.25	2.39	2.85	3.09	3.37	1.79-4.15	2.82	2.64	2.49
Round Plas.	2.25	2.37	2.21	2.33	1.94	2.36	2.21	2.45	1.89-2.50	2.25	2.54	2.42
Wax (Light)	2.50	1.23	1.40	1.63	1.25	1.41	1.29	1.18	1.05-3.50	1.42	1.55	1.40
Wax (Dark)	1.50	1.17	1.13	1.03	1.05	1.16	1.10	1.04	.95-1.75	1.14	1.26	1.13
Poll./Col.	35.63	23.33	30.00	30.00	28.50	30.00	30.00	32.25	20.00-41.00	30.77	31.13	27.31

MARKET SHARE

A volatile wax market, due to some selling stored wax to make up cash flow, and others selling because of excess in stock has dropped the price. A short crop this year will really increase the price because there's little stored. A big crop who knows?

Watch varroa mite treatments this year. Careless, late or no treatments can spell real trouble.

Region 1

Prices steady to just a bit lower as tight money problems trickle down. Sales seasonally slow, local crops mostly gone. Mild winter means early brooding, and maybe hungry bees. Spring seems early.

Region 2

Sales appear steady, but prices of regular crops are up a bit. Specialty crops are about gone. Warm winter and early spring means early feeding. Mite infestation spotty with severe losses in some areas, and none in other areas.

Region 3

Sales increasing a little along with prices. Market seems steady, if not terribly strong. Varroa causing problems in colonies not treated. Colonies generally in good shape as pollination season heats up.

Region 4

Sales have been surprisingly good all winter in this region, primarily because the economy has been stronger than in most places. Colonies in good condition due to mild winter, and losses seem down. Mites less of a problem, so far.

Region 5

Sales and prices steady and moving at about predicted rate - early spring is usually slow. Northern areas are still having problems with mites - severe losses in some areas. Even the generally mild winter hasn't helped. However, southern areas seem to fare better this year.

Region 6

Sales and prices typically slow for the season. But the weather is the real show. Rain, rain and more rain has slowed queen and package production. But the flip side is that there will probably be a better than usual brush crop.

Region 7

Sales and prices typically strong, and looking better all the time. Weather has been good with moisture adequate and lots of flying time. Mild winter should help, but late blizzards will be troublesome.

Region 8

Honey sales play second fiddle to pollination contracts, splits, queen and package production and moving bees back to where they came from earlier this year. Almond pollination contracts were slightly overbooked this year reducing prices. Also, colonies in the best condition since pre-mite days.

NEW FOR YOU

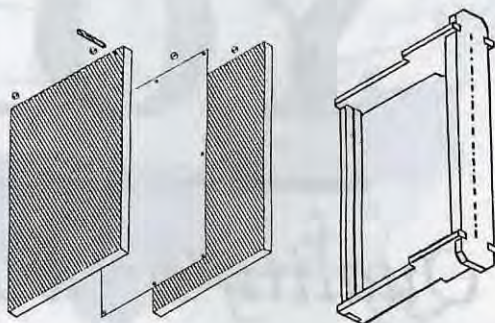


ANP of North America Inc. announces the introduction of their newly constructed FDA approved frame insert.

The insert has a unique construction in that the bottom of the hexagonal, full depth cell is wider than the top. This design, claims the manufacturer, enables the bees to put more food in the cell which causes the larva to mature faster. This, in turn results in the cell being capped earlier than usual, and the larva staying in the capped cell for a shorter than normal time.

This reduced 'cell time' results in fewer varroa females maturing, which, in turn, reduces the overall population of varroa mites in a colony.

The combs are composed of one center wall, two sides with the tapered cells, and nine assembly pins. These fit in a regular wooden frame, supplied by the beekeeper.



ANP inserts are offered at an introductory price of \$3.00/insert in quantities of six boxes of 10 or more.

For more information contact ANP of North America, P.O. Box 672, Porterville, CA 93258. □

BOOK REVIEW

A Compound of Excelsior, by Susan Rice. Published by Gasogene press, Ltd., Box 1041, Dubuque, IA, 52004. \$10.95 (plus \$2.75 S&H).

There is a dedicated no, make that an obsessed group of people who refuse to believe that Sherlock Holmes (the fictional detective created by Sir Arthur Conan Doyle) no longer exists.

Conan Doyle did, however, retire Holmes from his Dectitive duties, and alluded to the fact that he moved to the country to take up bee farming. Susan Rice defends that allusion in this odd-sized, soft cover 90+ page ook.



She first details several references Doyle made to bees and beekeeping, then explains why someone with Holmes' love for the urban would move to the country and actually take up beekeeping.

She succeeds, I think, because her obsession to Holmes easily equals the obsession most beekeepers have for honey bees. She takes Holmes from the hustle and bustle of London to the quite chaos of a beehive – and convinces any Holmes enthusiast that solving the mysteries of the honey bee would hold the attention of anyone – even somebody with a mind as keen as the Master.

To do this she goes into some detail on honey bee biology and beekeeping technique. It's obvious she is neither a beekeeper, nor even a naturalist, but

she has the basics down, and a Holmes reader will gain much from this.

But there is a more fundamental reason Holmes took to bees, and Rice brings up this surprise ending right where it should be – at the end.

You won't be a better beekeeper when you finish this very well written book, but you will understand Sherlock Holmes, and the people who have dissected each of his stories.

The steep price of this little book shouldn't stop you from picking it up. And even if the story seems a bit off-beat, the honey bee illustrations on each page are engaging. And the ending only adds to the pleasure.

Kim Flottum

VIDEO REVIEW

Extracting Honey For The Small Scale Beekeeper. 40 minute VHS video tape by R.J. Elliott, 1291 Brandywine Dr., Summerville, SC 29485 – \$22.50 (post-paid).

R.J. Elliott has put together an unassuming little program that looks at removing supers, uncapping frames, extracting honey, using settling tanks and bottling the final product.

This isn't a Hollywood production, but it doesn't need to be, either. It works just fine the way it is.

Elliott starts in the bee yard, discussing super removal using fume

boards. When he gets inside he starts uncapping by removing a super's frames all at once using a handy little trick anybody can copy. He doesn't mention all the precautions he takes, like the plastic on the floor, closed windows and the like. He did his preparations very well, and it pays to watch closely.

Uncapping is done primarily with a hot knife, and cappings fall into a handy pail. He mentions which way is best relative to moving the knife up or down and how to use the tip of the knife to best advantage.

He has a six-frame radial extractor, and we see how and why they work – a good demonstration of vibration, time, speed and more.

Once done, he shows how to empty the extractor, comments on honey moisture, capped honey, other capping tanks, other extractors and how much honey he gets from how many supers.

He moves to settling tanks, separating honey by color, how long to let it settle and then a bit about bottling and labeling.

This is a great tape for both beginners and anyone who hasn't yet mastered the harvest process. And you should watch it several times, because like so many experienced beekeepers, Mr. Elliott forgets to mention why some things get done, but you can see how it works, and why by watching.

This tape will save you its value and then some just because you'll speed up your operation (and probably keep it cleaner in the process).

Kim Flottum



RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

“Making Alfalfa More Attractive; Kin Recognition & Expensive Books.”

Several attempts have been made to increase the number of honey bees that will visit alfalfa flowers for pollination. Honey bee attraction to flowers is based on several qualities including flower color, nectar sugar concentration, nectar volume, and floral odor. The paper cited below reports on efforts to improve the quality of the floral odor.

In these tests, five known alfalfa floral odors were tested to determine if any one of them might be especially attractive and cause more bees to visit the test site. The “results demonstrate that specific alfalfa floral volatiles affect honey bee foraging behavior” and could be used to improve pollination. The authors recommend that plant breeders select for floral attractiveness, as well as other factors, when developing new alfalfa varieties.

Alfalfa is the leading forage legume, especially for dairy cows in the United States. It has no real competitor. Alfalfa has a peculiar pollination mechanism. In order for fertilization to occur, a visiting insect must put pressure on the keel that contains the flower’s sexual parts. When this is done the flower actually explodes (or “trips”) and the sexual parts “pop out” hitting the insect on the head. Honey bees don’t like this and they learn how to collect nectar from alfalfa but avoid tripping the flowers. Still, naive (inexperienced) bees trip flowers, and occasionally an experienced forager may do so, too. This paper suggests a way of increasing the number of these bees and thus improve seed set through better pollination.

Kin Recognition

“In many ways honey bees provide an ideal system for the study of kin recognition.” This is one of the introduc-

tory sentences in a chapter on honey bees in a book devoted to the subject of how animals recognize their kin. It has long been recognized that humans recognize their relatives and respond accordingly. One is, for example, more inclined to include kin in their wills than they are non-relatives. Kin recognition in animals other than humans has been little studied until recently. However, some of the interesting and better examples of kin recognition are coming from the study of honey bees.

Several of the examples of kin recognition in honey bees discussed in the reference below have to do with facts that every beekeeper knows. For example, bees in a colony recognize their own queen. If one removes a queen from a colony, and immediately replaces her with another queen, the introduced queen is usually killed (except under certain circumstances). But almost always, when a new queen is introduced to a colony it must be done slowly and even then it doesn’t always work. If a queen is removed from a swarm and the bees are given a choice between a sister of their own queen and an unrelated queen, they will usually select the queen that is a sister of their own queen. That this is done can be easily demonstrated; how it is done is not clear.

Some aspects of kin recognition in honey bees are more difficult to understand. An example is found when a colony is made queenless and one follows how a new queen is reared. There is prejudice and a group of fully related worker bees (full sisters) may discriminate and attempt to rear one of their own as the new queen rather than to allow a half sister to ascend to this position.

Not all of the answers regarding kin recognition are answered. However,

it is clear that the fact that we can manipulate honey bee colonies so easily, versus the way in which we must handle other animals, makes them a favorite for those who are experimenting in this area. The chapter below has some heavy reading and requires a good understanding of modern genetics to make sense. Nevertheless, what is written is clear and is understandable from a practical point of view.

I can’t leave this 457-page book without commenting on its price. It costs over \$90, which is ridiculous. Authors who contribute to a book with this kind of price tag are not doing themselves nor science any favors. Some (many) libraries can’t afford such prices and certainly individuals will resist paying this much for a book, no matter how good it is which limits the number of people who will read it. The responsibility lies in the hands of those who write. My suggestion is that when one is asked to contribute to a book they should ask who will publish it and what the price will be. Contributions to a book like this tend to be undervalued, and while the book is overpriced – that is seldom read, and even less often purchased. This, of course, is an opinion. Talk to your librarian and you will find a person very much concerned about this question.

References:

Henning, J. A., Y. S. Peng, M. A. Montague and L. R. Teuber. *Honey bee behavioral response to primary alfalfa floral volatiles*. *Journal of Economic Entomology* 85: 233-239. 1992.

Getz, W. M. *The honey bee as a model kin recognition system*. Kin Recognition. P. G. Hepper, Editor. Cambridge University Press, Cambridge. 1991.

by
Lynn Royce
and
B.A. Stringer

U P Close And (very) Personal



Flagellum of the honey bee antenna. Sensory hairs and plate organs can be seen on the jointed appendage. (Royce / Stringer photo)

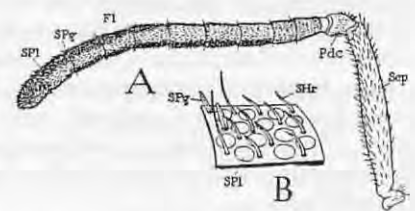
The antennae, or “feelers”, of honey bees are important sensory receptors for the insect. They may be regarded as analogous in part to our olfactory senses of taste and smell. Bees detect odors with them and, by using both antennae together, can also tell the direction the smell is coming from. Tiny hairs, pits, pegs and plates give the bee topochemical (directional and chemical) information regarding carbon dioxide presence, humidity, taste and temperature.

Honey bee antennae have three different styles of hairs which are sensitive to mechanical and olfactory stimuli. Plate organs, sensitive to queen substance and Nasanov gland odor, vary in number between the castes of honey bees. Queens have 1,600 antennal plate organs, workers 3,000 or more, and

drones have 30,000. This reflects the essential function of drones, which is to locate a queen. Much of the initial locating is done by drones sensing pheromones downwind from the queen.

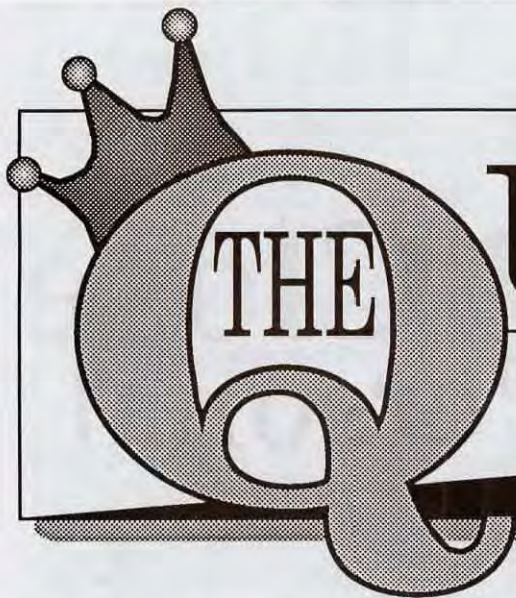
Honey bee antennae are made up of three distinct jointed parts; the flagellum, scape, and pedicel. A honey bee worker has 12 segments in each antenna, while drones have 13. It is thought that, since the drone’s main function is to locate and mate with a queen, the perception of queen pheromone is very important and the reason drones have more receptors and longer antennae than workers. The flagellum, from the Latin word for whip, is the section of the antenna furthest from the head. The scape is the part from the bend, or “elbow”, to the head. The pedicel, at the base of the antenna, contains

Johnston’s organs which are common to all insects with ringed or segmented antennae. These organs are sensitive to minute changes in antennal position and so can detect air flow and flight speed, probably complementing the function of hairs on honey bee eyes. □



(Snodgrass Fig. 96 a,b.) Antennal sense organs. A. Left antenna of worker, showing plate organs, peg organs and pits of organ of Johnston between bases of flagellum and pedicel. B. Part of antennal surface with sensory hairs, pegs and plate organs. Fl - Flagellum, Pdc - Pedicel, Scp - Scape, SHr - sensory hair, Spg - sensory peg, Spl - sensory plate.

Reprinted from R.E. Snodgrass: *Anatomy of the Honey Bee*. Copyright © 1956 by Cornell University. Used by permission of the publisher, Cornell University Press.



QUEEN AND YOU

Susan Cobey

The U.S. honey bee population is a "melting pot" of several races that have been hybridized over time. The United States lacks the clearly separated races found in Europe, the Near East and Africa.

The various races of honey bees originated by natural selection and were separated by geographical isolation. Over time they have been exported worldwide and hybridized with the help of man. Not native to North America, the Italian, Carniolan and Caucasian bees were imported before the U.S. closed its borders in 1922. These three races are common in the U.S. today, though rarely found in their pure form.

The fact that the queen mates with 10 to 20 different drones creates a complicated social structure within a hive of bees, because these various races of honey bees easily and routinely interbreed. This super-family relationship has many implications, one of which is explored here.

It is common for two or more races to be sisters within a single hive, but communication between hive-mates of different races may be misunderstood. Forager bees communicate distance and location of a food source to their hive-mates. Different races perform slightly different dances to indicate a food source. The dialect of the dance language performed by one race of bees is often misinterpreted by another race.

Foragers perform the round dance to indicate a nearby resource. For a more distant food source they perform the tail-wagging dance, which indicates

its direction and distance. Different races will initiate these dances when the food source is at varying distances. The transition dance performed to indicate a food source of intermediate distance (that distance determined by the bee to be further than a round dance would need, but less than a tail-wagging dance would indicate) will also vary between the races. The tempo of these dances is another communication variable noted between the races. The vigor and length of the dance is used to indicate the richness of the food source.

various races. Karl von Frisch studied mixed colonies of Carniolan and Italian foragers. In response to a feeding station placed 10 meters from the hive he found that the Carniolan foragers performed round dances and the Italian foragers displayed sickle dances.

The tail-waggle or long distance dance performed by Carniolans indicates a food source 85 meters or more from the hive. But long distance to the Italians indicates a food source of more than 35 meters from the hive. You can see where confusion may arise.

COMMUNICATION CONFUSION

The foraging dances of the Carniolans are the most distinct when compared to Italians or Caucasians. And, since Carniolans tend to make more frequent long distance flights, they use the round dance to indicate a food source of up to 15 meters from the hive. The Italians, on the other hand, will perform the round dance to indicate a resource of up to eight meters from the hive.

Further, the transition dance displayed by the Carniolans is a more direct transition when compared to the Italian transition dance. The Carniolans use a figure "8" pattern as compared to the "sickle" transition dance of the Italians.

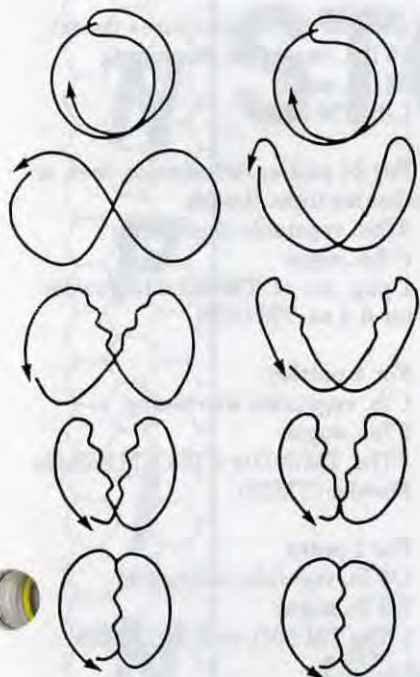
Researchers have spent long hours observing the dance language of these

Lindauer found that when a Carniolan forager receives information from an Italian dancer indicating a food source at 100 meters, the Carniolan flies to a spot 120 meters away. Conversely, when an Italian forager receives information from a Carniolan dancer indicating the same food source, the Italian goes only 80 meters. Neither, it would seem, work very efficiently.

The Carniolans have a more rapid dance rhythm compared to most other races, and confusion can occur when the two races communicate. Carniolan foragers, stimulated by an Italian dancing bee indicating a food source 200 meters from the hive, will search at a distance of 300 meters. The Carniolan workers, reacting to the slower dance of the Ital-

ian bees, will fly to a greater distance. Not surprisingly, Italian foragers reacting to the rapid dance of the Carniolan bees, will fly to nearer locations looking for lunch.

Take a closer look at the bees in your hives. Do you have racially mixed colonies? If so, observe the dances and see if you can detect any of these differences. □



Transition dances from the round to the waggle dance. On the left are the sickle-shaped transition dances used by most bee races, and on the right are the direct transition dances used by *A.m. carnica*. (Redrawn from von Firsch, 1967a.) (From Winston, M. 1987 *The Biology of the Bee*)



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? DO YOU KNOW ?

FLOWER POWER!

CLARENCE H. COLLISON

Success in beekeeping is often measured by the amount of surplus honey that is produced annually by the beekeeper. The beekeeper actually, however, has limited control on the factors that regulate honey production from year to year. Honey production and colony development are directly related to the floral sources in the immediate area of the apiary and the prevailing climatic conditions. Beekeepers should become familiar with the major floral sources of their area and when these species bloom in order to know when peak colony populations need to be present.

Major honey flows depend on a few plant species which yield nectar abundantly and are readily available. Besides two or three main annual sources, there should be a great variety of minor plants yielding both pollen and nectar throughout the season to support the colonies between the main flows. How well do you understand the factors that affect colony development and honey productivity? Please take a few minutes and answer the following questions to see how well you understand this important topic.

The first four questions are true and 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. ___ Fresh pollen and nectar in the spring serves as a strong stimulus for brood rearing in a honey bee colony.
2. ___ Foraging honey bees collect large quantities of wind-borne pollens such as pine, ragweed, etc.
3. ___ Nectar secretion is affected by soil conditions such as fertility, moisture and acidity.
4. ___ The natural diet of adult worker honey bees switches from heavy reliance on honey and nectar to pollen as the bee ages.
5. ___ Maple
6. ___ Tulip Poplar
7. ___ Willow
8. ___ Basswood
9. ___ Black Locust
10. ___ Mesquite
11. ___ Sourwood
12. ___ Tupelo
13. ___ Orange
14. Name three colony conditions that would result in a queen laying a small, solid brood pattern (3 points).
15. Name four colony conditions that could result in a spotty brood pattern (4 points).
16. Most flowering plants produce nectar, pollen or both and are worked by foraging honey bees. Name three characteristics that determine the value of a particular plant species toward surplus honey production (3 points).
17. There are a relatively small number of plants that produce honey with an off-flavor or a bitter aftertaste. If you have harvested honey you decide is undesirable, what course of action should you take? (2 points).

Some tree species are important to early spring colony development. They bloom early, before most floral sources become available. Other tree species are dependable producers of surplus honey and bloom after the weather settles and colonies are strong enough to store surplus honey. Please indicate which tree species listed below are important to colony development or sources of surplus honey.

- A. Colony Development B. Surplus Honey

ANSWERS ON PAGE 234

SPRING TONIC.

Don't Forget The Basics

We've noticed that with all the attention tracheal and varroa mites are getting, and the noise folks are making about African honey bees, some of our traditional nasties have been overlooked and are making things miserable for bees, and beekeepers.

"American Foulbrood and Nosema are particularly troublesome this time of year", said Joli Winer, co-owner of Mid-Con Agrimarketing, a bee supply and medication business located in Overland, KS.

"In the spring bees are under considerable stress, and Nosema particularly is a problem", she said. "Unchecked, it can reduce a colony's ability to build up in time for a honey flow, reducing your crop. Ultimately, it can kill a colony", she adds.

"But treatment is easy and inexpensive", adds Cecil Sweeney, Mid-Con's other co-owner, and Joli's husband.

"Fumidil-B is, unfortunately, often overlooked and too often forgotten", he said, "and treatment is recommended every spring to take care of it."

"You treat colonies by mixing the right amount of Fumidil-B in either sugar syrup or high-fructose corn syrup, and then feeding that mixture to your bees, early in the spring. But there are some tricks to remember," he added.

"First, take a level teaspoon (be sure and read the package insert) of Fumidil-B and add it to about a half pint of hot water (from the tap) and let it sit for three or four minutes," he said, "Make sure it is completely soaked. That's very important", he added.

"Once it's soaked up as much as it can, then add it to a gallon of 50:50 syrup or HFCS 55, and shake, shake, shake. It doesn't work if it doesn't mix, so shake it again," he said.

"You only need to feed once in the spring, but make sure you have it off your hive at least 30 days before the honey flow. You don't want to take any chance of contamination", he said. "That's important, too."

"Well, don't forget about American

Foulbrood," Joli said. "Spring is the perfect time to treat, or to give a precautionary treatment, just in case you've bought used equipment, or somebody else's bees," she adds.

"But first, you have to know what a healthy colony is, what good comb looks like, and what the disease looks like, too", she said.

"There's several ways to treat", said Cecil, "and they're all easy. For those who have a few colonies, probably the best way to treat is to buy a 6.4 oz bag of TM25 (available from most beekeeper supply companies), and mix it with a three pound bag of powdered sugar. Then, put two tablespoons of this mixture on the ends of the top bars in each



Cecil Sweeney & Joli Winer

colony." You've got to do this three times, at 4-5 day intervals, though," he adds, "and you need to finish all three treatments at least 30 days before the main honey flow, which most people can figure as about two to four weeks before dandelions hit full bloom," he said.

"If you have quite a few colonies", said Joli, "you probably should consider extender patties, which are easy to make and use." she adds.

"There's several formulas you can use, but those listed here are the most common", Joli added. Here they are.

1) For 100 patties (to treat 100 colo-

nies once, or 33 colonies three times):

16 lbs. vegetable shortening
32 lbs. sugar
1 lb. TM 50D

2) For 20 patties (20 colonies once, or six colonies three times):

3 lbs. vegetable shortening
6 lbs. sugar
1 pkg. 6.4 oz. TM Soluble Powder (or 6.4 oz. TM 50D)

3) For 6 patties:

1 lb. vegetable shortening
2 lbs. sugar
3 Tbs. TM 50D or 6 Tbs. TM Soluble Powder (TM25)

4) For 1 patty

1/3 lb. vegetable shortening
2/3 lb. sugar
1 Tbs TM 50D, or 2 tsp. TM25

"There are also three commercially available premixed products on the market", said Cecil, "and you should check those out, too."

The products are Terra Brood Mix put out by Mid-Con, Tetra Bee Mix, put out by Dadant and Sons, and Mann Lake's Terra-Patties.

The first two contain both medication and a pollen supplement that bees find attractive and easy to eat. When prepared according to directions you not only administer the correct amount of medication, but add some nutrients to the colony. No vegetable shortening is involved.

Terra-Patties consist of a vegetable shortening carrier and a terramycin compound. They are fed like the extender patties mentioned above.

"Spring can be tough on your bees", Cecil says, "and anything you can do to reduce stress and let your bees concentrate on what they do best, will let you do your best."

So don't get caught up in the varroa and tracheal mite controversy without attending to the basics - take care of these, and the rest will be a lot easier. □

NORTHERN EXPOSURE

A.J. SARLING

90 DAYS OR DIE

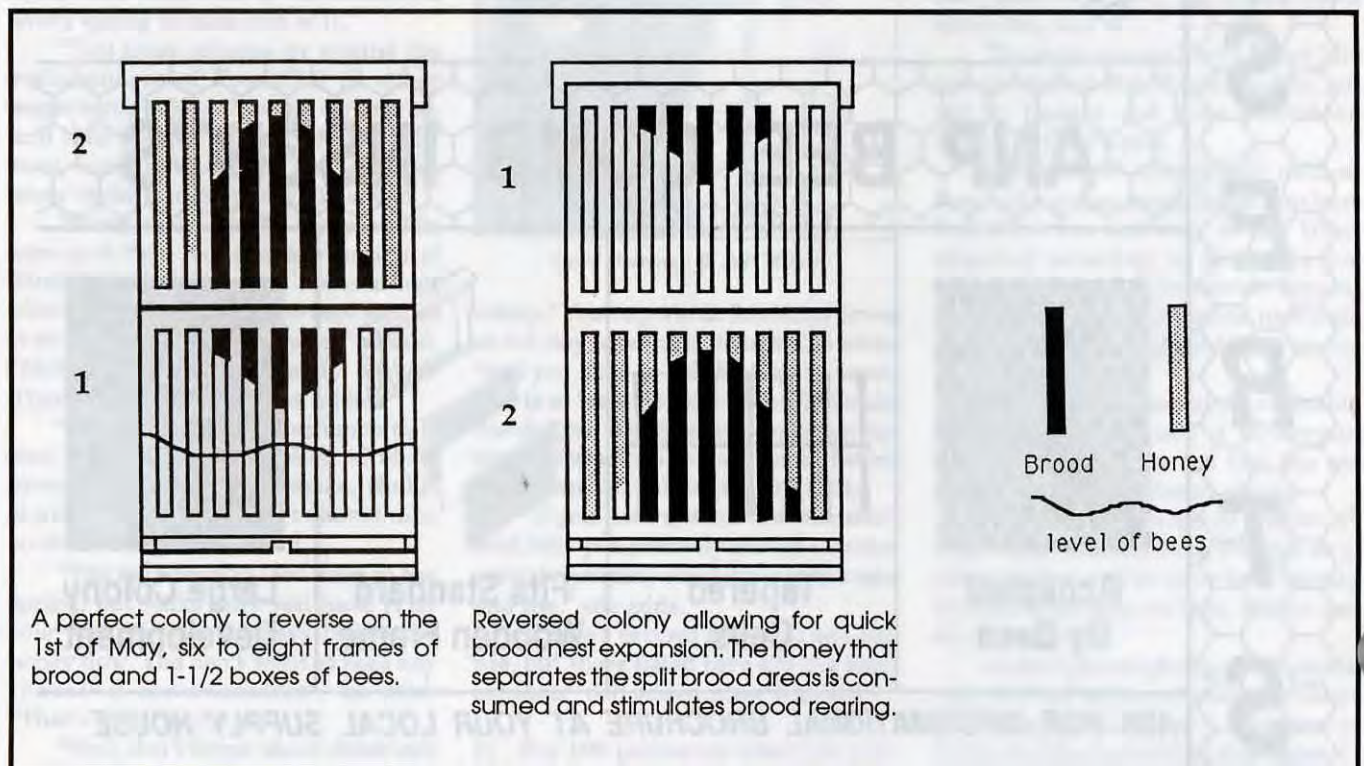
Snowbound, windswept prairies, and forever freezing temperatures are popular misconceptions about Canada. There are, in fact, 100 frost-free days per year, on average – which we call spring and summer. This period transforms the prairies into a paradise of honey-yielding flora. In a constant battle against time, beekeepers in this land produce some of the largest honey crops in the world. A motivated beekeeper can produce 250 pounds per colony on a 10-year average. But timing is of the

essence. There is no room for mistakes. An error in judgment can cost the year's honey crop. A beekeeper's business could DIE!

What is beekeeping? When considering honey production it has been described as, "The ability to manage honey bee colonies in such a way as to obtain large, or maximum, adult populations to coincide with the major nectar flows in a given area." There are three basic problems common to achieving the above – 1) Determining when honey flows oc-

cur within an area; 2) Building colony populations in preparation for these flows; and 3) Determining what to do with colonies during non-flow periods. Individual management systems, such as reversing brood chambers, requeening colonies or making splits, must complement the overall concepts of the season's management to successfully produce the maximum honey crop and ensure the survival of the colonies for the following year.

Fairview, located in Alberta,



Canada is just over 400 miles due north of the Washington/Idaho/Canada border. It is on the east side of the Rockies, which run in a basically NW to SE direction along our western border with British Columbia.

The calendar dates referred to in this and subsequent articles reflect our 'Northern Exposure', so apply these techniques to your locale accordingly.

Outdoor wintered two-story colonies are unwrapped during the last week of April, and the first inspection occurs during the first week of May. This bears repeating – we're with overwintered, two-story colonies. Eight weeks later the bees must have peaking populations to coincide with the beginning of the major honey flow, which often lasts less than six weeks and forces the beekeeper, if he wishes to be successful, to blend and complement individual management concepts. The golden rule is to "keep it simple" Don't spend 90% of your time messing with 10% of your colonies.

Unwrapping the colonies occurs three weeks after the first major pollen flow is available for the bees. This is to soften the effect of unwrapping the colonies with an expanding population by having large amounts of hatching worker brood. The standard colony checks for a queen, disease, food stores, and space to accommodate expansion are made. It is at this point that we

"This far North, overwintered two-story colonies are unwrapped during the last week of April, with first inspection during the first week of May."

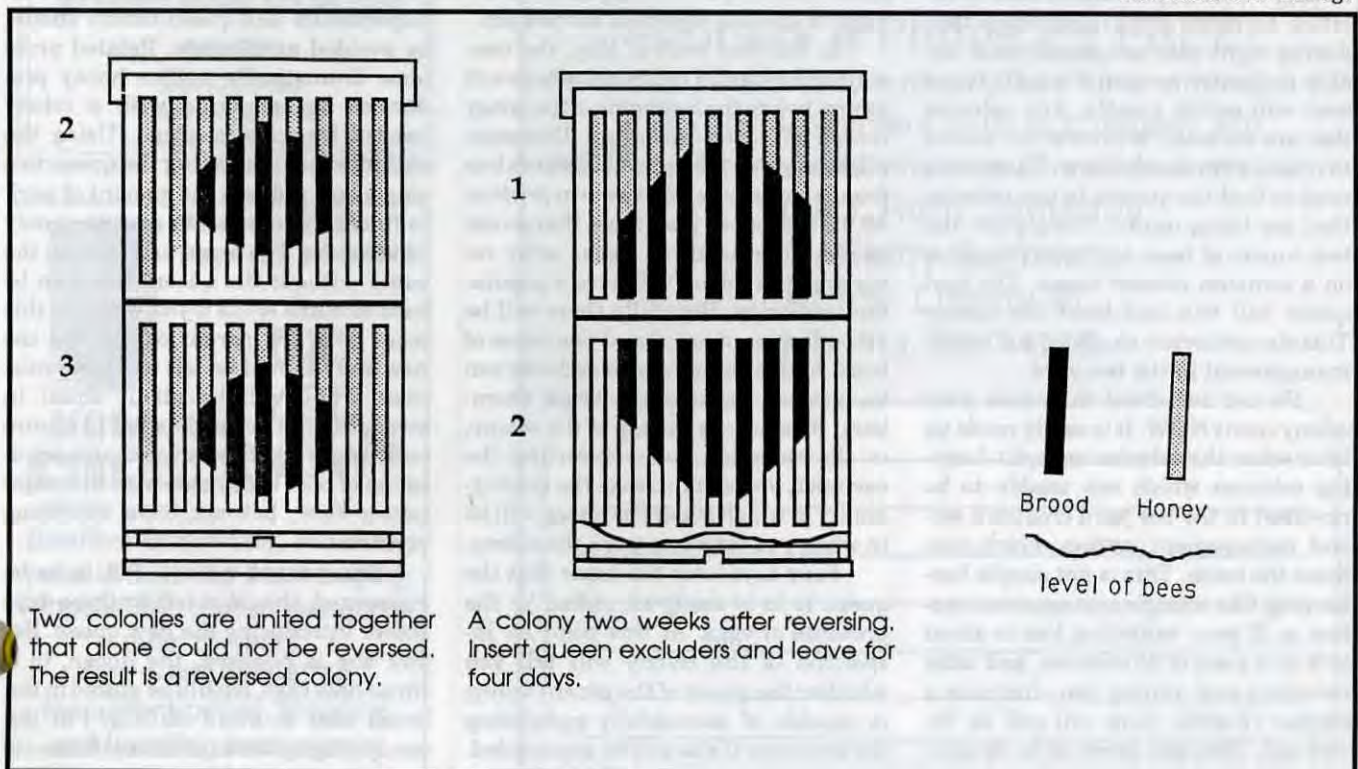
consider what the end results need to be – 1) what is the ideal sized unit to produce the maximum honey crop; and 2) what unit will most successfully winter to ensure we have bees the following spring. With this in mind management decisions are made.

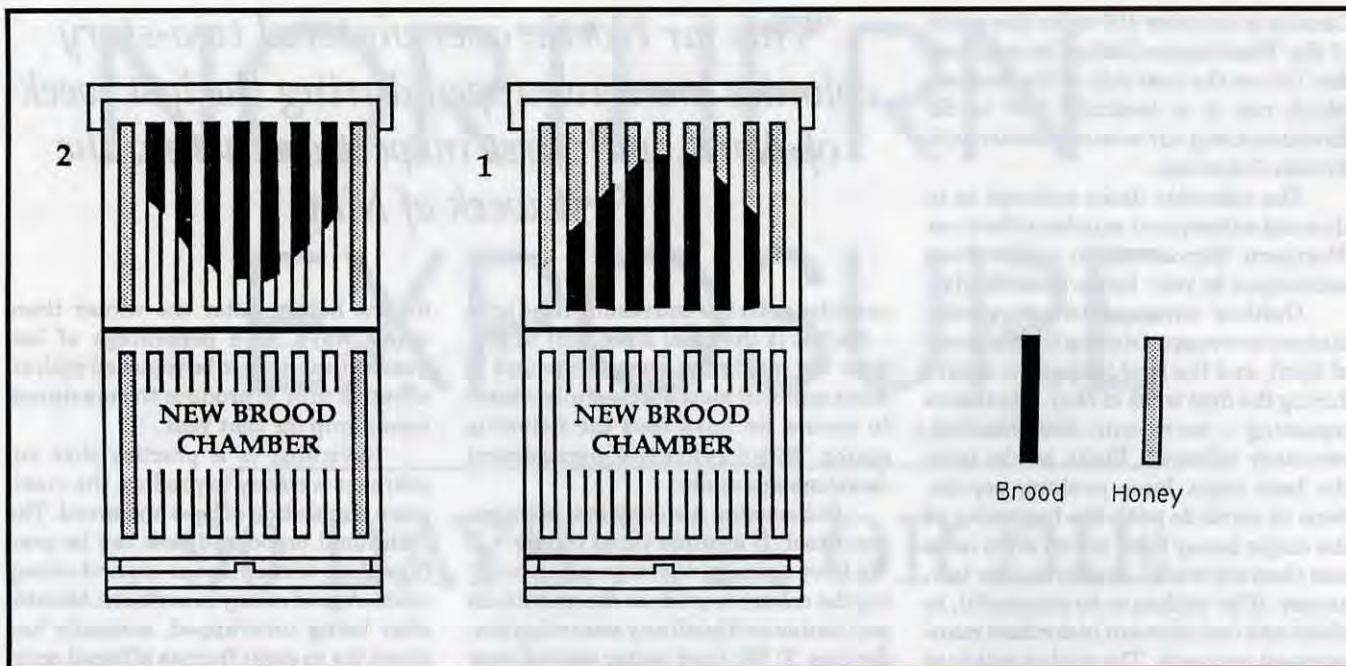
Requeening a colony is a management tool. It ensures three things – 1) We have a young, vigorous queen heading the colony to produce the maximum population and quell any swarming tendencies; 2) We have better control over desired genetic stock; and 3) Colony survival during the winter period and early spring build-up is much better. Remember, if you closely examine the life cycle of a *natural* colony, the swarm colony, and probably its parent will both be headed by a new queen entering the winter months. Requeening a colony should also be considered as creating a new colony, whether this was a parent colony being requeened or a split. The genetics and character of the colony change with the new queen, hopefully

for the better. After the winter there will always be a percentage of lost queens that have to be replaced with an effective unit to produce the maximum honey crop for that year.

Reversing is a practice that encourages a colony to produce the maximum population of bees and brood. The additional brood and bees can be used to replace winter loss or expand colony count. A good colony in northern Alberta, after being unwrapped, normally has about six to eight frames of brood occupying frames in two boxes, and 1-1/2 supers of bees – ideal for reversing. The top box, with the majority of brood, is simply placed on the bottom board with the original bottom box placed on top. This splits the brood nest. The colony population of bees must be adequate (bee to brood ratio) enough to ensure brood temperature is maintained in *both* areas. Take a look at the diagram. This forces the bees to expand the brood nest. Any honey above the brood in the bottom super (original top super) is con-

Continued on Next Page





Five days after inserting excluder queen can be located by the presence of eggs in one super. The super with the queen is normally left and becomes the parent colony. Requeened if required. Make sure parent colony has plenty of food stores.

Split moved to another yard and new queen put in brood nest. Should be made up of sealed brood and young bees.

EXPOSURE ... Cont. From Pg. 209

sumed and further stimulates them to join the two areas of brood together. A colony, whose population of bees in relation to brood area is so small that during night time temperatures is unable to cluster around the split brood nest will suffer greatly. Any colonies that are too small to reverse are united to create a reversed colony. There is no need to find the queens in two colonies that are being united. Simply put the two supers of bees and brood together on a common bottom board. The best queen will win and head the colony. This also achieves a single style of colony management in the bee yard.

Do not be afraid to reduce your colony count NOW. It is easily made up later when the colonies are split. Leaving colonies which are unable to be reversed in the bee yard creates a second management system which confuses the issue. This is not simple beekeeping like a single management system is. If your wintering loss is about 10% in a yard of 40 colonies, and after reversing and uniting you eliminate a further 15-20%, there will still be 70-75% left. This will leave 25 to 35 colo-

nies which can be split later to replace winter loss or increase colony count. After reversing be sure applicable feeding and disease control is carried out.

In the first week of May, the two-story colony with 1-1/2 boxes of bees will swarm before the beginning of the honey flow, if left to its own design. This must not be allowed to happen. Research has found that colonies that swarm produce 45.8% less honey than those that do not swarm. Two to three weeks after reversing, the colony will have a population explosion. Hopefully there will be 10-14 frames of brood and two boxes of bees. At this point a queen excluder can be inserted between the brood chambers. By smoking the top of the colony, or the entrance, before inserting the excluder, you can increase the predictability of which super the queen will be in when you return to work the colony.

Four days later the super that the queen is in is easily identified by the presence of eggs. At this point an inspection of the colony will tell you whether the queen of the parent colony is capable of successfully completing the season or if she will be superseded.

Strength of the colony in relation to others and a solid brood pattern are good indicators. If in doubt, requeen. Supersedure and queen failure should be avoided at all costs. Related problems dramatically reduce honey production as compared with a colony headed by a virile queen. Using the excluder and restricting the queen to a single box, reduces the amount of work in finding the queen to searching only nine combs. The brood and bees, in the super without the queen, can then be used to make splits if you want. At this point both the parent colony and the new split should be left as viable colonies. They will be about equal in strength, and perfectly sized to ensure each colony reaches the maximum population of bees to coincide with the major nectar flow, but not have swarming problems.

The parent colony, if it is to be requeened, should be left for three days before introducing the new queen. Before she is released, the queen, in a three-hole cage, should be placed in the brood nest to avoid chilling. Put the candy plug upwards so dead attendants

don't block the exit. Push the combs tightly around the cage, making sure the screen is exposed. Although this damages a small area of brood, they will not build burr comb around it.

The split should be moved to another yard and placed on a bottom board. It is best to make the split from hatching brood and house bees, which minimizes drifting. If there is a honey flow on, I would not hesitate to insert a queen immediately, having moved the colony several miles from its original location. Both the parent colony and the split should be bottom supered with a brood chamber which can be reversed, if necessary, on the first queen check after introduction. If there were 30 parent colonies, there will probably be a percentage which will be too small to split. These should be re-queened and will probably be a perfect sized unit for

"The first week of May, a 1-1/2 box of bees, left to its own design, will swarm before the honey flow."

the upcoming honey flow. Of the remaining colonies, the strength of the finished unit to be made up will dictate how many splits you can make.

In the prairie country of Canada, on May 15th, five to seven frames of hatching brood is desirable. If there were 25 colonies from which brood and bees could be taken, this would normally equate to about 18-20 splits leaving all the parent colonies of an equal strength to that of the split. This would replace all the winter loss and provide increase. The end result is a perfectly matched unit which will peak with a

maximum population to coincide with the honey flow. With effective honey bee management the bees will produce the maximum honey crop. The unit will then enter winter as a two-story colony headed by a new queen, ensuring almost a perfect chance for survival to next spring. □

Northern Reading
The Prairie Beekeeping Manual, Vol. 2

The Effect of Queen-Related Problems on Honey Production, Dr. D. Nelson
ABJ 1982, Volume 122, Page 636

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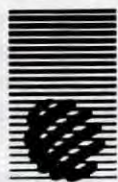
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MEET
THE HOMEOWNER
FROM HELL.

"Listen, did you hear about that beekeeper over in Evansburg who went to that ritzy neighborhood to take down a swarm and caused all that commotion? I hear he'll be in court for years with the guy who owns the house. They're both suing each other. Makes you kind of wonder about going out when somebody calls to pick up a swarm, doesn't it?"

Sound interesting? Here's what happened. .

PAMELA MOORE

Our homeowner, Mr. Darling, spots a large swarm on a tree limb near his very expensive home. He wants it removed and calls his local county extension office. The Extension Agent gives him a list of beekeepers who do this and advises him to call one of the names on the list.

Darling calls the beekeeper who lives the closest and makes an appointment to have him come out and take care of the problem.

The beekeeper, Jeff Kennedy, promptly arrives at the Darling home that afternoon with his equipment and meets Darling, who shows him where the swarm is located. It's still in the same place, hanging from the limb.

Kennedy suits up, places his extension ladder on the house, because the swarm is out on a limb and easily accessible from a ladder leaning against the house, and begins to climb.

Just as Kennedy reaches the branch with the swarm to remove it, he slips from the ladder and falls. The ladder is knocked off balance and it falls, too, hitting Darling's expensive car. Then, it bounces off the car and crushes Darling's rabbit hutch which contains eight prize-winning, purebred rabbits. Two of these rabbits are killed outright, and one doe aborts her litter.

When Kennedy falls he naturally gives a yell, which startles Darling's family dog. The dog runs over and bites Kennedy in a very tender spot, just as he hits the ground. The bite is severe enough that Kennedy cannot work for two weeks (he sits at a desk all day).

Meanwhile, up above, the bees are stirred up because of the jerked branch and swoop down and sting Darling's two young children badly enough that their mother rushes them to the emergency room at the hospital.

Darling is furious and the bees are still in his tree. Kennedy is furious, though not severely injured, throws his equipment in the back of his truck and tears out of Darling's driveway, but, to miss hitting the dog runs over a recently landscaped area in Darling's front yard.

Sound fantastic? Well, maybe.

More than one law suit and more than one insurance claim will result from this story of woe. Of course it's fantastic, and a situation like this would probably never occur. But any one, or even all of these things might happen to you, someday.

We went to two local experts for comment on both the legal and the insurance claim possibilities that would arise if beekeeper and homeowner decided to be as angry as they could over the incident. What follows are the possibilities, and some answers to the "what ifs" that could arise.

William B. Young, of Oberholtzer, Filous and Young, in Medina, agreed to field our legal questions; and Randy Heller, of Randy Heller Insurance Agency, Nationwide Insurance, also of

Medina, handled the insurance side of the problem.

First, although no papers were signed or instructions spelled out between the two men, they, none-the-less, had a valid contract between them. *Business Law, Principles and Cases*, by Ronald A. Anderson, defines a contract:

"In order to be an enforceable contract, there must be 1) an agreement; 2) between competent parties; 3) based upon the genuine assent of the parties; 4) supported by consideration; 5) made for a lawful object; and 6) in the form, if any required by law."

Even though money did not change hands, Young said the *consideration* (4, above) here is the bees, which the beekeeper will take with him.

Darling (the homeowner) wants to sue Kennedy (the beekeeper) for destruction of property while trying to remove the swarm. But before a suit can be established, Young says it must be determined if Kennedy was *reckless* in his performance of duty. If he was, a suit may be possible. However, if Kennedy was doing his job carefully, it would be difficult to proceed. "Falling off a ladder is a common occurrence," said Young. Kennedy owes a duty to Darling to act with standards required to do the job, though.

The insurance agent said that Kennedy came out for consideration (the bees), and Darling would have a "hard time" going after Kennedy. His recommendation was that Darling's homeowner's insurance pay the damages, then let the insurance company go after Kennedy - if they feel that they can get anything.

Meanwhile, Darling wonders if his homeowner's insurance will cover Kennedy's injuries, specifically from the dog, since the fall seemed not to cause



Continued on Next Page

"Most of us trust most homeowners – The trick is to know which ones you shouldn't."

HOMEOWNER ... Cont. From Pg. 214

injury. Darling's dog already has one bite to his credit, and that's on his insurance record.

Legally, one bite from a dog *can* make it a *biting* dog, and Darling is liable. Kennedy might have a good case here.

From an insurance standpoint, it could be said the dog was aggravated by the commotion of the yell and falling ladder, useful in the defense. But if the dog was expected to bite again, the insurance company may not want to pay the claim. The insurance company may pay the medical bill resulting from treating the bite, but Heller says that paying a medical claim *does not* admit liability. He suggests that ideally Kennedy should have his own disability insurance to cover bills like this and lost time from his real job.

However, if Kennedy makes money from his beekeeping hobby, especially if it could be considered a business, he may be covered under a business policy (providing he has one) because he was injured in the line of business.

But it isn't over yet. Darling wants his purebred rabbits and hutches replaced and wants Kennedy to pay for them. If Kennedy was negligent while using the ladder, Darling may have a chance to collect. But Young says there are *two* kinds of negligence: simple negligence and intentional negligence. When simple negligence can be proved, compensatory damages may be recovered. However, if intentional negligence is proved the court may award *both* compensatory and punitive damages. Punitive damages are charged so as to make the person not do the same thing again – in essence a punishment.

If Darling chooses to go to his own homeowner's insurance for compensation for the rabbits and hutches, he stands a pretty good chance of receiving payment. However, the rabbits and hutches must not be housed in a separate building and Darling must not make money from them. If not on both counts,

he is probably covered because they are personal property, according to insurance agent Heller.

By now Darling is so angry he wants to sue the Extension Service for giving out a list with Kennedy's name on it. Although most extension services don't put a disclaimer on their swarm lists, they also do not make recommendations or claims about the beekeeper's ability to perform the service. The only recourse here is if the extension service *knew in advance* that Kennedy operated "outside the normal standard" when removing swarms. Most extension agents contacted report they know little about the names on the list, except these people do perform the service. Some humane societies will also publish a swarm list, as do many police and

fire departments. The same holds true – they seldom make recommendations.

But Darling isn't done yet. He wants the damage to his home and property repaired. He wants the house repainted because paint was scraped off the wall by the ladder during the fall. He also wants a large ornamental tree replaced because it was damaged by Kennedy's truck as he sped off.

Young, our legal expert said the negligence case would have to be proved for any kind of suit to be successful. And Heller, the insurance pro, said costs for painting the house would probably be covered under homeowner's insurance, but that replacing the tree would fall under certain money limit for landscaping, which would probably be spelled out in the policy.

But after all this, Darling still has a swarm of bees near his house and has had a very traumatic experience (according to his sworn testimony). He wants Kennedy to pay for a professional exterminator to come out and kill the bees, since the job was not completed.

It is doubtful that Darling would do well with this suit either, since he must prove Kennedy didn't finish the job *on purpose*. But Darling *could* say that Kennedy's non-performance on the contract (remember there really was a contract) makes Kennedy liable for fulfilling the contract. This could get sticky.

Darling also wants Kennedy to pay for the emergency room treatment his children received after they were stung by the excited bees. Most probably Darling's own insurance would pay the bill, but if medical fees were high enough, his insurance company may want to come after Kennedy. Heller, the insurance pro, doubted if Kennedy would be ultimately responsible for any of these bills.

There is another side to this story, however. So let's listen in.

Kennedy wants some money for his trouble, so he wants Darling to pay for the damages his truck received when (abruptly) leaving the property. Young, the legal advisor, said if Kennedy can prove he was keeping an eye on the dog to be sure it wasn't in the path of his truck, he may be able to prove he was not negligent in leaving the property (Kennedy said he swerved to miss the



dog and ran over the bush). But looking at it the other way, "Kennedy owed a duty to exercise care on Darling's property." Again, Kennedy *could* be charged with negligence, and maybe even recklessness. Another sticky issue.

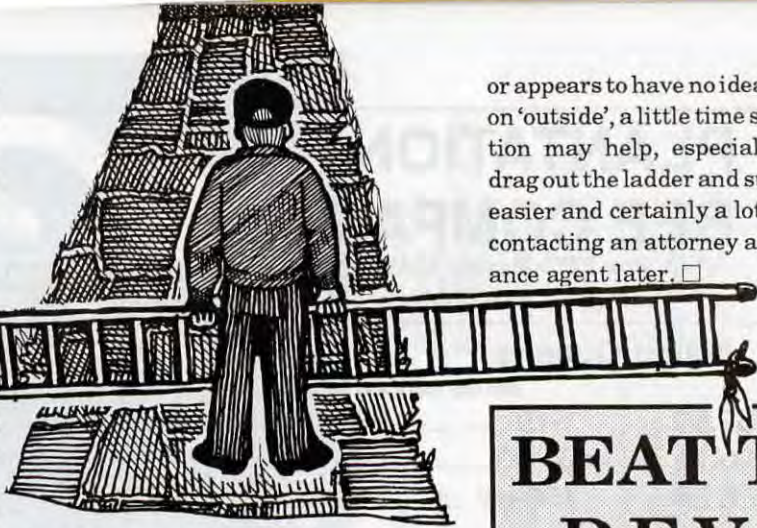
Heller said that Darling's insur-

ance company would defend him, and that the beekeeper would have to prove negligence on the homeowner's part. In the unlikely event Darling's insurance company had to pay Kennedy, they may in turn, come after Kennedy's car insurance for the landscaping damage.

Both Young (legal) and Heller (insurance) explained a little about how their professions look at this type of situation, although neither have had one quite like it.

Young said he handles personal injury cases by looking at what the client has lost – both in medical bills and wages. If special damages are sought, for future medical bills and wages, the amount considered *could be three to ten times* the original amount charged. He also suggests taking the case to a large city, where jurors are used to dealing with larger numbers.

He added that when a homeowner invites a business person onto his property, he must provide a higher standard of care than he would for a trespasser. Homeowners must warn people coming onto the property of any known dan-



gers. He also said courts look not at the intended act a person does, but the intended *result* of the action.

has previously referred to claims agents. The first suggestion he made was to read your policy carefully. See what you are covered for, how much your policy will pay and in what situations it will and won't pay. How does your insurance policy deal with a hobby or a business? Know these things before finding yourself in a strange predicament, he warned.

To sort some of this out, we talked to a beekeeper who does go out after swarms, and is on the county extension swarm list. He also gathers wasp venom for medical purposes. Although he chose to remain anonymous, he did tell us he carries no special insurance, because he said, "Insurance companies want so much for so little. They also have a problem differentiating a hobby from a business."

This beekeeper uses a "one-on-one" approach for taking swarm cases, and walks away from any situation that

or appears to have no idea what is going on 'outside', a little time spent in education may help, especially before you drag out the ladder and suit up. It's a lot easier and certainly a lot cheaper than contacting an attorney and your insurance agent later. □

BEAT THE D.E.V.I.L

Although most of us are happy to remove a swarm from the property of a scared-to-death homeowner, there are some common sense precautions to consider so your Good Samaritan activities don't land you in court – defending your actions or recouping a loss.

First, when receiving a call for help, determine exactly what the homeowner wants, and in return tell them, exactly, what you are willing to do. For instance, many citizens (people who don't know the difference between honey bees and horse flies, let alone yellow jackets or hornets) assume any insect that remotely resembles a 'bee' is a honey bee, and a beekeeper will remove it. This may, or may not be true for you. If not, lay down the ground rules *before* you leave.

Most swarms are as big as a bushel basket and only shoulder height from the ground, but those that move (while you drove over, obviously) to high places and precarious locations, may stay right where they are. Make that clear *before* you leave.

Do they want the bees? Do they expect you to *pay* for them? Do you expect to be paid? What about the strays left behind? Do you have an insurance policy that covers *you* if something happens? Are you liable if someone is stung or injured while you are removing the swarm? Do you have a contract? Do you have a release? Can you believe the world has come to this? □

Can you believe the world has come to this?

gers. He also said courts look not at the intended act a person does, but the intended *result* of the action.

Heller explained that he is an insurance *agent*, the person who sells insurance. The first thing he would do in a case like this would be to put the insured person in touch with the claims *agent* – the person who ultimately decides these things – and his opinions and comments are based on cases he

looks "shaky."

This is probably the way most of us operate. We trust most homeowners, and figure that most of them trust us and, with the increasing encroachment of city dwellers into formerly rural areas, beekeepers will be called upon more often to remove bees from private property. That 'trust' will need to increase, because the contacts will increase.

If a homeowner seems a bit "shaky",

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National Organizations Dealing with Mechanized Honey Bees

Government

- United States Department of Agriculture (USDA)

Animal Plant Health Inspection Service (APHIS)

- Phil Villa-Lobos USDA, Off. of Press & Media Rel. Room 459-A Admin. Bldg. Washington, DC 20250 Ph. (202) 720-3088

Honey Bee Management

- Tom Willis USDA, Agr. Extension Ser. Room 3328 South Bldg. Wash., DC 20250-0900 Ph. (202) 720-2047

AHB Research

- Kim Kaplan USDA, Agr. Research Ser. Bldg. 005, #335, BARC-W Beltsville, MD 20705 Ph. (301) 344-3932

AHB Research at State Colleges & Universities

- John Naegele USDA, Co-op. St. Res. Ser. Aerospace Bldg., Rm. 328-B Washington, DC 20250 Ph. (202) 401-4952

Federal Extension Service

- Dr. James E. Tew NPL, Apiculture Extension Service, USDA ATI / The Ohio State Univ. Wooster, OH 44691

APHIS Information

- Doug Hendrix USDA, Animal & Plant Health Insp. Service 6505 Belcrest Rd., #613 FB Hyattsville, MD 20782 Ph. (301) 436-7253

Industry

- The Amer. Farm Bureau 325 Touhy Avenue Park Ridge, IL 60068 (312) 399-5747

- The Amer. Beekeeping Fed. See Industry

- American Honey Producers See Industry

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- California - Gera Curry 1220 N Street, Room 304 Sacramento, CA 95814 Ph. (916) 445-3588
- Florida - Phyllis Habeck 1911 S.W. 34th Street Gainesville, FL 32608 Ph. (904) 372-3505
- Georgia - Lisa Ray Room 300 Capitol Square Atlanta, GA 30334 Ph. (404) 656-3689
- Louisiana - Larry Michaud 5825 Florida Blvd. Baton Rouge, LA 70806 Ph. (504) 922-1234
- Mississippi - Harry Fulton P.O. Box 5027 Miss State, MS 39762 Ph. (601) 325-3390
- New Mex. - Lana Dickson P.O. Box 30005, Dept. 3189 Las Cruces, NM 88003 Ph. (505) 646-2804
- Texas - Dave Mayes 229 Reed McDonald Bldg. College Station, TX 77843 Ph. (409) 845-2895

INDUSTRY ORGANIZATIONS

• **American Beekeepers Association.** Fred Rossman, P.O. Box 905, Moultrie, GA (912) 985-7200

• **American Beekeeping Federation.** Sec.-Treas., Troy Fore, P.O. Box 1038, Jesup, GA 31545.

• **Ladie's Aux. of ABF.** Donna Ruby, Rt. 3, Box 3, Milnor, ND 58060, (701) 427-5263

• **Amer. Honey Queen.** Keri Kester, c/o Joann King, Rt. Box 102, Marion, ND, 58466, (701) 669-2296.

• **American Honey Producers Association.** Richard Adee, P. O. Box 368, Bruce, SD 57220, (605) 627-5621.

• **Apiary Inspectors of America.** Pres., Laurence P. Cutts; FL State Dept. of Agr., Doyle Conner Bldg., Box 1269, Gainesville, FL 32602 (302) 739-3505.

• **CA Bee Breeders.** P.O. Box 95, Red Bluff, CA 96080.

• **Eastern Apicultural Society of North America, Inc.** Sec. Loretta Surprenant, Miner Institute, Chazy, NY 12921, (518) 846-8020.

• **Western Apicultural Society of North America.** Nancy Stewart, 2400 21st Street, Sacramento, CA 95818 (916) 451-2337

• **National Honey Board.** Chairman, Bob Smith, 9595 Nelson Road, Longmont, Colorado, (303) 776-2337.

• **Mid-U.S. Honey Producers Marketing Assn.** Gary Reynolds, Box 363, Concordia, KS 66901, (913) 243-3619;

• **National Honey Producers & Dealers Association.** Richard Sullivan, 5 Ravine Dr., P.O. Box 776, Matawan, NJ 07747. Ph. (908) 583-8188.

• **Professional Apiculturists Assn.** Malcolm T. Sanford, Entomology Extension Dept., Univ. of FL, Gainesville, FL 32611, (904) 392-1801.

• **Southern States Beekeepers Federation.** Dr. John Ambrose, Dept. of Entomology, Box 7626, Raleigh, NC 27695, (919) 737-3140.

• **The Canadian Honey Council.** Linda Gane, Box 1566, Nipawin, Sask. S0E 1E0 (306) 862-3844

• **Can. Assn. of Prof. Apic.** Dr. G. Otis, Dept. of Env. Bio., Univ. of Guelph, Guelph, Ont. N16 2W1, (519) 824-4120

GOVERNMENT AGENCIES

• **USDA - Agricultural Research Ser.** Nat. Program Staff, R.D. Plowman, Room 225, Bldg. 005, BARC-W, Beltsville, MD 20705. (301) 720-3656.

• **Beneficial Insects Lab.** Dr. John J. Drea, Rm. 100, Bldg. 476, BARC-East, Beltsville, MD 20705. (301) 504-8975.

• **Honeybee Breeding and Genetics & Physiology Research Lab.** Dr. Thomas E. Rinderer, Research Leader, 1157 Ben Hur Rd., Baton Rouge, LA 70820. (504) 766-6064.

• **Honey Bee Research.** Dr. Anita Collins, Research Leader, 2413 East Hwy. 83, Weslaco, TX 78596. (512) 969-4870.

• **Bee Biology & Systematics Laboratory.** Dr. John Vandenberg, Laboratory Leader, Utah State University, Logan, Utah 84322-5310.

• **Carl Hayden Bee Research Center.** Dr. Eric H. Erickson, Center Director, 2000 E. Allen Road, Tucson, AZ 85719. (602) 629-6380.

• **Honey Market News.** Linda Verstrate, USDA-AMS, Fruit & Vegetable Div., 2015 So. 1st St., Rm. 4, Yakima, WA 98903. (509) 575-2492.

• **Price Support Program.** Jane Phillips, Commodity Analysis Division,

Agricultural Stabilization and Conservation Service, USDA, Washington, DC 20250. (202) 720-7602.

• **Extension Service (Federal).** Dr. Ricardo Gomez, ES USDA PPMS, RM 3347S, South Bldg., Independence Ave., Washington, DC 20250. (202) 720-2471

• **Biosystematics Research Centre.** Dr. R. J. T. Trottier, Dir., Rm. B149, K. W. Neatby Bldg, Ottawa, Ontario, Can. K1A 0C6. (613) 996-1665.

• **Agriculture Canada.** Dr. D. L. Nelson, Dr. T. P. Liu and Dr. T. I. Szabo, Research Sta., Research Branch, Agr. Canada, Box 29, Beaverlodge, Alta., Can. T0H 0C0. (403) 354-2212.

INTERNATIONAL ORGANIZATIONS

• **International Bee Research Association.** Andrew Matheson, Director, 18 North Road, Cardiff, CF1 3DY, UK. Telephone: (0222) 372409, Fax (0222) 665522, Telex: 262433 G (quote B8390).

• **Apimondia.** International Federation of Beekeepers' Associations - President, Raymond Borneck, Rue Du Creux, Montbarrey, France, 3y; General Secretary, 101 Corso Vittorio Emanuele Rome, Italy 00186, (6) 65-12286. Periodical: Apiacta (quarterly).

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- **ETOWAH CO BEEKEEPERS** — James Walker, 419 Cove Creek Rd., East Gadsden, 35903
- **JEFFERSON CO BEEKEEPERS** — Ms. Robert Musgrove, 3418 Venus Ln., Fultondale, 35068
- **MOBILE CO BEEKEEPERS** — Ben Cox, 7751 Prince James Dr., Mobile, 36619

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- **COOK INLET BEEKEEPERS** — Naomi Harris, Box 140173, Anchorage, 99514
- **INTERIOR AK BEEKEEPERS** — Stephen Peterson, 1153 Donna Dr., Fairbanks, 99712
- **KENAI BEEKEEPERS ASSC.** — Edmund Knutsen, P.O. Box 1525, Soldotna, 99669
- **SOUTH CENTRAL AK BEEKEEPERS** — Peggy McKaig, P.O. Box 141976, Anchorage, 99514

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- **CTRL AZ BEEKEEPERS** — M. Kuzmik, 1544 W. 6 St., Tempe, 85281
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- **CA BEEKEEPERS** — Carol Penner, 19980 Pine Creek Rd., Red Bluff, 96080
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- **SAN FRANCISCO BEEKEEPERS** — Lenore Bravo, 47 Levant, San Francisco, 94114

- **SAN FRANCISCO HOBBY BEEKEEPERS** — Leonore Bravo, 47 Levant St., San Francisco 94114
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- **VENTURA BEEKEEPERS** — Don Schram, 3612 Nyeland Ave., Oxnard, 93030

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- **LEE CO BEEKEEPERS ASSN** — W H Lohrey, 107 E Lake Dr., Lehigh Acres, 33936
- **N CENTRAL FL BEEKEEPERS** — Tom Cutts, 1741, NW 7th Ave., Gainesville, 32601
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- **WALKER CO BEEKEEPERS ASSN** — Ms. Louis Huggins, Rt.1, Rossville, 30741

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- **NORTHERN IL BEEKEEPERS** — Barbara Bliss, 41 Ester St., Crystal Lake, 60014
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- **SANGAMON VALLEY BEEKEEPERS** — Leonard Edgecomb, 3170 S. Franklin St. Rd., Decatur, 62521
- **SO ILLINOIS BEEKEEPERS** — Don Graff, P.O. Box 895, Marion, 62959
- **SPOON RIVER VALLEY BEEKEEPERS** — Joan Block, RR5, Canton, 61520
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- **HOWARD CO BEEKEEPERS** — Irving C. Robinson, 4672 Clydesdale Ct., Ellicott City, 21043
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- **HAMPDEN CO BEEKEEPERS** — Robert Cosby, 375 Kings Highway, West Springfield, 01089
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• **WORCHESTER CO BEEKEEPERS**—Carol Messar, 29 Juniper Rd., Leominster, 01453

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- **JACKSON CO BEEKEEPER ASSN** — Kenneth Losey, 6962 Folks Rd., Horton, 49246
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- **SAGINAW BAY BEEKEEPERS** — John Kern 12740 E. Curtis, Frankenmuth, 48134
- **SOUTHEASTERN MI BEE ASSOC** — Roger Sutherland, 5488 Warren, Ann Arbor, 48105
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- **MN HONEY PRODUCERS** — Darrel Rufer, Rt 1, Box 408R, Waverly, 55390
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- **MID-MO BEEKEEPERS** — Susan Givens, 107 West Dent Ave., Salem, 65560
- **MIDWESTERN BEEKEEPER ASSN** — Carol Kjelshus, 7121 Park, Kansas City, 64129
- **MISSOURI VALLEY BEEKEEPERS** — Gorden Davis, 2151 Golfview, Wentzville, 63385
- **OZARK BEEKEEPERS ASSOC** — Mary Jane Kelly, Rt. 6, Box 610-I, Springfield, 65803

- **OZARK MOUNTAIN BEEKEEPERS** — Eddie Rosencrans, Rt. 2, Box 118, Reeds Spring, 65737
- **SEMO HONEY PRODUCERS** — Bob Carter, 407 Leseiur, Portageville, 63873
- **SO CENT BEEKEEPERS** — Marge Kilton, RR 2, Box 2746, Alton, 65606
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- **EASTERN NE HONEY PRODUCERS** — Inara Kesang, 8910 Monroe Court, Plattsmouth, 68048
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- **NORTHERN NEVADA APICULTURE SOC** — Bill Goff, 140060 Edmands Dr., Reno, 89511

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- **MERRIMACK VLY BEEKEEPERS** — Robert Salvage, 3 Birchwood Rd., Windham, 03087
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- **MORRIS CO BEEKEEPERS** — Roha Duve, R.D. 1, Box 258-B, Washington, 07862
- **NE BEEKEEPERS ASSOC, NJ** — Alfred E. Cundall, 390 Jackson Ave., Township of Washington, 07675
- **SOUTH JERSEY BEEKEEPERS** — Sheryl Markley, 13 W. Millcreek Rd., East Hampton, 08060
- **SUSSEX CO BEEKEEPERS SOC** — Marilyn Cosh, 175 Sally Harden Rd., Wantago, 07461

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- **CHAUTAUQUA CO BEEKEEPERS** — Ken Waite, Rt. 3, Box 1, Jamestown, 14701
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- **S ADIRONDACK BEEKEEPERS** — Rick Green, 15 Gretel Terrace, Ballston Lake, 12019-9108
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- **SOUTHERN TIER BEEKEEPERS** — H. W. Shoemaker, 3 Spring Lane, Binghamton, 13903-3669
- **WESTERN NY HONEY PRODUCERS** — Rev. W. Willis, 121 N. Main St., Holland, 14080

NORTH CAROLINA

- **ALAMANCE CO BEEKEEPERS** — Tony Robertson, 1731 Alta-Union Ridge Rd., Burlington, 27217
- **ALBERMARLE REGIONAL BEE CLUB** — Wink Munden, 506 Hemlock Ave., Elizabeth City, 27909
- **ALLEGHANY CO BEEKEEPERS** — Bryon Woodruff, Rt. 1, Box 139, Glade Valley, 28627
- **BUNCOMBE CO BEEKEEPERS** — Eloise V. Wilson, P.O. Box 159, Fairview, 28730
- **BURKE CO BEEKEEPERS ASSN** — Rev L. N. Puette, Rt. 2, Box 958-A Connelly Springs, 28612
- **CABARRUS CO BEEKEEPERS** — Vernon Hathcock, Rt. 3, Box 139-B, China Grove, 28023
- **CARTERET CO BEEKEEPERS** — Harry Lockey, Jr., Rt. 2, Box 226, Newport, 28570
- **CASWELL CO BEEKEEPER ASSN** — Paul Myers, Rt.1, Box 133, Blanch, 27212
- **CATAWBA VALLEY BEEKEEPERS** — Jim Peeler, Rt. 11, Box 397, Hickory, 28601
- **CHATHAM CO BEEKEEPER ASSN** — Judy Allen Pic, Rt. 1, Box 309, Pittsboro, 27312
- **CHOANOKE BEEKEEPERS ASSOC** — Frank Stevenson, 301 E. Broad St., Murfreesboro, 27855
- **COLUMBUS-BRUNSWICK BEEKEEPERS** — Sylvia Martin, Rt. 2, Box 306, Chadbourne, 28431
- **DAVIE CO BEEKEEPERS ASSN** — Dorris Dillon, Rt. 3, Box 590, Mocksville, 27028
- **DURHAM CO BEE CLUB** — Ellis Selph, 2502 Winton Rd., Durham, 27707
- **EDGEcombe CO BEEKEEPERS** — Peggy Weatherford, Rt. 2, Box 162, Battleboro, 27809
- **FORSYTH CO BEEKEEPERS ASSN** — Margie Weatherman, 5395 Spainhour Mill Rd., Tobaccoville, 27050
- **GASTON CO BEEKEEPERS ASSN** — Harold Cline, 840 Churchill Dr., Gastonia, 28052

- **GREENSBORO BEEKEEPERS** — Henry Moon, 2416 Wright Ave., Greensboro, 27403
- **GUILFORD CO BEEKEEPERS** — Edward Snyder, 5400 Boshier Lake Dr., Mcleansville, 27301-9213
- **HAYWOOD CO BEEKEEPERS** — Cornell Hollingworth, 1322 Allens Creek, Waynesville, 28786
- **HENDERSON CO BEEKEEPERS** — Bitton Allison Jr., Horse Shoe, 28742
- **HOKE CO BEEKEEPERS ASSOC** — Betty Freeman, Rt. 2, Box 527, Raeford, 28376
- **IREDELL CO BEEKEEPERS** — Bob Kale, Rt. 2, Box 63, Catawba, 28609
- **JACKSON CO BEEKEEPERS ASSN** — Robert Anders, P.O. Box 8, Cullowhee, 28723
- **JOHNSTON CO BEEKEEPERS** — R. G. Adams, 507 Morris Ave., Benson, 27504
- **LEE CO BEEKEEPERS ASSOC** — W. Lynn Spivey, 120 E. Weatherspoon St., Sanford, 27330
- **MACKLEBURG CO BEEKEEPERS** — Gene Shannon, 838 Burnley Rd., Charlotte, 28210
- **MONTGOMERY CO BEEKEEPERS** — Archie Craven, Rt. 3, Box 231, Mount Gilead, 27306
- **ONslow CO BEEKEEPERS** — Maurice Cook, Rt. 4, Box 167, Jacksonville, 28540
- **ORANGE CO BEEKEEPERS ASSOC** — Jeffrey Lee, Duke University, Durham, NC 27706
- **PAMLICO CO BEEKEEPERS** — Susan Herring, 6789 St. Julian Way, Fayetteville, 28314
- **PITT CO BEEKEEPERS ASSOC** — Scott Flanagan, 501 Grimmersburg St., Farmville, 27828
- **RANDOLPH CO BEEKEEPERS** — George Byrum, Rt. 2, Box 151, Asheboro, 27203
- **RICHMOND CO BEEKEEPERS** — Mrs. Robert Martin, 222 Hilltop Ave., Rockingham, 28379
- **ROBESON CO BEEKEEPER ASSN** — D. S. Gillispie, 1905 Rowland Ave., Lumberton, 28358
- **ROWAN CO BEEKEEPERS ASSN** — James Ijames, 211 W McCubbins St., Salisbury, 28144
- **RUTHERFORD CO BEEKEEPERS** — Arthur Stchley, Rt. 3, Rutherfordon, 28139
- **SAMPSON CO BEEKEEPERS** — Florence Beretich, Rt. 3, Box 14, Clinton, 28328
- **SURRY CO BEEKEEPERS ASSN** — Z. Wayne Thompson, Rt. 1, Box 179, Elkin, 28621
- **SWAIN CO BEEKEEPING CPTR** — M. G. Sanderson, Rt. 2, Box 608, Bryson City, 28713
- **TRANSYLVANIA CO BEEKEEPERS** — James Bales, Star Rt. Box 580, Rosman, 28772
- **TRI-CO BEEKEEPERS ASSOC** — Allen Caldwell, 115 Peachtree St. #103, Murphy, 28906

- **WAKE CO BEEKEEPERS ASSOC** — Stanley Hodge, 13711 Spring Rd., Raleigh, 27610
- **WATAUGA CO BEEKEEPERS** — Alicia Breton, P.O. Box 13, Todd, 28684
- **WAYNE CO BEEKEEPERS ASSOC** — Louise Sasser, 108 E. Westwood Dr., Goldsboro, 27530
- **WILSON CO BEEKEEPERS ASSN** — Harvey Denton, Rt. 2, Box 50-B, Bailey, 27087

OHIO

- **ASHTABULA BEEKEEPERS** — Bill Loudon, 86 Stockwell St., Painesville, 44077
- **BUTLER CO BEEKEEPERS** — Bob Raven, 6651 Imhoff Rd., Oxford, 45056
- **CARROLL CO BEEKEEPERS** — David Pallavey, 4107 Ivory Rd., NW, Carrollton, 44615
- **CENTRAL BEEKEEPERS ASSN** — Vernon Chute, 1635 N. Hague Ave., Columbus, 43204
- **CENTRAL OH BEEKEEPERS** — David Casdorff, 4111 Maize Rd., Columbus, 43224
- **CLARK CO BEEKEEPERS** — Rolland Anderson, 1312 N Lowry Ave, Springfield, 45504
- **COLUMBIANA & MAHONING CO BEEKEEPERS** — Beverly Converse, 4950 Lower Elkton Rd., Leetonia, 44431
- **COLUMBIANA CO BEEKEEPERS** — Grace Hamilton, Rt. 1, Lisbon, 44432
- **GAUGA BEEKEEPERS ASSN** — Mary Cluts, 9799 Pekin Rd., Novelty, 44072
- **GREENE CO BEEKEEPERS** — O. K. Simison, Rt. 1, Spring Valley, 45370
- **GUERNSEY CO BEEKEEPERS** — Roger Seaton, 9488 Liberty Rd., Cambridge, 43725
- **HIGHLAND CO BEEKEEPERS** — Jess Prye, 7926 Wright Rd., Hillsboro, 45133
- **HOCKING CO BEEKEEPERS** — Annette McClain, 20193 St. Rt. 328, New Plymouth, 45654
- **JEFFERSON CO BEEKEEPERS** — Guy W. Amrtin, Box 422 Rainbow Dr., Bloomingdale, 43910
- **KOKOSING VALLEY BEEKEEPERS** — Kenneth Neighbarger, 305 Sychar Rd., Mt. Vernon, 43050
- **KNOX CO BEEKEEPERS ASSN** — Harold Bower, 14258 Beckley Rd., Mt. Vernon, 43050
- **LAKE CO BEEKEEPERS ASSN** — Mark Rinderman, 116 Hawthorne Dr., Painesville, 44077
- **LAWRENCE CO BEEKEEPERS** — Margaret Reid, Rt. 1, Box 100, Willow Wood, 45696
- **LOGAN CO BEEKEEPERS** — Mrs. James R. Eaton, Rt. 1, Mt. Victory, 43340
- **LORAIN CO BEEKEEPERS ASSN** — Harry Painter, 7074 Case Rd., North Ridgeville, 44039-2734
- **MARION CO BEEKEEPERS ASSN** — Henry Perry, 440 Avondale Ave., Marion 43302

- **MEDINA CO BEEKEEPERS** — Annie Pemberton, 3814 Beat Rd., Litchfield, 44253
- **MIAMI CO BEEKEEPERS** — Robert Newmann, 183 S. Dorsett Rd., Troy, 45373
- **MID-OHIO VALLEY BEEKEEPERS** — Janet Davis, Rt. 1, Box 160, Waterford, 45786
- **MORROW CO AREA BEEKEEPERS** — Arthur Korody, 4084 Co. Rd. 115, Mt. Gilead, 43338
- **MORROW CO BEE ASSN** — Rebecca Gilliland, 1299 Nancy Lane, Columbus, 43227-2165
- **MUSKINGUM CO BEEKEEPERS** — Dennis Moffitt, 185 Homestead Dr., New Concord, 43762
- **NW OHIO BEEKEEPERS ASSN** — Zelma Cox, 1623 W. Wayne, Lima 45805
- **PORTAGE CO BEEKEEPERS** — Peggy Kaminski, 1459 E. Howe Rd., Kent, 44240
- **RICHLAND CO BEEKEEPERS** — Ralph Mitchell, Brokaw Rd., Rt. 2, Butler, 44822
- **ROSS CO BEEKEEPERS ASSN** — Fred Weaver, 27 Courtland Dr., Chillicothe, 45601
- **SOUTH CENTRAL BK ASSN** — Fred Ginther, 122 Huntington Lane, Chillicothe, 45601
- **SOUTHWESTERN OH BEE ASSN** — Don Cooke, 731 Miami Ave., Terrace Park, 45174
- **STARK CO BEEKEEPERS** — Mrs. Fran Muller, 1927 6th St. SW, Canton 44706
- **SUMMIT CO BEEKEEPERS** — Lester Sadler, 813 McCawley Rd., Stow, 44224
- **TRI-COUNTY BEEKEEPERS ASSN** — B.J. Hoffman, 3198 Crater Rd., Wooster, 44691
- **TRUMBULL CO BEEKEEPERS** — Sheila Terrill, 10044 Ridge Rd., Kinsman, 44428
- **TUSCARAWAS CO BEEKEEPERS** — Mrs. Donald Ziegler, 666 S. Beaver St., Newcomerstown, 43832
- **WARREN CO BEEKEEPERS** — Oscar Brown, 7154 Hopkins Rd., Maineville, 45039

OKLAHOMA

- **CENTRAL BEEKEEPERS ASSN** — Glenn Gibson, Box 368, Minco, 37059
- **DEEP FORK VALLEY BEEKEEPERS ASSN** — J.H. Allison, Rt. 1, Box 386 B, Henrietta, 74437
- **EAST CENTRAL BEEKEEPERS ASSN** — Carl Morse, Rt. 1, Box 28, Atwood, 74827
- **FOUR STATE BEEKEEPERS ASSN** — J.D. Merit, 231 I St. SE, Miami, 74354
- **FRONTIER COUNTRY BEEKEEPERS ASSN** — Chuddie Smith, P.O. Box 34, Guthrie, 73044
- **GREEN COUNTRY BEEKEEPERS** — Shirley Wright, Rt. 1, Box 55A7, Locust Grove, 74352
- **INDIAN NATIONS BEEKEEPERS** — Doug Bemo, 527 Anthony, Muskogee, 74403
- **NORTH CENTRAL BEEKEEPERS** — Joe Green, Box 1983, Stillwater, 74076
- **NE OKLAHOMA BEEKEEPERS** — Carl Harrison, 109W-50 St. N., Tulsa, 74126
- **NW BEEKEEPERS ASSN** — J.B. Shepherd, Rt. 2, Box 100, Maynoka, 73860

- **RED RIVER BEEKEEPERS ASSN** — Louis Stallings, HC 70, Box 12, Boswell, 74727
- **SE OKLAHOMA BEEKEEPERS** — Dorothy Bragg, Rt. 1, Box 305, Caddo, 74729

OREGON

- **LANE CO BEEKEEPERS** — James Sheridan, 1885 Norkenzie Rd., Eugene, 97401
- **COOS CO BEEKEEPERS** — Walt Price, P.O. Box 217, Coquille, 97423

PENNSYLVANIA

- **ARMSTRONG-INDIANA BEEKEEPERS** — Kleber Minich, 1414 3rd Ave., Natrona Heights, 15065
- **BUCKS CO BEEKEEPERS** — Eugene Pester, 512 Feaster Ave., Feasterville, 19048
- **CENTRAL WSTRN PA BEE ASSN** — Nancy Paffenroth, Unionville Rd., Evans City, 16033
- **CHESTER CO BEEKEEPER ASSN** — Tim Sterreit, Westlawn School, Westlawn, 19395
- **CLARION CO BEEKEEPER ASSN** — R. W. McHenry, Front St., Box 176, Sligo, 16255
- **DAUPHIN CO BEEKEEPERS ASSN** — Linda Kerstetter, 8068 Fox Mill Rd., Harrisburg, 17112
- **FRANKLIN CO BEEKEEPERS** — Leigh Knepper, 191 Franklin Farms Lane, Chambersburg, 17201
- **LACKAWANNA CO BEEKEEPERS** — Esther Ziegler, Rt. 1, Dalton, 18414
- **LANCASTER CO HONEY PRODUCERS** — Loren Sandler, 1235 Red Run Rd., Stevens, 17578
- **LEHIGH VALLEY BEEKEEPERS** — Richard Olson, RD 1, Box 296M, Germansville, 18053
- **LUZERNE CO BEEKEEPERS** — Ernest Young, 347 E. Noble St., Naticoke, 18634
- **MONTGOMERY CO BEEKEEPERS** — Joseph Duffy, 309 Cliveden Ave., Glenside, 19038
- **NORTHWESTERN PA BEEKEEPERS** — Jeff Allio, RD 3, Nickleplate Rd., Cochrannton, 16314
- **POTTER CO BEEKEEPERS ASSN** — Lloyd Tyler, Rt. 3, Coudersport, 16915
- **SCHUYLKILL CO BEEKEEPERS** — Richard Malick, 220 Cherry Dr., Wyomissing, 19610-2202
- **VENANGO CO BEEKEEPERS** — Ms. Ernest Montgomery, Rt. 4, Box 14, Franklin, 16323
- **WAYNE CO BEEKEEPERS ASSN** — Evelyn Merring, RD 6, Box 6601, Lake Ariel, 18436
- **YORK CO BEEKEEPERS** — Judy Brenne-man, Rt. 1, Box 1377, Spring Grove, 17362

RHODE ISLAND

- **BRISTOL CO BEEKEEPERS ASSN** — Bruce Holden, 11 Field Lane, Barrington, 02806
- **KENT COUNTY BEEKEEPERS ASSN** — Kent Cameron, 256 Buttonwoods Ave., Warwick, 02886

- **NEWPORT CO BEEKEEPERS ASSN** — Steven Amble, 136 Cedar Ave., Portsmouth, 02871
- **PROVIDENCE CO BEEKEEPERS ASSN** — Salvatore Bucacci, 23 Gillen St., Providence, 02904
- **WASHINGTON CO BEEKEEPERS ASSN** — Ed Cook, RR 2 Box 223, 100 Acre Pond, W. Kingston, 02892

SOUTH CAROLINA

- **MID-STATE BEEKEEPING ASSN** — Clifford E. Ward, 910 Pond Dr., West Columbia, 29169
- **YORK CO BEEKEEPERS ASSN** — Ms. I. T. Hepp, Leslie Highway, Rock Hill, 29732

TENNESSEE

- **ANDERSON CO BEEKEEPERS** — Teresa Huddleston, 4105 Meridith Dr., Knoxville, 37921
- **BLOUNT CO BEEKEEPERS** — John Gee, 173 Hamil Rd., Friendsville, 37737
- **CHATTANOOGA AREA BEEKEEPERS** — Joe Kilpatrick, 834 Runyan Dr., Chattanooga, 37405
- **CHEROKEE BEEKEEPERS ASSN** — Ms. David Robinson, Rt. 4 Box 353, Decatur, 37322
- **COLUMBIA BEEKEEPERS** — Lona Vaughn, Rt. 7, Box 123, Columbia, 38401
- **DICKSON CO AREA BEEKEEPERS** — Elaine Smith, Rt. 1, Box 74C, Cumberland Furnace, 37051
- **DUCK RIVER BEEKEEPERS ASSN** — Elaine Holcombe, P.O. Box 303, Shelbyville, 37160
- **FRANKLIN CO BEEKEEPERS** — James Duncun, Rt. 2, Winchester, 37398
- **HAMILTON CO BEEKEEPERS** — Ms. J. D. Humberd, 8528 East Brainerd Rd., NE, Chattanooga, 37421
- **JACKSON CO BEE ASSN** — R. C. Smith, Gainesboro, 38562
- **LAWRENCE CO ASSOC** — Ralph Ring, Lawrenceburg, 38464
- **LEWIS CO BEEKEEPERS** — Allen Martin, RR 1 Box 321-E, Hohenwald, 38462
- **LOUDON CO BEEKEEPERS** — Jim Goodman, 8633 Hwy. 11, Lenoir City, 37771
- **MCMINN CO BEEKEEPERS ASSN** — R. D. Malone, Lake View Farm, Niota, 37826
- **MEMPHIS AREA BEEKEEPERS** — Dean Bush, 1948 Prado Ave., Memphis, 38116
- **MONROE CO BEEKEEPERS ASSN** — E. E. Hagler, Madisonville, 37354
- **NASHVILLE AREA BEEKEEPERS** — Allan Davis, 137 Spring Valley Rd., Nashville, 37214-2833
- **OVERTON CO BEE ASSN** — Ronald Johnson, 317 University St., Livingston, 38570
- **SEVIER CO BEEKEEPERS ASSN** — John R. Kelley, Rt. 14, Box 229, Sevierville, 37862

- **STONES RIVER BEEKEEPERS** — George Cooksey, 2407 Braxton Bragg Dr., Murfreesboro, 37130
- **TIPTON CO BEE ASSN** — Ira Sellers, Covington, 38019
- **TN HONEY PRODUCERS/PACKERS** — Charles Neal, 7525 Georgetown Rd., Ooltewah, 37363
- **UNICOI CO BEE ASSN** — Enloe Hensley, Rt. 2, Erwin, 37650
- **WASHINGTON CO BEEKEEPERS** — K. Saylor, Rt. 2, Box 94, Jonesboro, 37659
- **WEAKLEY CO BEE ASSN** — A. M. Walker, Dresden, 38225
- **WILSON CO BEEKEEPERS ASSN** — Felix Preston, Rt. 7, Box 104, Lebanon, 37087

TEXAS

- **ALAMO AREA BEEKEEPERS ASSN** — Eva S. Prieto, 6418 Redbird Lane, San Antonio, 78240
- **ANDERSON CO BEEKEEPERS** — Tony Gunnels, 208 Fifth St., Palestine, 75801
- **ANGELINA ASSN** — George A. Berry, Rt. 9, Box 5160, Lufkin, 75901
- **BRAZOS VALLEY ASS'N** — Khris Thur-mold, Rt. 4, Box 61, Belmont, College Station, 77840
- **CAPITOL AREA BEEKEEPERS** — A. J. Adaire, 1507 Summit St., Austin, 78741
- **COASTAL BEND BEEKEEPERS** — Lillian Edwards, 3925 Burns, Corpus Christie, 78415
- **COLLIN CO HOBBY BEEKEEPERS** — Bill Johnson, 3441 Cherrywood Lane, Plano, 75074
- **CONCHO VALLEY ASSN** — Travis Lane, 6427 Goodland Loop, San Angelo, 76901
- **EAST TEXAS ASSOCIATION** — Harold Woolard, Rt. 1, Box 20, Edgewood, 75117
- **EL PASO ASSN** — Steven Cameron, 1505 Mesalero Dr., El Paso, 79925
- **FORT BEND ASSN** — Ms. Carol Gibson, 8102 Tella Dr., Houston, 77036
- **GALVESTON CO ASSN** — Charles Eisler, Rt. 1, Box 805, Dickinson, 77539
- **GOLDEN TRIANGLE ASSN** — R. C. Lawson, 1855 Fox Rd., Vidor, 77662
- **HARRIS CO ASSN** — Herb Barrier, Rt. 3A, Box 3385, Pearland, 77581
- **HEART OF TX BEEKEEPERS** — Ann G. Hill, 303 W. Chantilly, Waco, 76706
- **HILL CO BEEKEEPERS ASSN** — August A. Lutz, Sr., 916 Monroe, Kerrville, 78028
- **HOUSTON BEEKEEPERS ASSN** — Stuart Kuik, 10806 Will-O-Wisp Dr., Houston 77035-3524
- **MONTGOMERY CO BEEKEEPERS** — Milton Howard, 1 Joann, Willis, 77378-8486
- **NORTH CTRL TX BEEKEEPERS** — Virgil I. Woodfin, 200 S. Park, Iowa Park, 76367
- **NORTH HARRIS COUNTY BEEKEEPERS ASSN** — Boice Burns, 14430 Sequoia Bend, Houston, 77032
- **PERMIAN BASIN ASSN** — Dean Britting-ham, 2312 North Adams, Odessa, 79761

- **RED RIVER VALLEY ASSN** — Larry Graber-holz, P. O. 2501, Wichita Falls, 76307
- **RIO GRANDE VALLEY ASSN** — Dr. Frank Eischen, 2415 E. Highway 83, Weslaco, 78596
- **SOUTH PLAINS BEEKEEPERS** — James Colson, P.O. Box 2247, Lubbock, 79408
- **TEXAS HONEY CO-OP** — P.O. Box 14292, San Antonio, 78214
- **TEXOMA ASSOC.** — Russell Green, P.O. Box 164, Ector, 75439
- **TRINITY VALLEY ASSN** — Mary Scott, 313 W. 7th St., Weatherford, 76086
- **TRI-CO AREA BEEKEEPERS** — Mike McPherrin, Rt. 1, Box 1127, Kempner, 76539
- **VICTORIA CO BEEKEEPERS** — Rex Bin-netson, 1208 S. Laurent, Victoria 77901
- **WALKER CO BEEKEEPERS** — B.B. Murphy, Rt. 8, Box 249, Huntsville, 77340
- **WILLIAMSON CO ASSN** — Dean Futch, 904 Chalk St., Copperas Cove, 76522

UTAH

- **WASATAH BEEKEEPERS ASSN** — Gerri Withers, 8349 S. 100 E., Sandy, 84070

VIRGINIA

- **BLUE RIDGE BEEKEEPERS ASSN** — Ms. Punky Ward, 3314 Bandy Rd., Roanoke, 24014
- **CENTRAL VA BEEKEEPERS EAST** — Sylvia Newland, 9002 Gayton Rd., Richmond, 23229
- **CENTRAL VA BEEKEEPERS WEST** — James Dubovsky, 3720 Country Ln., Charlottesville, 22903
- **GLOUCESTER BEEKEEPERS ASSN** — Ms. Carmen Stanford, Rt. 4, Box 2825, Hwy. 17, Gloucester, 23061
- **HALIFAX BEEKEEPERS ASSN** — E. Donald Chandler, P.O. 265, Virgilina, 24598
- **LOUDOUN BEEKEEPERS ASSN** — Richard Hays, Sr., P.O. Box 1030, Purcellville, 22132
- **NASA-LANGLEY APIC CLUB** — Mary Ward, P.O. Box 712, Gloucester Point, 23062
- **NORTHERN PIEDMONT BEEKEEPERS** — Barbara Dennis, Rt. 1, Box 570, Amisville, 22002
- **NORTHERN VA BEEKEEPERS** — Pearl Liles, 2451 S. Culpeper St., Arlington, 22206
- **PIEDMONT BEEKEEPERS ASSN** — Mrs. A.A. Blanks, Rt. 1, Box 14, Long Island, 24569
- **POWHATAN BEEKEEPER ASSN** — Faye Clarke, 2802 Hill Top Lane, Powhatan, 23139
- **PRINCE WILLIAM BEEKEEPERS** — Brenda Powers, 7216 Cushing Rd., Manassas, 22110
- **RICHMOND BEEKEEPERS ASSN** — Lillian P. Mills, Rt. 2, Box 615, Woodford, 22580
- **SHENANDOAH VLY BEEKEEPERS** — Leo Joyce, P.O. Box 700, Front Royal, 22630

- **SOUTHWEST PIEDMONT BEEKEEPERS** — Harry Litte, P.O. Box 7, Collinsville, 24078
- **TIDEWATER APICULTURAL FOUNDATION** — Anthony Moll, Rt. 2, Box 89, Newport, 24128
- **TIDEWATER BEEKEEPERS ASSN** — Elaine Utterback, 4424 Gannon Rd., Chesapeake, 23703
- **VA COMMERCIAL BEEKEEPERS ASSN** — C.L. Burgess, 1900 Memorial Ave., Lynchburg, 24501

VERMONT

- **BENNINGTON CO BEEKEEPERS** — J. Ash, P.O. Box 723, Bennington, 05201
- **EASTERN APICULTURAL SOCIETY** — Maxine Manchester, P.O. 647, Middlebury, 05753
- **NORTHERN BERKSHIRE BEEKEEPERS** — P.O. Box 236, Williamstown, 01267-0236
- **VERMONT HONEY PROMOTION** — Pete Genier, RFD 1, Fair Haven, 05743

WASHINGTON

- **CENTRAL VALLEY BEEKEEPERS ASSN** — Claudia Richardson, 9409 Coolidge, Yakima, 98908
- **CLARK CO BEEKEEPERS ASSN** — Pamela Crone Wenzloff, 16810 NE 40th Ave., Vancouver, 98686
- **COLUMBIA BASIN BEEKEEPERS** — Meril Peterson, 1305 W. 42 Ave., Kennewick, 99336
- **COWLITZ CO BEEKEEPERS ASSN** — Eva Davis, 3956 Columbia Hts Rd., Longview, 98632
- **INLAND EMPIRE BEEKEEPERS** — Ms. Rae Bateman, 12028 E. Boone, Spokane, 99206
- **MT BAKER BEEKEEPERS ASSN** — Anthony Duralia, 1451 Country Lane, Bellingham, 98225
- **NORTHWEST DIST BEEKEEPERS** — Peg Dougherty, 9312 222nd St. SE, Woodinville, 98072
- **OLYMPIA BEEKEEPERS ASSN** — Cheryl Randall, 2511 26th Ave. NE, Olympia, 98506
- **PALOUS HILLS BEEKEEPERS** — Ed Bries, W 125 Main St., Pullman, 99163
- **PIERCE CO BEEKEEPERS** — Dianne Knowles, 13204 McCutcheon Rd., E. Orting, 98360
- **PUGET SOUND BEE ASSN** — Merrill Kuehn, 17333 Fourth, SW, Seattle, 98166
- **SKAGIT VALLEY BEEKEEPERS** — Mike Lundbert, 2757 E. Section, Mt. Vernon, 98273
- **VASHON ISLAND BEEKEEPERS** — Miriam Bishop, 9200 SW Bank Rd., Vashon Island, 98070
- **WHIDBEY ISLAND BEEKEEPERS** — Jim Short, P.O. Box 535, Coupeville, 98239

WISCONSIN

- **BARRON CO BEEKEEPERS** — Kathryn Mansfield, W 16383 Co. Rd. O, Weyerhaeuser, 54895

- **BROWN CO BEEKEEPERS** — Thomas Cashman, 1415 E. Mason St., Green Bay, 54301
- **CHIPPEWA & EAU CLAIRE BEEKEEPERS** — Fern Eggen, 4733 Stardusk Dr., Rt. 7, Chippewa Falls, 54729
- **DODGE CO BEEKEEPERS** — Peter Graetz, W 1997 Lincoln Rd., Oconomowoc, 53066
- **JEFFERSON CO BEEKEEPERS** — Franklin Borth, N. 1605, Watertown, 53094
- **MANITOWOC CO BEEKEEPERS** — Henrietta Mack, 6529 N County Rd. W, Reedsville, 54230
- **MARATHON CO BEEKEEPERS** — Dean Kaatz, 500 Forest St., Wausau, 54401-5568
- **OTAGAMIE CO BEEKEEPERS** — Linda Anderson, Rt. 4, Sunset Lane, New London, 54961
- **POLK-BURNETT BEEKEEPERS** — Phillip Larson, RR 2, Clayton, 54004
- **RACINE-KENOSHA CO BEEKEEPERS** — Carolyn Fanelli, W. 150 S. 6959 Cornell Cir., Muskego, 53150
- **ROCK CO BEEKEEPERS** — Larry Patnoe, Rt. 1, Box T-22, Beloit, 53511
- **RUSK CO BEEKEEPERS** — Elenor Albrecht, Rt. 1 Box 214, Glen Flora, 54526
- **SAUK-COLUMBIA COS BEEKEEPERS** — Daniel Licht, S 6566 Hwy PF, North Freedom, 53951
- **SHEBOYGAN CO BEEKEEPERS** — Mrs. Elaine Schuman, 126 Grafton Ct., Kohler, WI 53044
- **SOUTHERN DIST BEE ASSN** — S. J. Ottis, 26 Breese Terrace, Madison, 53701
- **STATELINE BEEKEEPERS ASSN** — Dan Stoudt, 3512 Hwy. 78, Gratiot, 53541
- **ST CROIX CO BEEKEEPERS** — Bob Olson, 1237 Willow Ave., New Richmond, 54017
- **TAYLOR-CLARK BEEKEEPERS** — Florette Kohn, N2580 CTE, Medford, 54451
- **WAPUACA CO BEEKEEPERS** — Stan Jakubek, P.O. Box 54, Iola, 54945
- **WISCONSIN HONEY PRODUCERS** — Rex Bowen, 6614 W. Milkte Ave., Milwaukee, 53210

WEST VIRGINIA

- **BENWOOD BEEKEEPERS** — Jim Pittman, 519 Boggs Rd., Benwood, 26031
- **CABELL-WAYNE BEEKEEPERS** — Gabe Blatt, 3554 Haney's Branch Rd., Huntington, 25704
- **EASTERN PANHANDLE BEEKEEPER ASSN** — Bea Atkins, Rt. 3, Box 30-A, Martinsburg, 25401
- **HAMPSHIRE CO BEEKEEPERS** — Mark Bell, Rt. 1, Box 149, Purgitsville, 26852
- **MARION CO BEEKEEPERS ASSN** — Tom Kees, Rt. 5, Box 93A, Fairmont, 26554
- **MID OHIO VALLEY BEEKEEPERS** — Clifford Leeson, 353A River Hill Rd., Washington, 26181
- **MORGANTOWN AREA BEEKEEPERS** — Charlie Metz, P.O. Box 58, Wadestown, 26589

- **TRI STATE BEEKEEPERS ASSN** — Don Snider, 52 Garvins Lane, Wheeling, 26003
- **WHEELING BEEKEEPERS ASSN** — Don Snider, 52 Garvins Lane, Wheeling, 26003

CANADA

- **ALBERTA BEEKEEPERS ASSOC** — Gertie Adair, 16715-113th Ave., Edmonton, Alberta T5M 2X2
- **ASSOC DES AGRICULTEURA-PQ** — Robert Villeneuve, 58 Est Colombiere, Quebec G1L 1R1, Que.
- **ASSOC DES APIC PROF PQ** — Roger Doyon, 57 Perras, Napierville CO, St Remi, Que
- **BRANT DIST BEEKEEPERS ASSN** — Kenneth Crabbe, Rt. 3, Scotland, Ont
- **CARLETON CO BEEKEEPERS** — John Baird, Rt. 1, Woodstock, NB
- **CENTRAL OKANAGAN BEE ASSN** — H. C. Macneill, Peachland, BC
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- **KALOWNA BEEKEEPERS** — W.G. Glower, 2203 Woodlawn St., Kalowna, BC
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- **NELSON BEEKEEPERS** — Ivan Lewis, 1309 McQuarrie Ave., Prince George, Nelson, BC
- **OTTAWA VALLEY DIST BEEKEEPERS** — George Benson, 156 Pleasant Park, Ottawa, Ont
- **PE ISLAND BEE CO-OP ASSN** — Geoffrey Paynter, P.O. Box 1114, Charlottetown C1A 7M8, Prince Edward Island
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- **PRINCE GEORGE BEEKEEPERS** — I. L. McGill, Rt. 7, Sunny Acres, Prince George, BC
- **QUINTE BEEKEEPERS ASSN** — N E Orr, General Delivery, Wooler K0K 3M0, Ont
- **SURREY BEEKEEPERS ASSN** — James Medill, 14708 68th Ave., Surrey, BC V3S 2B1

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Directory,
Gleanings In Bee Culture
 P.O. Box 706
 Medina, OH 44256.

USING THIS DIRECTORY

Starting with the first page we have listed at the State Level . . .

A Contact Person for the State Association
 The State *Inspector*
 The State *Extension Agent*
 The *State Trade Office* for Export Marketing
 The Office of the State *Department of Agriculture*

Next, there is a page with Federal contacts (both U.S. & Canadian) for a variety of groups, a listing of the major Industry Organizations and their respective contacts, the USDA Research Labs and the International groups.

Finally, there are the contacts for *Local Associations*, those at the Regional, County or even City level.

DID YOU KILL THE QUEEN?

When Considering The Mathematics of Beekeeping, Division Is Always Better Than Subtraction

I thought I had heard it all while I was a bee inspector, but one Spring day while walking out of an apiary owned by George Lambson, a backlotter in Yuba County, California, I again heard the question I had been badgered with many times. It's always the same, some loving beekeeper accusing me of killing his queen while I inspected his hives. This was different though, there was some hope and anticipation. He asked again. "Well, did you find the queen and kill her?" I admitted to seeing the queen, but I was sure I had not killed her. His reply blew me away. "Darn. Those darn queens are hard to find. You're supposed to kill them this time of year to prevent swarming."

Another bright, budding beekeeper's way of avoiding the natural instinct built into honey bees over 10 billion years of evolution to reproduce

the species. Not surprisingly, he asked if I knew anyone who wanted to buy his hives. He was tired of beekeeping. He hadn't made any honey in the last six years. A familiar story, heard on these pages before.

Joe Hanson met this same problem in another way. He really loved bees and I gave him two hives in 1971, just before I left California. The last thing I said to Joe was take good care of the bees and multiply and replenish your interests. I had no idea he took my admonition quite so literally. When I visited four years later, his front yard had hives in every corner, but on closer inspection, all I found were weak, small units that June day. There must have been 30 hives strewn all over that front yard, but every time a hive swarmed, he caught it where it landed and left the hive he put it in right there. When I drove up he had new equipment all over

the driveway as he frantically tried to keep up with the swarms. His wife was standing in the doorway, madder than a wet hen with divorce on her mind. The house and yard had gone to pot while her loving husband tried to keep up with the bees. Joe's comment was he could not take it any longer. "The bees are driving me

crazy" he said. So when I left that day, he had only five strong hives in a nice orderly row and Joe was wondering what had hit his bee yard.

Once, I picked up 28 swarms in one day, and I just kept making separate units until I stumbled upon the bright idea of "**United we stand, separate, we shall fail!**". Well, I wanted to stand, so I united lots of hives and that year made lots of honey.

Swarm prevention will drive a normal beekeeper insane, and then bankrupt, if he does not solve this age old problem. First, you must understand that swarming is a normal, natural process, which must be reckoned with. It must, however, be dealt with on the bees' terms, not the beekeeper's.

On April 13, two days before taxes are due (remember that day with regard to where my bees are in the western states) in Utah, and one day after a snowstorm, I made 60 divides from 75 of the 77 hives I overwintered. Successful overwintering, with little loss and super strong hives could drive anybody insane. Those hives are tearing the lids off by the first week of April, and it can be truly frightening to the uninitiated beekeeper.

So that week I go out with a good friend to unpack my bees and look inside for the first time - knowing and fearing what I would find. What you see under the lid that first visit determines either what the crop will be, or if you will be playing catch-up the rest of the season. It shouldn't be a surprise. Like many Aprils before this, it was a repeat. My friend would hear me swear under my breath, "Not one dead hive in this

O.B.
WISER





When you pop the cover and you see a colony this strong, with brood and bees in both the top and bottom super, you know you've got one to divide.

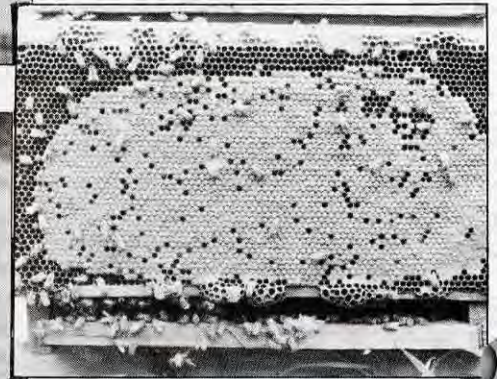
QUEEN ... Cont. From Pg. 217

whole yard (I call it the Sheep yard) and only two that are weak or queenless." Yes, my **queenless** hives survive the winter all the time. I just requeen them and give a couple frames of brood and they take off like gangbusters.

So what do you do with a whole yard of bees ready to swarm? The Demaree method? Switching top boxes with the bottom box? Supering and breaking the hives apart to give them air? Switching strong hives with weak hives? Or the most futile of all, cutting queen cells? Or the total waste of time and money of clipping queen wings? All these methods are worthless, in my opinion. They seldom work because they do not address the real problem, **bees want to divide and multiply - their prime directive**, and they very seldom let some puny beekeeper's manipulations stop 10 billion years of evolutionary programming.

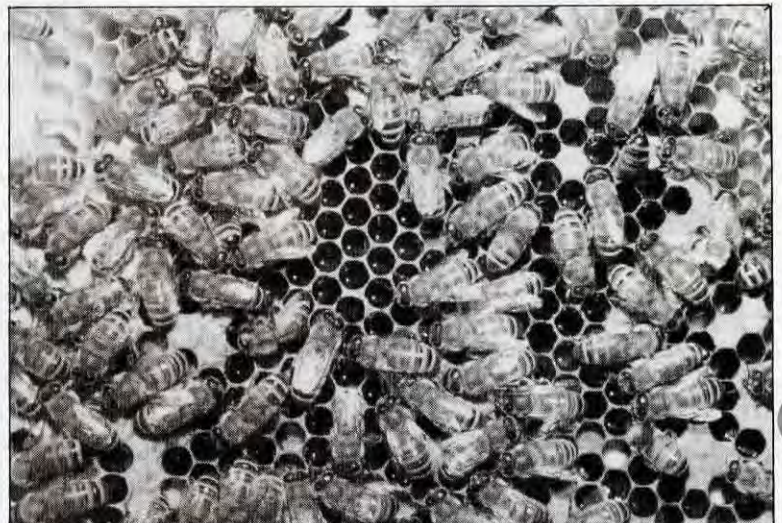
There is only one logical thing to do. Swarm the little suckers in a controlled manner, to your advantage. But alas, I do not want any more beehives. **More is not better**, folks. You must say "stop" at some point, to maintain your sanity. Your beekeeping career and your marriage depend on it. Believe me, I've seen bees end good, solid marriages.

So what tells me I must divide? Well, first off, you do not have to worry if you have to look for the cluster, and it is on only 2 or 3 frames. Those hives won't swarm or make any honey, either.



Carefully work out one of the center frames to check brood. If you see several like this, consider it an investment in your future.

Honey frames, too, are money in the bank. Use these to feed your newest colony.





Place two or three, or maybe even four frames of brood with bees attached, or brood/honey mix in the center of the box that will be the 'new' colony. Then, place two or three frames of honey on the outside of the brood you put in. This keeps bees, and brood together for warmth.



When finished, put an inner cover with a screened hole on top of the colony you took bees and brood from, then place the divide right on top.

So for those little hives, with fewer than four frames, add one or two frames of bees and brood the first of April, while there is still hope.

Once I had 200 hives that had two frames or less of bees and a queen. I had moved them to California during my first year of commercial beekeeping, and had made grundles of mistakes on a big scale. You know, instead of messing up with 10 hives, I made my mistakes with 1,000 hives. These bees got freezer burned by sub-zero moving temperatures because I forgot to put a head board on my semi-load. A small, but costly error.

But what I did with those weak hives worked with story book accuracy. As the bees were coming out of the almonds, there were 50 I called my "Magnificent 50" that had unreal strength. I shook 200 lbs. of bees from them and left them in a warehouse overnight. Then, on a cool, sunny Sunday morning, with a song and a prayer in my heart, I took those bulk bees,

sprayed them with heavy syrup and plopped one pound or so of bees in front of each hive, while the shadows of morning were still on the front of the hives. The dew clung to the manzanita blooms and the bees just laid there like cold molasses until the sun touched them, then they all started to crawl into the hives at once. That was the end of March. I added one frame of brood fourteen days later, and by May each one was strong enough to divide.

The trick is to use your boomers, the ones I call my *super strong*. Then I only take one frame, or at most two, from any of these to give to the weak. My intent is to not harm their buildup, but at the same time give as many as possible the chance to "give at the office" the first thing in the Spring.

A strong hive has the whole center seven frames of the top box full of bees. **The super strong hive**, however, has wall-to-wall bees the first of April—all nine frames—with bees in the bottom box as well.

When to divide is important and my dates do vary, but the last few years half my bees had to be divided by the 14th of April or they would have swarmed by the 21st of April.

This next comment will take some bee brains to understand. Brood comes in cycles. The queens lay their first *major* cycle about 21 days before April 1st, give or take 10 days. A brood cycle is when all the available cluster space is filled with eggs at about the same time, so they all come off about the same time. Three complete brood cycles and your bees are in the trees. It is that simple. Divide them after the second cycle and before the third cycle comes off. What a hive at this stage should look like at dividing time (at least to me) is a nearly full top box of bees with some brood already in the lower box.

My bees are mostly uniform in strength because of my wintering method and they are all tearing their lids off at about the same time. However, there are always differences so

don't plan to divide your bees with the preconceived idea you will take four frames from every hive. You take what they can give and not be hurt, and no more. Your personal "bee instinct" must tell you what that is. It depends on the location, the time of year, the weather, the water conditions, how lucky you feel and how good a weather predictor you are for the next two months.

I make it a point to divide early and usually take no more than two or three frames per hive. That means no more than two frames of brood and one honey. Never, never, never take all the big frames of honey (usually on the outside) from the parent colony. I make it a practice to get my divide on one side of the hive, leaving the other side totally alone. A good heavy divide is three frames and sometimes four, if they are honey bound.

What you do to the parent hive after the frames are pulled is mighty important, at least to the bees. Some idiots separate the parent hive's brood with empty frames, making sure the first spring chill kills the outside frame. This, of course, insures they will not swarm, will not build up and probably not make honey, solving the two major problems. What you should do is push all the brood together and leave the honey on the outside position, putting the empties back on the outside so the cluster can expand as it grows, just like

nature would do it.

So, you have your divide, frame by frame, not taking too much, yet taking enough from each hive. What do you do with these frames of brood and honey? Those frames are money in the bank. They are your investment and, as with any investment how you place your assets will determine your future success or failure. Any one who does it the same way every year is about as smart an investor as the Wall Street *new bee*, who plunks all his money into penny stocks every year just because it worked once. Dumb, dumb, dumb.

So every year is different. The weather is different and the plants that make nectar and pollen are different, just as you are different and have different things you need to adjust to. Maybe this is the year you're going to Alaska to shoot a prize moose, or your daughter is getting married, or

So, question number one: **How strong should I make the divides?** How many new hives you want and what the season is going to do all play a role in this important decision. Well, do not make them the same every year. I had a friend I thought was some kind of a robot - four frame divide, four frame divide. That is all he knew and he took all four from one poor hive. You have heard that you must not mix bees, right? Bull! Mix all you want. It makes no difference and hasn't for me the past 20 years.

What kind of divides are there to

make? The smallest is a three frame divide. Two frames of brood and bees and one frame of honey. Nothing less than that will do. A four frame divide is two brood and two honey - that's a strong divide with good potential. Mine always make honey the first year. Then there are six frame divides, four brood and two honey. And, if you are real conservative - the eight frame monster. But remember, the stronger the hive, the greater the probability of poor queen acceptance if the weather goes foul on you. Threes and fours nearly always get near 100% acceptance.

Next, take that divide and put it on top of the hive it came from. That's the best way to survive when all your bees are strong. You have little loss. I use inner covers that are both solid and have screen on them, but are solidly separated, with an entrance on one side. Just flip the inner cover over and you have a bottom board - see last month's article - *Two Queens!*

I just finished making 140 divides and today is April 20. Cold weather is moving in and snow is on the ground, but I am not worried about my divides. Swarming has been prevented and each unit has honey in it, so this cold spell will be weathered. Each divide will sleep well tonight because it sits on top of a natural heater and it will not lose its brood edges to tonight's sub-freezing temperatures. I'll sleep well tonight, too, and so will the bees. And I learned how to do *THAT* the hard way. □

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LOOKING FOR

TROUBLE

There are four good methods you can use to find varroa mites in a honey bee colony. These methods are also useful in estimating the extent of the infestation, but these are only estimates, and should be used as guides, rather than exact measurements. The methods are – checking drone brood, checking adult bees using a soapy water wash, examining bottomboard debris, and the ether roll, using adult bees.

By ROGER MORSE

KNOW THY ENEMY

Recognition and control of bee diseases should be an integral part of your management scheme. However, many beekeepers have relied heavily on state apiary inspection programs for assistance because they have not taken this responsibility seriously, or for some other reason were unable to follow a protective program. When state apiary inspection laws were first passed in the late nineteenth century, there was broad public support, especially from fruit growers and dairy farmers. Both groups saw the importance of maintaining a healthy beekeeping industry so an abundance of bees would be available for pollination.

But now, increasing competition for state funds is causing some state departments of agriculture to abandon mandates given them years ago by agriculturally oriented legislatures. California has given up bee inspection at the state level, and funds available for bee inspection in New York State in 1991 were less than half that of the year before. In many states beekeepers can no longer rely on state apiary inspectors for assistance in their bee disease control programs.

Nevertheless, there are good methods of controlling most of the serious honey bee diseases. However, before you apply a treatment it is important to know what disease, or diseases, are present and when they should be treated. Varroa mites are no exception.

WHERE THEY CAME FROM

Varroa mites are native to Asia, where they infest the small Indian honey bee (*Apis cerana*). Indian honey bees groom varroa mites from their bodies and kill them, thus limiting the number of mites in a colony. The bees and the mites live more or less in harmony, with the mites rarely, if ever, killing a colony.

The economic importance of varroa mites on European honey bees was not discovered until the early 1960s. Most colonies of European honey bees have no defense against them. In the past 30 years, the mites have been accidentally spread by people to Europe, Africa, and North and South America. They were first discovered in the United States in 1987 by a migratory beekeeper in Wisconsin, but by then the mites were already widespread in many states. They

Photo on top of page by M. Burgett

can be found almost everywhere in the country today, though in many areas they are not yet sufficiently abundant to kill colonies. However, thousands of colonies have died in Florida, Massachusetts, and New York, but Florida continues to have the worst infestation.

THE LIFE CYCLE

Mated female mites, with eggs already in their ovaries, move into brood cells just before the cells are capped — they prefer drone brood over worker brood, given a choice. When the cells are being capped brood is in the larval stage, but within a day after capping it will be in the pupal stage. When brood is capped there is still some royal jelly in the bottom of the cell, and mites quickly burrow into this royal jelly and consume some of it. The honey bee larvae consume the rest and cleans royal jelly off of the varroa mites at the same time. The varroa females slowly deposit their eggs, and the emerging nymphs and even the old females puncture the bee's pupal skin and feed on its blood.

If there are more than about seven young varroa in a cell the bee is usually

killed. If there are fewer the bee may live and emerge, but is likely to have deformed legs, wings, and antennae. They may be much smaller, and these deformed bees are usually removed from the hive by normal workers.

Varroa mites mate in the cells where they are reared — sisters and brothers mate. When mature female varroa mites emerge from a cell they quickly find an adult bee and burrow under the overlapping segments on the underside of its abdomen. Here they insert their mouthparts through the integument and feed on the adult's blood. After several days in this position they drop off the bee and enter a ready-to-be-capped brood cell and the cycle is repeated. Mites are spread from one hive to another largely by drifting bees, but other modes of transportation exist.

WHY LOOK FOR MITES?

Varroa mites are spreading rapidly and in all probability every beekeeper in the continental United States and Canada will have infested bees within two to four years. It is important that beekeepers everywhere in this

country, Canada, and Mexico check their colonies for varroa mites *at least twice a year*. And, when varroa mites are found in a colony it is important to know when and how to treat for them. Varroa mites seldom kill colonies the first year they are present. This is not always the case, however. In late 1991, a New York beekeeper told of colonies that produced over 100 pounds of honey in July and August, but were dead from Varroa mite infestations by late fall. This is good grounds to treat infested bees the year an infestation is found.

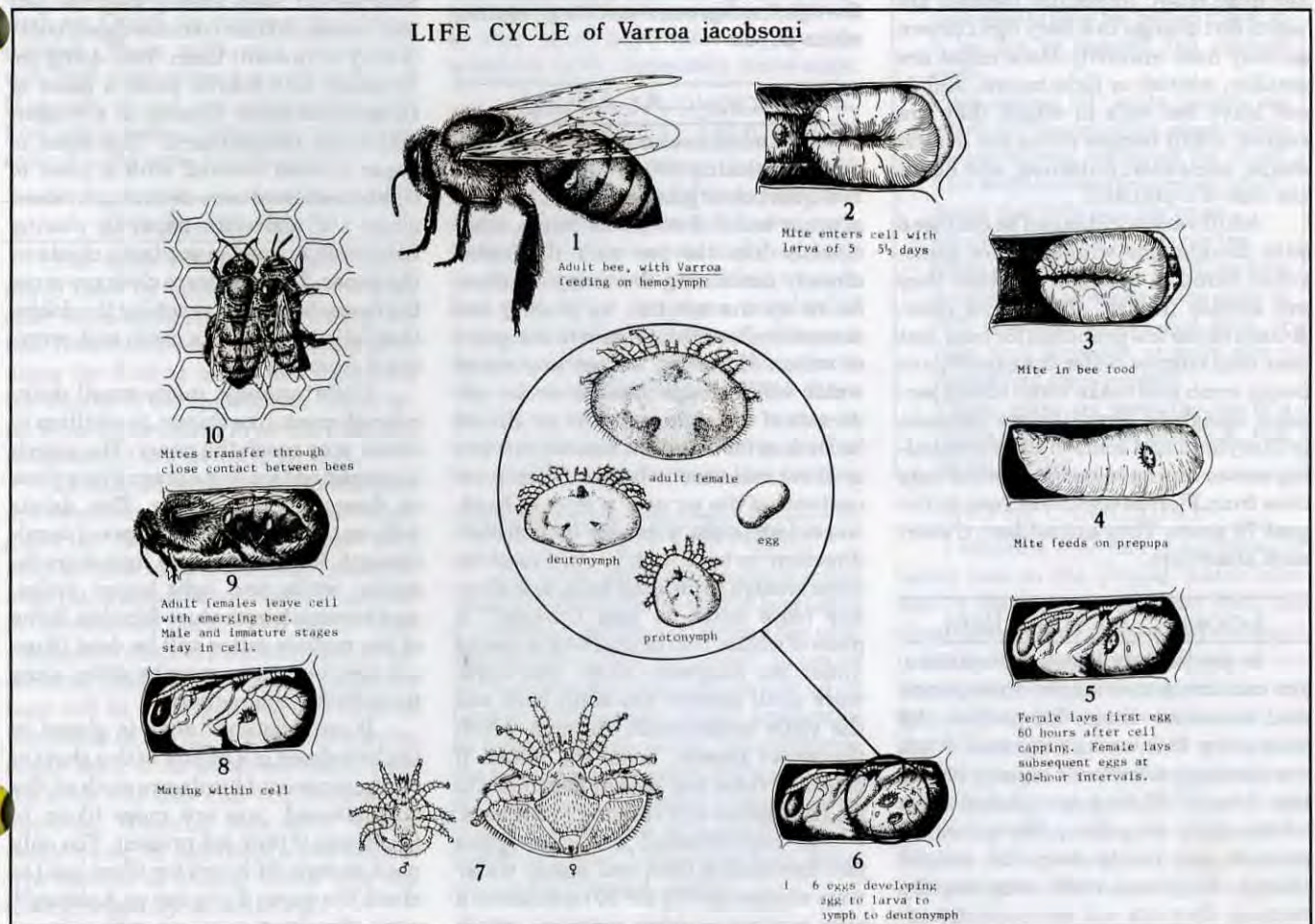
Once the mites are established in a colony, annual, and maybe even twice-per-year treatments are necessary. Until you know they are established, though, it is sufficient merely to know if they are present or not. After they are established you need to monitor your colonies so you know the level of infestation and to make treatments at the appropriate time.

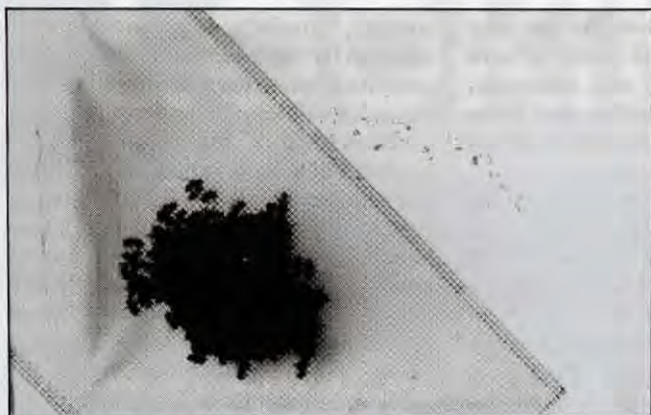
HIDE & SEEK

You can check both brood and adult bees for varroa since both may be infested. Unfortunately, all diagnostic

Continued on Next Page

LIFE CYCLE of *Varroa jacobsoni*





Dead bees on top of the screen, with mites underneath after a soapy water wash.



Varroa mites, as they appear on the material beneath the wire mesh grid.

VARROA ... Cont. From Pg. 223

methods, except examining bottomboard debris, involve killing some bees, especially when the infestation is light. However if varroa mites are easily seen on brood and/or adult bees, the infestation is usually fairly high and the colony may already be past saving.

WHAT TO LOOK FOR?

Whether you are looking at brood or adult bees, it is the reddish-brown, adult female varroa mite that you will see most often. Immature females are white but change to a very light brown as they near maturity. Male mites are smaller, whitish or light brown, and do not leave the cells in which they are reared. Adult female mites are oval in shape, somewhat flattened, and about the size of a pinhead.

Adult varroa mites can be confused with *Braula*, the wingless flies sometimes found in colonies, because they are similar in size, shape, and color. *Braula* cause few problems for bees, but they may burrow under the cappings in honey comb and make comb honey sections unsightly. Braulids are common in Maryland and some of the surrounding states but have been reported only once from Florida and New York in the past 70 years. They are seldom, if ever, seen elsewhere.

LOOKING AT BABY BEES

In moderately heavy infestations, you can uncap and remove drone pupae and examine them for mites. An uncapping fork works very well if you are checking a few cells on only one or two frames. If they are placed on a white cloth or paper, the mites, if present, are easily seen. Be careful though; they may walk away rapidly because they are not permanently at-

tached to the pupae. Mites prefer drone brood to worker brood, so it is better to check there than on worker brood, at least at first.

A more efficient method is to uncap a large patch of drone brood with a long, serrated knife. The comb is then banged against a surface covered with a white sheet or piece of paper so the drone pupae fall out and onto the white surface. Several hundred pupae may be examined rapidly in this manner. The dark varroa mites are easily seen against the light background and the glistening white pupae.

LOOKING AT ADULTS

Live adult bees may be sampled for mites by placing 200 to 400 in a one- or two-quart clear glass jar about half full of soapy water. Sweep bees from a comb directly into the jar with the water already containing the soapy solution. Make up the solution by placing one teaspoon of liquid detergent in one quart of water. However, almost any soapy water will dislodge mites from the underside of the abdomen. The jar should be shaken for at least a minute, but two or three minutes is better. Then pour contents of the jar over a piece of hardware cloth (eight wires per inch in each direction is best, but it only need be large enough to hold the bees, and allow any loose mites to pass through). A piece of white cloth or sheeting is placed under the hardware cloth. The hardware cloth catches the adult bees and the cloth underneath, through which the water passes, holds the mites. If possible, rinse the bees at least once to find any mites still clinging to the bees.

In experimental situations glass jars containing bees and soapy water were shaken gently for 30 minutes on a slow moving shaking machine, which

removed all the mites from the bees. Hand shaking for one or two minutes will dislodge about 95% of the mites present. A 70% alcohol solution may be substituted for the soapy water with about equal success.

BOTTOMBOARD DEBRIS

A very effective but somewhat more time-consuming method of searching for mites is to check the debris that falls onto a bottomboard during a 24- to 72-hour period. Bees usually keep the bottom boards in their colonies clean, but it is easy to prevent them from doing so. To check this debris, place a piece of clean white paper directly on a reasonably clean bottomboard. This sheet of paper is then covered with a piece of eight-mesh hardware cloth that is raised about 1/4" above the paper by placing three or four wooden or plastic cleats on the paper. The hardware cloth prevents the house bees from reaching the debris that falls through the mesh and carrying it from the hive.

Unfortunately, many small dark-colored speck-like things, in addition to mites, may reach the paper. The search is simplified by using a magnifying glass or dissecting microscope. This debris will contain mites in all stages of development, including white immature females, white and light brown males, and brownish immature females. Some of the mature mites will be dead (from old age) but many may be alive, some more feeble than others.

If an Apistan™ strip is placed in the broodnest of a colony with a sheet of white paper and hardware cloth on the bottomboard, you are more likely to find mites if they are present. You only need to wait 24 hours (or often less) to check the paper if you use an Apistan™ strip. Smoking a colony with tobacco

ETHER ROLL METHOD

STEP 1

- Remove 200-400 bees from a center comb from the brood nest. Place into a quart jar.
- Place lid on jar, tap jar to settle bees to bottom.



STEP 2

- Using a can of aerosol ether-based starter fluid (used to start cars in cold weather), spray into jar for 1-2 seconds.
- Close jar immediately and gently shake/roll bees for 10-15 seconds.



STEP 3

- Then, turn jar on its side and gently roll bees.
- Any mites present will adhere to the film left on the sides of the jar.
- Mites will be about the size of a common pin head, and a bright, medium to dark brown color.
- If you suspect mites to be present, empty the bees and rinse the film with 70% (rubbing) alcohol. Take, or send, to your local inspector.
- Remember, this test is NOT foolproof. You need to check SEVERAL colonies in your apiary. Also, very low infestations will not show up on this test.



smoke (there is tobacco available especially for this technique) will also dislodge some mites from adult bees, and cause them to drop onto the bottomboard. This system is far from perfect since varroa mites in good health, or even only crippled by fumigant, may still be very active and walk long distances after they fall to the bottom. Sticky boards that capture the mites are available, and are very effective in holding mites – they are expensive, however. A simple sheet of white paper may be covered with Vaseline or a fat such as Crisco to capture the mites, instead. These work only reasonably well and some mites may still escape. However, if you use tobacco you will find some mites, indicating the presence of *some* level of infestation.

THE ETHER ROLL

The ether roll is a favorite technique used by apiary inspectors who, after some experience, have found it a fast, reasonably easy, and accurate technique for finding mites and assessing the degree of the infestation. Some experience is necessary to use this method successfully so I saved it for last.

To do an ether roll, 200 to 400 bees are swept into a one- or two-quart clear glass jar. Ether from an aerosol can, such as those used to help start gasoline engines, is squirted into the jar in a one- or two-second burst. The jar is then rotated or rolled on its side for about ten seconds. Most of the mites on the adult bees will be dislodged and will stick to the inside of the jar where they may be easily seen. If no mites are found with the ether role they may still be present, however. Washing bees with water, soapy water, or alcohol is a more effective method of finding mites that are not dislodged by an ether roll.

WHEN?

In the fall, when most colonies have little or no brood, you are much *more* likely to find mites on *adult* bees. When the cluster breaks and there is brood present in the colony you are much *less* likely to find adult mites in the same numbers simply because the gravid females move into brood cells in large numbers. This makes it even more difficult to estimate the number of mites present. **However, finding mites during the spring on capped brood**, using the techniques mentioned, should be easy, since most mites are now immobile in cells – especially drone cells.

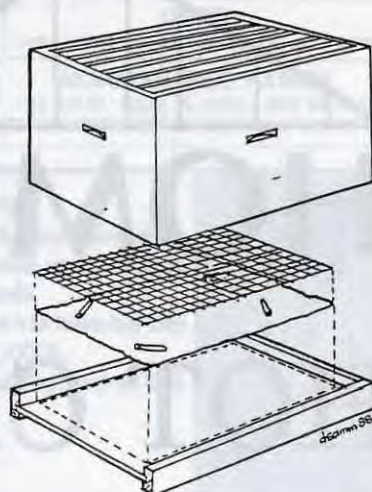
HOW MANY IS TROUBLE?

When you find more than 30 to 40 adult mites per 100 adult bees using the soapy water or ether roll techniques, the infestation is serious and the colony *may* be beyond recovery. This is more or less true when the same number of mites is found in drone brood, although do remember that mites prefer drone brood over worker brood. When there are 30 to 40 mites per 100 pupae in drone brood the infestation in worker brood will usually be much less serious.

WHAT DO I DO NOW?

Colonies with *any* number of mites should probably be treated at least once a year with Apistan™ strips (the only approved method at press). Colonies with mite loads of 10 to 20 per 100 adult bees or drone pupae should preferably be treated within weeks, depending on the time of year or when the honey flow is in progress. The label makes it clear that contamination of honey to be harvested is illegal. Label directions must *always* be followed, period.

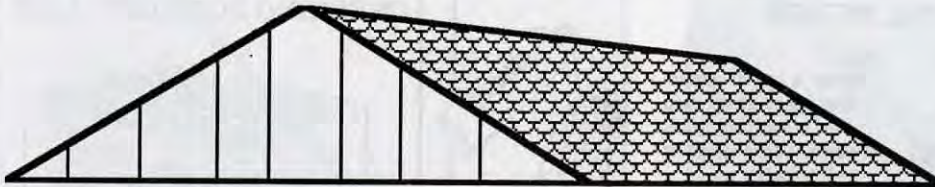
CHECKING BOTTOMBOARDS



- Clean bottom board of all large, foreign objects – dead bees, wax, dirt, etc.
- Cut a piece of clean, white paper to fit on the bottom board. It should be large enough to cover the board, but small enough to insert and remove easily without moving the above super. Insert the paper so it rests on the bottom board.
- Cut a piece of 8 mesh wire (8 wires/in. each way) to fit on the bottom board, so it too can be inserted and removed easily.
- Place several 1/4" sticks (pencils are nearly 1/4") on top of the paper to keep the mesh from resting on the paper. This keeps the bees from removing any debris that falls onto the paper.
- Check your colony in a day or two.
- Mites are readily seen, but if you have doubts, place all debris on the paper in 70% (rubbing) alcohol and send, or take, to an inspector, or check with a magnifying glass yourself.
- Varroa mites are about the size of a common pin head and medium to dark brown in color.

AND IN CONCLUSION. . .

I estimate that half the colonies of honey bees in the United States have died in the past several years from tracheal mites. These mites were first found in the United States in 1984, only about three years before varroa mites were found. Many beekeepers have recouped their losses from tracheal mites but many have not. Our knowledge of varroa mites indicates that they will be a much greater problem. Proper diagnosis is the key to any successful disease control program. Varroa mites are no exception. □



HOME HARMONY

ANN HARMAN
6511 Griffith Road • Laytonsville, MD 20882

HOT CROSS BUNS

"Hot Cross Buns
Hot Cross Buns
One a penny, two a penny,
Hot Cross Buns.

Hot Cross Buns,
Hot Cross Buns,
If you have no daughters,
Give them to your sons."

from Mother Goose

Hot Cross Buns are traditional fare for Good Friday. Their origins are in England where different types of buns are an important part of regional cooking. Historically, however, Hot Cross Buns were made throughout the country as a traditional Eastertime bread. A famous London bun shop sold thousands of Hot Cross Buns for Good Friday.

One fascinating piece of folklore is that a Hot Cross Bun would not get moldy like other breads and they were hung in homes as a lucky charm.

You might think that Easter, a religious event, prompted the cross design. However, breads decorated with a cross have been found in pre-Christian Roman and Greek ruins. Some historians think the cross may have originally represented the sun or perhaps the four seasons. Whatever the origins of the cross, it is most appropriate for the Easter season.

Recipes for Hot Cross Buns seem to be as variable as the number of cookbooks available. No agreement can be found on the spices to be used, on currants or raisins, and even on the icing for the cross. Since the buns originated in England, I would think that currants would be the most traditional fruit. Dried currants can be difficult to find in

grocery stores, therefore try to purchase a box of them during the Thanksgiving-Christmas season and store box in your freezer until you need them. The combination of cinnamon, nutmeg and cloves gives a pleasant mingling of flavors, so choose the mixture over a single spice.

You can score a cross in the top of a bun with a knife before baking and ice the cross afterwards, or leave the top smooth, whichever you prefer. Be certain to let the buns cool somewhat before applying the icing or it will melt and slide around. Bakeries use an icing bag with a tip to give a flat ribbon. If you do not have cake decorating equipment, just use the tip of a teaspoon and a knife to put the icing cross on.

Eastertime can be a busy time: visits from relatives, dyeing eggs, preparing for the Easter Rabbit, and just cooking enough food for everyone. Therefore, we have two recipes for Hot Cross Buns. One is traditional, requiring kneading and rising; the other is much quicker – a no-knead bun with only one

Easter baskets should have a squeeze bear of honey along with decorated eggs and jelly beans. Some homemade honey candies would be a nice addition also. Honey candies for a basket should be tightly wrapped in a clear plastic wrap so they do not absorb moisture from the air and become sticky. Colored transparent wrap can be difficult to find but florists sometimes have some and are usually willing to give or sell you a small amount. Florists also have small decorative bees which can be used to decorate baskets for bee lovers. □

rising and the great advantage of being made in advance and refrigerated up to two days before baking. They are both delicious, so choose the one that fits into your schedule.

Hot Cross Buns - traditional method

1 package yeast
1/4 cup warm water (about 110°)
1 cup warm milk (about 110°)
2 Tbs butter or margarine
1/3 cup honey
3/4 tsp salt
3/4 tsp cinnamon
1/4 tsp ground cloves
1/4 tsp nutmeg
2 eggs
3/4 cup currants
1/4 cup finely diced candied peel or citron
4-1/3 to 4-2/3 cups flour, unsifted

In a bowl, dissolve yeast in water. Stir in milk, butter, honey, salt, and spices. Beat in the eggs. Add currants, candied peel or citron, and enough of the flour (about 4 cups) to make a soft dough.

Turn dough out on a floured board; knead until smooth and satiny (10 to 20 minutes), adding flour as needed to prevent sticking. Turn dough over in a greased bowl; cover and let rise in a warm place until doubled (about 1-1/2 hours).

Punch dough down and divide into 36 equal pieces; shape each into a smooth ball. Place balls about 2 inches apart on lightly greased baking sheets. Brush each gently with a mixture of 1 egg yolk beaten with 1 tablespoon water. Cover lightly and let rise in a warm place until doubled (about 35 minutes).

Bake in a 400° oven for about 10 minutes or until lightly browned. Cool on racks for about 5 minutes; then, with a spoon or the tip of a knife, drizzle frosting over top of each bun to make a cross. Makes 3 dozen.

Sunset Cookbook of Breads
Lane Publishing Co.

Hot Cross Buns - no-knead, batter buns

4-1/2 cups (about) flour
 1/3 cup honey
 1 tsp salt
 1/2 tsp cinnamon
 1/8 tsp ground cloves
 1/8 tsp nutmeg
 2 packages yeast
 3/4 cup milk
 1/2 cup water
 1/2 cup butter or margarine
 2 eggs
 1/2 cup currants
 1 egg yolk beaten
 1 Tbs cold water

Combine 1 cup of the flour, honey, salt, spices and yeast. Heat milk, the 1/2 cup water and shortening until very warm (about 120°-130°). Add to dry ingredients and beat 2 minutes at medium speed. Add 1/2 cup flour and 2 eggs. Beat at high speed 2 minutes. Add more flour to make very stiff batter. Stir in currants. Cover tightly. Refrigerate dough at least 2 hours or up to 2 days.

Turn dough out onto floured board; shape into 18 balls; arrange in 2 well-greased 8-inch square pans. Combine egg yolk with the tablespoon cold water and brush buns gently. Cover, let rise until doubled, about 1 hour.

Bake at 375° for 20 to 25 minutes. Cool. Then apply icing cross.
adapted from Fleischmann's Yeast package

Now for the icing.

1/2 cup confectioner's sugar
 2 tsp hot milk
 1/4 tsp vanilla

Stir ingredients together. If too runny, add more sugar. If too stiff, add a very little more milk or water.

Now that you have made some Hot Cross Buns and found out how delicious they are, why not make a batch at different times throughout the year. There is absolutely no reason why we should save these buns just for Good Friday. □

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Finding The Perfect Sweet Spot

JEFF OTT

Probably *the* most important thing you can do to insure the productivity, health and acceptance of your bees is to pick the best spot for your beeyard. Far too often this is overlooked. But because community ordinances are being written to deal with the public's fear of "killer bees" and the countryside is shrinking to accommodate the expanding suburbs, apiary site selection will become even more critical to the beekeeper.

Sometimes you don't have much choice. You have your backyard – and that's it. But even then incorporate at least some of the following suggestions and guidelines to reduce the grief on your bees, yourself, perhaps your neighbors and to certainly increase your enjoyment.

Home Rule

Before placing colonies in a location already scouted (including your backyard), check local ordinances to find out if it is legal to proceed. Many communities either already have, or are in the process of instituting ordinances that ban bees altogether or limit the number and placement of colonies. Call city hall but be prepared to hold and hold and hold, and repeat your question several times to several different people – sometimes even the dog catcher (animal control officer). If a specific ordinance has not been written pertaining to bees and beekeepers, your bees may fall under a general "nuisance" ordinance. This is usually a catch-all ordinance covering anything that creates a problem for your neighbors. This can include a barking dog, a noisy

car shop or even an unkept lawn – and certainly honey bees. If they feel threatened by bees they may have City Hall make you stop. If there is no specific ordinance though you and your bees should be safe until someone complains to the authorities.

Perhaps the best source of reliable ordinance information will come from your local beekeeper's association. If you don't know who to contact, or whether or not there even is a local Beekeeper's Association, check in the "Who's Who" Directory in the center of this issue for the association nearest where you live or plan to keep bees. If you consider keeping bees in a suburb or city, a local group will be your best bet. They should understand the tem-

perament and peculiarities of local jurisdictions, either from experience or reliable hearsay. Another good source of information would be the county bee inspector, if you have one. To find out check with your State Inspector, again listed in the directory. But if you are going to keep your bees in the country all that is usually necessary is permission from the landowner, and usually some agreement on site rental (how much honey is the site worth? is the answer).

Getting There

Once you've found you can keep bees where you want, what's next? Well, how long are your bees going to stay there? (If it is your backyard, you may

Long rows can lead to drifting, but this site has good exposure, plus a wind break in back. Accessibility is also good with a close road and flat land.



think, "What kind of crazy question is THAT?") Ask yourself, if you set a bunch of colonies in a field and plan to pull them out for two weeks in May for an apple pollination job, then again for two weeks in July for the pumpkin bloom, will you be able to get the bees out when you need them? The landowner may have worked up the field leaving no way to get to your colonies with the truck. This would make what would have been a very simple moving job very tiresome if you have to carry each colony across the field, one-by-one, by hand.

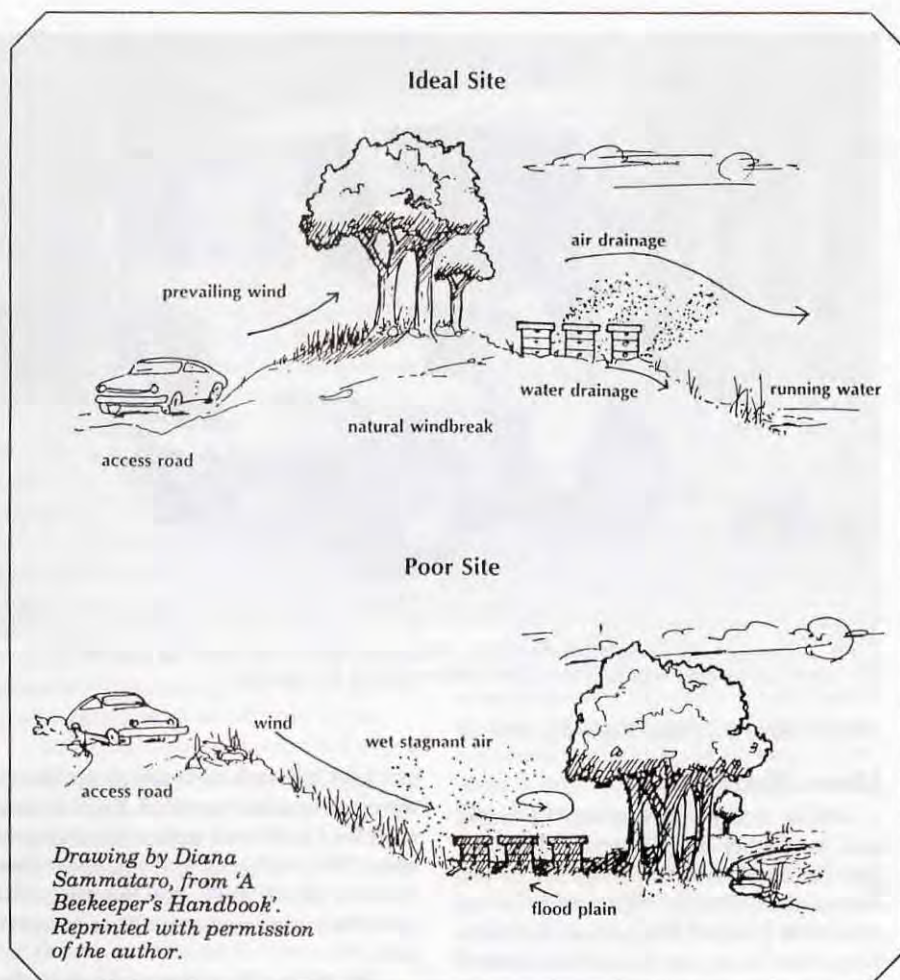
Something else to consider is access at harvest time. Avoid, if possible, carrying supers full of honey any distance. Be able to pull up right behind the colonies with your truck, trailer, or wheelbarrow. A full deep weighs 90 pounds, a medium about 60 and shallows around 35 pounds each. Spending one weekend day moving heavy supers, and one on the couch with a bad back is not a good plan. Easy access is.

What happens when the field next to your new site gets plowed and planted?

Will you be able to reach your bees after a week of rain? Sometimes the best site can become a nightmare after an inch of rain. Is it in a flood basin? A friend tells the story of when a landowner called and said the river was over the banks and the bees were in danger of drowning. He didn't lose the bees, but he had to do some quick scrambling (and wading) to make sure they didn't float away!

If you're big enough, or plan on being big one day, will you be using a "Bobcat" or forklift to move colonies around? If so, there are some additional concerns you'll want to address. Will the landowner object to the ruts and torn turf that may occur when the ground is soft? If you are already using these this is not a new thought. However, if you are new to forklifts and the like, you need to think somewhat differently about apiary accessibility and some other things — like overhead clearance, turning areas, surface stability, and how will you get the machine there in the first place?

Continued on Next Page



The basics for site location are access, windbreaks, air drainage, water and available forage.

Colonies situated like this are easy to work, reduce drifting to near zero, and make beekeeping enjoyable.





If you are going to be using machinery like this watch for ground stability, overhead clearance, turning area and ability to get to the site with the machine.

SWEET SPOT... Cont. From Pg. 229

How Many?

How many colonies can be easily and profitably placed at the site? You need to know several things before you decide this, though. First what is the available forage? Most sites, will support a few hives, but if you're concerned about making honey, not just keeping bees, then will your new location produce enough to provide a surplus. Conventional wisdom suggests you need to test a site several years before an "average" yield can be determined, but you still need an idea of what's grown in the area. This is why so many beekeepers are good at plant identification!

Other considerations aside, make sure that you have enough bees in a yard to make the time and effort of getting to them "cost effective." If you drive 50 miles round trip to inspect five colonies, it's difficult to justify the time and money spent even for a great per/colony return. Along the same lines, the more colonies you have in one spot, the fewer stops you need to make and the less road time spent. Commercial operators, or at least those who know their costs, figured this out long ago. Learn from them.

After you have set up your new yard, keep an eye out as you drive to and from 'work'. Farmers in some areas have found a new "cash crop" – Canola. This four to seven foot plant has brilliant yellow flowers that are both beautiful and productive. However, this "rose" has a thorn: honey from it granulates

quickly! In fact it can even granulate in the comb before it's pulled. You can deal with this, and even make a good crop of honey from it, but only if you know that it is out there. Then you can make the necessary management changes to adjust.

Additionally, when evaluating the area around your new apiary, keep an eye open for trash dumps, large tracts of commercially grown produce, new housing developments with pools in every yard and other potential problems.

Once bees learn of a water source, it's a hard habit to break.

A nearby produce field can be a real problem for your bees. (There are many crops that pose pesticide risks – vegetable, cotton, alfalfa, fruit orchards and more.) Most growers are very conscientious about applying pesticides, spraying in the evening and giving notice of spraying schedules, but some are not. If they do not know your bees are only a mile down the road, you could lose an entire yard in a matter of hours. Pesticides still cause serious problems for beekeepers. Even the suburban beekeeper has to deal with the local lawn care service that sprays fertilizers and pesticides on neighborhood yards!

Swimming pools and the houses they are near can be a great source of water for bees, however it is to the grief of pool owners. More urban beekeepers have probably had to move their bees due to an irate pool owner than for any other reason. I talked to a beekeeper last summer who had to move ten colonies from his backyard because the neighbor had purchased an above ground pool and the bees found this a great convenience. Neighborly relations were strained, certainly. However, this situation could have been avoided had some cautions been implemented before hostilities broke out.

Water, Water (But Not) Everywhere

Bees use water primarily to cool the hive and dissolve crystallized honey. Once they learn a source of water, they return to that source for more water. Foragers recruit others to the same location, just like a good nectar source. If there's no natural water source nearby provide one. Some beekeepers leave a barrel or pail of water in the apiary, but if you do this or something similar, be sure to provide a float where the bees can land and keep from drowning. You can drape a sheet of burlap or other material into the barrel to provide a footing for the bees. If you only have a few of colonies use an old chicken waterer or even put those boardman feeders on. This is the only thing the Boardman feeder is actually good for, anyway. Provide these alternate (or only) water sources as early in the season as possible to get them trained to your source. And keep them as close as you can to minimize flying time and effort.

Which Way Is The Best?

Most every good beekeeping book tells you to keep colony entrances facing in a "East, Southeast direction to catch the morning sun." But if all other site requirements are met, do not worry if the hives face another direction. The thought is that if you place colonies with entrances facing the Southeast, they will receive early morning sunlight allowing the bees to warm-up and start flying earlier. Facing the hive in a southeasterly direction also protects the entrance from most Winter winds, but there are more serious aspects to consider in hive placement than this, and they can affect the colonies health and productivity.

Windbreaks and Shade

No, this is not a new T.V. Detective series. However, these two things will protect your bees and help increase their yield more than anything else you can do. A windbreak is essential to your colonies no matter the time of year. In summer, nectar laden field bees constantly battle the wind just to land at the entrance. And winter winds can cut through the colony like a knife. The colony will probably survive, but it adds stress to a weakened colony and causes even strong colonies to work harder than they need to.

To avoid these problems locate your colonies so the prevailing wind is stopped by a line of trees, brush hedges or even a fence. This creates a calm air space around the apiary. If you have your bees located in the city or suburbs, a strategically placed windbreak not only reduces the wind, but forces the bees up and out of the way of nearby people, pedestrians and automobiles. When used as a people barrier, a hedge or fence about eight feet tall reduces or eliminates chance sightings, and close encounters of the bee kind.

A good windbreak can also do double duty and increase shade during the hottest part of the day. When the inside of a hive becomes too warm, the bees

reduce collection, because some foragers begin collecting water – not, I trust from your neighbor's swimming pool or bird bath. If your windbreak doesn't provide shade, improvise some sort of sun block for the bees during the hottest part of the day. Let your imagination guide you. Just make it sturdy to withstand strong winds and hold snow. If you plant a hedge, make sure it doesn't block the entrances and still gives you room to work – especially two or three years from now when it matures.

Consider a wood or wire fence around your hives if they will be in the back yard. Fences have several advantages over a foliage barrier. First, you can build a fence at exactly the height you need and you don't have to wait for it to "grow" Second, the fence can be part of your decorative landscaping, and finally, it can be protective. A secure fence will keep young visitors out until you're ready to show off your hives.

Another important point to keep in mind is the fence's design. Do not build a solid fence because of the turbulence caused inside when the wind blows. To avoid this, make sure the fence has slats, or openings like a picket or alternate-side fence style. These openings break up the wind as it blows and lowers overall impact on the other side.

Just Say No To Rows

Drifting occurs when colonies are placed in rows and the prevailing wind helps returning field bees to "drift" to the wrong hives. Foragers returning to a 'wrong' colony loaded with nectar or pollen are much more likely to be 'passed' by guards than 'empty' bees. The colonies at the ends of the row "gain" bees, while colonies in the center "lose" bees. Drifting also hastens the spread of diseases or mites. Using windbreaks reduces drifting, as will using shorter, irregular rows, smaller colony "pairs" and placing the front doors in opposite directions. Placing a few 'landmarks' in the apiary, especially if it is in a large open area also helps returning foragers orient themselves when returning home.

Every apiary has its own individual problems and requirements that need to be addressed to ensure the success of the site. Simply remember the biological basics that all creatures need – food, water and protection from the elements. Throw in the particulars for beekeeping – neighbors, working room and permission – and your bees will make the very best of your efforts. Together, you will define, find and refine the best of the Sweet Spots. □

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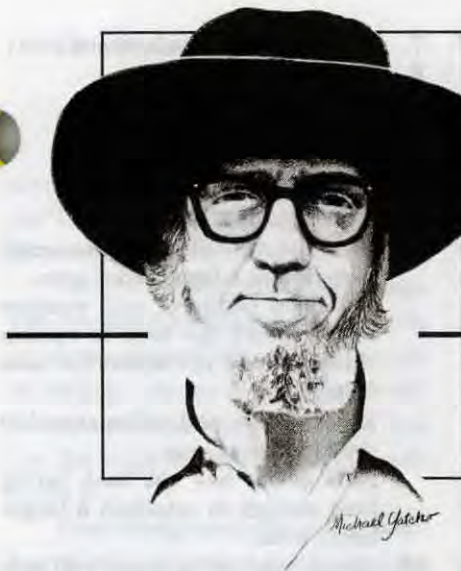
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BEE TALK

RICHARD TAYLOR

Box 352, Interlaken, NY 14847

"Harvesting is a leisurely task, with little lifting or disturbance of the bees."



I'm going to continue my discussion of comb honey production this time, but first an encouraging word on Varroa. I recently learned, from what I consider a reliable source, about a sixty-colony apiary in Florida that was nearly wiped out by Varroa mites in just one season. All the colonies perished, *except one*, and that one came through still strong. Learning of this, queen breeders rushed to that spot to get the surviving queen, bearing new queens from her by artificial insemination with drones from the same colony. Now that sort of thing, it seems to me, indicates the direction in which things should go. We know that some bees are resistant to mites, including Varroa. So the thing to do is find those strains, propagate them, as was done in the case just mentioned. I believe that in the not too distant future chemical controls will be a thing of the past and mites will become a minor nuisance. I have heard some experts predict that in time feral colonies will have disappeared from the continent, driven to extinction by mites, but that seems to me nonsense. Resistant strains will survive.

So now back to comb honey.

By the first of July I have pretty much forgotten about swarming, because the bees have just about lost interest. They are busy gathering nectar by then, and the basswoods are about to bloom and keep them busy. So I can more or less relax, so far as apiary work is concerned. What is required now is frequent trips to the bee yards to make sure no supers stay on the hives after they are filled. Travel stain *must* be avoided; I cannot overemphasize this.

As I check under the covers to see

what is going on I add new supers to each hive in which the bees have begun to work in the super already there, putting the new super *under* the one the bees are working in. This, too, is important, for it ensures that on subsequent trips all finished supers will be the ones on top. If it were otherwise, that is, if any finished supers were below unfinished ones on top, then it would be very easy to miss them, and the result would be travel stain. I want always to be able to tell which supers are ready, or nearly ready, for harvest, just by checking the top one. I do this by tilting that top super up and peering up into it from below, leaving the inner cover stuck down. When I find a super which is about half finished, and getting filled fast, then I stand on end the brick which is on every cover. That tells me, at a glance, which supers I'll be needing to harvest on my next trip to the apiary. In addition to this, it is very desirable to mark each super as it goes onto the hive – with color coded thumb tacks, for example – to indicate just when this was done. That is but another precaution against leaving supers on the hives too long and risking travel stain.

Sometimes a super will be found completely filled, right into the corners, but if it is mostly filled – all but perhaps a half dozen sections – then it is ready to take. To leave it on the hive longer in the attempt to get those last few sections capped over is to risk travel stain.

I use screen boards and two-way bee escapes to clear the supers of bees. You only need a dozen or so of these for about fifty colonies, since you will not be

harvesting from all your colonies at once, and the screen boards can be used over and over throughout the harvest season, which will extend for several weeks. I have described screen boards several times. They resemble inner covers, except most of the surface is eight-mesh screen rather than wood. These screen boards work much better than ordinary inner covers fitted with the bee escapes. Besides this, it is of the utmost importance to leave the inner cover where it is, on top of the super, plastered down with propolis. Once loosened, or replaced with a different inner cover, there is risk of leaving a crack through which bees can re-enter the super and rob it out. This is why, when I come to a super which I think is likely to be filled, I ascertain this by raising one of the supers and peering *up into it*, rather than prying off the inner cover. If it is in fact ready, then it is a simple matter to slip an escape screen in, without lifting the super completely off.

I leave the outer covers off after inserting the escape screens, with a scrap of asphalt shingle over the inner cover hole. Then, when all the escape screens are under the harvestable supers, I stroll through the apiary, checking to make sure the bees have found no holes or cracks from which they could rob out the supers. It is easy to ascertain this because, in case there is any such hole or crack, a few bees will be clustered there. Any such unwanted openings are sealed over with a bit of wide masking tape or wad of newspaper. If the super does not fit down tight on the hive, leaving an inviting crack, then masking tape is put around the entire hive. This works fine, and I have never known the bees to chew through

Continued on Next Page

this in the short time it is needed.

Usually the supers will be pretty well cleared of bees by the next day, but I usually wait two days before returning to get them. There is no need to wait longer and to do so is slightly risky – the bees might in time find an unnoticed crack, for instance. And if there is a nectar flow in progress, then the escape screen is likely to get plastered with burr comb. Actually, this does not matter much, but it is worth trying to avoid.

Of course there will always be a few bees in some of the supers. So I pile them on my truck in such a way that any remaining bees can fly out during the fifteen or twenty minutes that I'm there, collecting finished supers. Most of the rest fly out as I'm driving home. And if there are still a few in the supers when they go into the honey house, then these will soon fly out to the screen door, from which they are easily liberated to the out-of-doors.

That's how I harvest the honey. It is deeply rewarding to see the filled supers begin to pile up in the honey house as I bring in more honey, day after day. And, except for the occasional crosshive, harvesting is a leisurely task, involving little lifting, and virtually no disturbance to the bees.

Now will begin the honey house work, which is also leisurely, though time-consuming. But there is no machinery involved here, no stickiness, and you can pick your own times for doing it. I shall try to cover that next month, in time to put these ideas into practice for another season. □

(Questions and comments are welcomed. Enclose a stamped envelope for a response.)



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Answers To ? Do You Know ?

1. **True** – The chief factors controlling brood rearing in the honey bee colony are the availability of pollen and honey, temperature, number of bees available to care for the brood and possibly day length. Fresh nectar and pollen early in the spring serves as a strong stimulus for brood rearing. Some beekeepers do stimulatory feeding in the spring to increase this natural response.
2. **True** – While honey bees actively visit flowers for the collection of pollen, analysis of pollen loads and pollen removed from pollen traps indicates that foragers also collect large quantities of wind-borne pollens. These wind-borne pollens are believed to be of low nutritional value to the bees in comparison to pollen produced by flowers that require insect pollination.
3. **True** – Soil characteristics such as fertility, moisture, and acidity affect nectar secretion by regulating the growth of the plant. The influence of soil fertility and pH is complex. Excessive vegetative growth promoted by an overabundance of nitrogen is detrimental to nectar production. The effects of potassium and phosphorus are more difficult to interpret. Adequate soil moisture for good plant growth is also a necessity.
4. **False** – During the first 5 or 6 days of adult life, worker bees consume large amounts of pollen to obtain the protein and amino acids required to complete growth and development. If young adult worker bees do not consume needed proteins, their brood food glands will not develop completely and their royal jelly will not support normal growth and development of larvae or egg production in the adult queen. The requirement for protein decreases when worker bees discontinue nursing activities (between 10th to 14th day of adult life). Subsequently, the chief dietary constituent becomes carbohydrates obtained from nectars and honey.
5. A) Colony Development
6. B) Surplus Honey
7. A) Colony Development
8. B) Surplus Honey
9. B) Surplus Honey
10. B) Surplus Honey
11. B) Surplus Honey
12. B) Surplus Honey
13. B) Surplus Honey
14. Weak colony or cluster size too small to maintain a large brood area. Extended period of cold weather which forced the bees to remain clustered and prevented the bees from flying. Excess honey and pollen stored in the brood nest area. New queen has not been laying long enough to establish a larger brood area.
15. Queen may not be mated well or is on the verge of failure. Pollen may be in short supply, thus the bees are lacking adequate protein supplies. Honey and pollen flow may be so heavy that the cells are filled before the queen has a chance to lay in them. Colony is suffering from a brood disease. Pesticide poisoning or poisonous nectar has caused a break in the brood rearing cycle or has killed some of the developing larvae.
16. Density in which the plant is growing in the area of the apiary. Quantity of nectar produced by each individual flower. Length of the blooming period and number of flowers per plant. Relative attractiveness of the flower to the bee which is dependent upon the quality of nectar produced by the plant. Ease in which the forager can remove the nectar supply from the flower.
17. Feed the honey back to your bees for them to use as winter stores or to be used in the production of additional bees. Many of these honeys can be mixed with honey from other desirable sources and sold as bakery grade honey.

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.

<u>Number Of Points Correct</u>	
25-18	Excellent
17-15	Good
14-12	Fair

Although it may be a bit late for some bee businesses, many are still in the "I'll need some help this year, where do you suppose we'll find it", mode.

But hiring good help doesn't happen overnight, or by accident, and to do it right requires almost as much thought as getting married (I did say almost). To succeed at either you need to find just the 'right person', there's no doubt about it.

Even though beekeeping is a rather specialized occupation, and finding the 'right person' may appear more difficult than finding somebody to milk cows, fix fences, cut wood or make widgets in a factory, it actually is more like most jobs than not.

In fact, the trickiest part of finding somebody depends more on you than the applicant, even in a tough job-finding market like the one we're in at the moment. I recently ran across some guidelines to consider when hiring a new person and I thought I'd pass them along, just in case you're interested.

First, have a clear job description, build a pool of applicants to select from, use a written application form, check references and personally interview the people you're most interested in.

For the person doing the actual hiring, consider the following -

KNOW YOURSELF

How are you viewed by potential or existing employees? Answer the following (honestly) to get an idea.

- Would I like me as a boss?
- Am I part of the team?
- Am I liked by the people I supervise?
- Do I enjoy talking to others?
- Am I a good teacher?
- Am I a good listener?
- Do people understand me when I give orders?
- Do I trust the people who work for me?
- Does my staff have some individual responsibility?
- Do I regularly give out 'pat on the back'?

If you answered NO to any of these, there are areas for improvement as a supervisor.

KNOW YOUR BUSINESS

What are the objectives of your business, and, at the same time, what are the short and long term problems a new employee will encounter? Further, what, exactly will your new employee do (remember that job description?), and how will that affect who you hire? If you know those answers, you can pretty well define your new employee.

SELL AN OPPORTUNITY

Are you enthusiastic about this job, your business, and the opportunity you're giving the applicant? If not, how can you expect the new employee to be excited?

There's no doubt that finding somebody who 1) enjoys hard work, 2) likes being outside in good and bad weather, 3) can take stings and 4) wants to work for only you is going to be difficult. So don't miss that perfect employee just because you didn't take the time or spend the energy. Can you afford not to find that person?

There are two stories this month that look at early spring management. At first glance, (or first read, as it were) you may think the authors are advocating two different methods to control swarms. In fact O.B. Wisner almost (but not quite) sneers at anyone who would spend time and energy reversing supers instead of simply making splits.

Meanwhile, A.J. Sarling spends a great deal of time reversing supers, and defends his system admirably. You would probably be convinced either was absolutely correct, if, just a few pages away there wasn't another equally convincing technique demonstrated.

So who's right?

Once again, both are. Both authors have a thorough understanding of "what it is that bees want to do". And both authors simply let the bees 'do their thing', but under controlled and profitable guidelines. I suggest you read both articles carefully and see how

much alike the basics are. And, although how they manipulate those honey bee instincts differ, the end result is the same. Reversing or dividing? Not as different as you might suspect - both work and both are right, for some of us.

Finally, meet A.J. Sarling, one of the authors mentioned just above, who penned the *Northern Exposure* article. A.J. hails from Fairview, Alberta, Canada (way, way up north), and runs about a thousand colonies for the college up there. Experience in England, Australia and other locales has given him an international perspective, while teaching many foreign students each year keeps that perspective current.

And, dealing successfully with a 90 day growing season and a 275 day winter should teach you something about intense management, and skilled wintering. Take a look at *Northern Exposure*.

* Several years ago I asked on these pages for some ideas on what to call people who don't keep bees. The label "non-beekeeper" has never felt quite right. I'm not a *non-accountant*, you're not a *non-editor*. see what I mean?

So after all this time I stumbled on what I think is the perfect handle for those who don't dabble in bees - *Citizens*.

It's perfect, isn't it? If you were in the service you know what a *Citizen* is. In fact if you are in most any specialized occupation, *Citizens* are all the rest of the world, anybody who doesn't *get* what it is you do for a living. Fireman, Policemen and lots more use it. I think we should, too. And I will on these pages from now on.

Citizens. Aren't they grand!

Kim Flottum

QUESTIONS?

The first three questions are from Carl C. Egolf, Newport, NY.

Half A Strip?

Q. If only half foundation strips are used in the top portion of round sections, will the bees continue to draw out fine, delicate comb in the bottom part of the round sections? Or do you need full sheets to get complete, uniform and finished sections?

A. The bees will usually fill the section completely even if foundation is used only in the top half of the section, but it is certainly better to use full sheets, as there will then be less risk of a hole through the bottom part.

Comb Sugar?

Q. Does feeding sugar syrup in the spring hasten the drawing of foundation in the comb honey supers, as well as stimulating brood rearing? Or will this result in the bees storing sugar syrup in the sections? Also, can sugar syrup be used to get the bees to cap the sections properly after the honey flow has stopped?

A. It must be an iron-clad rule of comb honey production that the bees have no access to sugar syrup when there are supers on the hive, as such sugar syrup will almost certainly find its way into the supers. Sections thus contaminated with sugar syrup could not legally be sold as honey. The way to get sections nicely drawn and capped over is to have a good honey flow. That is sometimes easier said than done, but there is no alternative.

Crystal Comb?

Q. You have recommended getting comb honey marketed early, before granulation sets in. But if you sell to a retailer, are you not just passing the buck to him, as the honey granulates on his shelf?

A. Most honey does not granulate very soon in the comb, though there are a few kinds that do. As for retailers, it is best to sell to fruit stands and similar specialty outlets, where comb honey sells fast, rather than to grocery stores, where it does not. If your comb honey does granulate after going to a retailer, which is really not very likely, then buy it back, and either use it yourself or let the bees rob the sections out in the spring or summer.

Packages or Nucs?

Q. Which would be better, to buy three-pound packages and hive them on foundation, or to make up three-frame nucs from my own colonies, buying new queens?

James Neagle, Jr.
Richmond, VA

A. Make up nucs from your own colonies. A colony started with a package dwindles for three weeks, when the first brood begins to emerge, and besides this, the rate at which the queen lays depends on the colony population. A nuc, on the other hand, begins growing in population at once, since brood is already to emerge when it is started. And there are two other advantages to using nucs from your own apiary: (1) You to some extent inhibit swarming, without really weakening the parent colonies, and (2) you save money.

The Perfect Bait Hive

Q. The January article on Dr. Tom Seeley said he had experimented extensively to learn what features of a bait hive were most attractive to stray swarms, but it was nowhere indicated what those features are. Can you tell us?

Ben Bender
Hillsboro, OR
(And several others)

A. Dr. Seeley concluded that, in general, a bait hive should be up off the ground at least ten or twelve feet, should be about the volume of a regular full-depth hive body, and should have a small entrance near the bottom, which faces south.

Buzzing the Birds?

Q. My bees have been bringing in bird seed and cracked corn, and the neighbors complain about them at their bird feeders. Why do they do this, and what can I do about it?

Basil Hutton
Marion, VA

A. In early spring, when brood rearing has begun and pollen is scarce, bees will often seek other sources of protein, cracked corn being one of these. Material resembling pollen—that is small, lightweight and, able to be packed. Saw dust, powdered sugar, and powdered protein supplement, left outside (and dry) will also attract bees. I suggest advising neighbors that bees so occupied will not harm either birds or people, and that they will abandon the feeders as soon as flowers begin to bloom in abundance.

(Questions are welcomed. Address Dr. Richard Taylor, Box 352, Interlaken, NY 14847, and enclose stamped envelope for reply.)

ANSWERS!

Richard Taylor

GLEANNINGS GLOBE

APRIL, 1992

ALL THE NEWS THAT FITS

But Costs are Up BEE BREEDERS CONCERNED

The American Bee Breeders Association is proposing a surcharge on queens and packages to cover the costs of complying with new procedures recipient states are imposing on shippers.

At its fall meeting, the ABBA adopted a motion that it express its "great concern about new procedures, permits, and regulations" designed to prevent the shipment of bees infested with mites. It noted that the lack of uniform procedures between states com-

plicates the shipping procedures and adds to the cost unnecessarily.

No specific surcharge amount was set. The suggestion is that each shipper determine his own costs for compliance.

The ABBA also reiterated its earlier recommendation that a miticide, such as Apistan, be included in every queen cage and bee package shipped, to ensure that the bees are mite-free when received by the customer.

Fore Remains Secretary FEDERATION'S NEW OFFICERS



Don Schmidt, Bob Brandi, David Sundberg

The American Beekeeping Federation has elected new officers and adopted policies to guide its activities for 1992.

Elected president was Don Schmidt of Winner, SD. He was succeeded as vice president by David Sundberg of Fergus Falls, MN.

Elected to a two-year term on the Executive Committee was

Gene Brandi of Los Banos, CA. He joins incumbents Ed Doan, Hamlin, NY; Dave Hackenberg, Lewisburg, PA; Dick Ruby, Milnor, ND; and Blaine Simpson, Parker, AZ. The immediate past president is Bob Brandi, Los Banos, CA. The Executive Committee re-named Troy Fore of Jesup, GA as secretary.

FEDERATION'S GOALS FOR YEAR

will work diligently through the self-policing program funded by the Honey Defense Fund to stop adulteration of honey.

shall foster the best possible relations with the general public and conduct their beekeeping operations to minimize the unnecessary exposure of the public to honey bees.

shall maintain the highest standards of maintenance and sanitation possible in their honey production and handling facilities and shall utilize current technical knowledge to use approved compounds, as labeled, to avoid the introduction of contaminants into honey in the hive or during collection, processing and packaging.

will cooperate with any other organizations when it is deemed that such cooperation will further the goals of the American Beekeeping Federation.

supports the adoption of policies by the USDA, state agriculture departments, counties and wood control districts to utilize legumes for planting set aside and marginal farm land, lands subject to erosion, and lands for wildlife habitat.

will work to maintain and expand its honey promotion efforts through the American Honey Queen Program

urges its membership to support legislative efforts by providing financial assistance, the beekeeping industry.

NGA Starts New Group

GARDENS FOR ALL

The National Gardening Assc., a national non-profit organization based in Burlington, VT has announced the formation of its new membership body, "Gardens for All" "NGA believes that gardeners develop a special appreciation for the needs, interdependency and fragility of life on Earth," said Penrose Jackson, Exe. Dir. "This is key to ensuring proper stewardship of the planet." Gardens for All seeks to help young and old, those new to gardening and veterans, discover the rewards of sowing, growing, and harvesting while acting as responsible caretakers.

By joining Gardens for All, members help others enjoy the rewards of gardening. Member-

ship fees support such efforts as innovative garden-based science education programs, garden grants programs, therapeutic and intergenerational gardening.

For \$25 annual dues, members receive an annual garden planner designed for Gardens for All members, a quarterly newsletter, and valuable savings on gardening publications, educational resources and workshops. Members become part of a national, interactive network of concerned citizens helping cultivate the gardeners of the 21st century.

For information, contact Penrose Jackson, Gardens For All, National Gardening Assc., 180 Flynn Ave., Burlington, VT 05401, (802) 863-1308.

GOVERNMENT NOTES

USDA economists say U.S. sugar production for 1991-92 should be a record 7.33 million short tons, up 400,000 tons from last year. The last three crops were affected by weather, but in each year, sugar production was above 6.5 million tons—higher than at any time in history with the exception of 1975 and 1987. In the last two years, sugar consumption has grown faster than high fructose corn syrup consumption.

The average U.S. family receives \$46 of benefits from \$17 of taxes used to support agricultural research. That's an average cost-to-benefit ratio of 1 to 2.7, reported Univ. of Georgia Professor of Agricultural Economics Fred C. White to the Agricultural Research Institute. The payoffs are several times those of industry research, he said.

Farmers may be able to depreciate some of the livestock on their farms. Livestock acquired for work, breeding or dairy purposes that aren't part of an inventory account may be depreciated. For more details on livestock depreciation, see the free IRS Publication 225, **Farmer's Tax Guide**. You can order it by calling 1-800-TAX-FORM.

H. Russell Cross, the new administrator of USDA's Food Safety and Inspection Service, says he will make the agency one that has strong credibility with the public, consumer groups, Congress and the industry. To do this, Cross says he will, within the next 30 days, address the need for the agency to better define and articulate its mission; review the more than 50 recommendations for a management evaluation report; will assess the need to adopt National Academy of Sciences recommendations; and meet with members of Congress, consumer groups, industry organizations, agency regional directors, supervisors, employees and employee groups to listen to their concerns and recommendations.

At Least For Now

MAINE STAYS CLEAN

For a small state—at least in population—Maine has been one big headache to Tetra Pak and Combibloc, makers of the aseptic "drink box", and their jointly funded Aseptic Packaging Council. Maine is the only U.S. state to have banned the popular container from retail sale, claiming it can't be recycled. APC insists it can be, although the procedure for separating foil, paperboard and polyethylene is slow and laborious.

APC got a boost in its efforts to overturn the Maine law last month

when a Superior Court justice denied the Attorney General's request that APC's court challenge to the ban be dismissed. "The Superior Court has indicated a willingness to listen to the facts about aseptic packaging and our commitment to recycling", says Council president Marshall Cohen. "We now intend to press vigorously for a decision overturning the ban." But he regrets that Maine's intransigence forces the APC "to use our resources for litigation rather than recycling."

**SEND MEETING
NOTICES AT LEAST
TWO MONTHS IN
ADVANCE TO ASSURE
PROPER EXPOSURE**

Packaging Costs Up

FOOD PROFITS DOWN

If you are what you eat, you're worth more than you were a decade ago.

Consumers spent \$515 billion on food in 1989, 41% more than the \$306 billion spent in 1980. The director of OSU's Food Industries Center says much of that increase is from higher processing and packaging costs. Plus, Americans spend nearly twice as much money eating out than they did a decade ago.

"Farmers aren't getting the same percentage of the food dollar that they used to," Winston Bash says. Farmers get about one quarter of every American food dollar. The rest covers the cost of processing raw commodities.

The U.S. Department of Agriculture reports that the cost of processing and selling food rose from \$183 billion to \$320 billion during the 1980's. In 1989, 76 cents of every dollar consumers spent on food went toward these costs. The remaining 24 cents went back to the farm.

"People will always complain about food prices going up," Bash says. "But they must remember that every time they go to the store they vote for it. Nothing lasts if it's not being purchased."

And what consumers have been voting for is value-added products. Ready-to-eat and other further-processed items are the fastest growing segment of the food processing industry, Bash says. But the cost of additional ingredients, labor or machinery needed for this processing adds to the retail cost of the product.

"Go look at tomatoes on the shelf," he says. "There used to be a few diced tomatoes. Today there's a whole range of various

types of diced tomatoes: stewed tomatoes, flavored tomatoes. So people are doing new things to the same old product in the name of 'value-added' " Bash says.

More women in the work force has been a major factor increasing the demand for ready-to-eat and convenience foods, Bash says. Much of the cooking and preparing of food formerly done by consumers is now being done by food processors.

"When they do that they ought to be paid for it. That's where value-added comes in," he says. Food prices have gone up, not as a matter of profit for processors, but because of higher costs from additional processing.

Changes in packaging over the last 10 years have also added to food-processing expenses. In 1980, out of the total marketing bill of about \$183 billion, 21 billion went for packaging. In 1989, packaging costs were 67% higher, \$35 billion of \$320 billion total marketing expenses.

"One major thing that's taken place is the tamper-proof features that have been added to many of our food products," Bash says.

Packaging has also taken on a new dimension with advertising. For example, manufacturers will use higher quality packaging to attract consumers, or more color to get a processor's advertising message across.

Bash says he thinks more plastics and aluminum, and less glass, will be used for containers. There's also a trend toward more ecologically-conscious materials.

"We're seeing a lot of work in recyclable packages. We're going to see a lot more of that—no question," he says.



Kari Kester, rt., was crowned 1992 Amer. Honey Queen at the ABF's 49th Annual convention in San Diego. Kristine, left, was named 1992 Amer. Honey Princess.

HONEY BOARD NEWS

Honey is gold to food manufacturers. The National Honey Board has developed a brochure explaining its Honey Bear Service Mark program and how manufacturers' products can qualify to use the honey bear logo on their packaging.

The honey bear is a symbol for manufacturers who use substantial amounts of honey in their products. The honey bear symbol helps consumers identify products which contain amounts of honey that are specified by the National Honey Boards' standards of quantity guidelines.

The honey bear service mark brochure is a colorful self-mailer. A simplified application for food manufacturers is included on a detachable business reply card. If

you know of a manufacturer who should receive this brochure, contact the National Honey Board office.

From brownies to muffins, croissants to banana bread, honey adds a unique flavor to baked goods. Honey also retains moisture so baked goods stay fresher longer. The National Honey Board will help bakers use more honey with new bulk formula recipe cards.

Your favorite baker can stand out from the competition with these honey-baked treats – sweet honey buns, honey banana bread, honey bears, and honey bagels.

If you know a baker who could use these new formulas, give the National Honey Board office a buzz at (303) 776-2337.

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THE SCOTTISH BEEKEEPER. Magazine of The Scottish Beekeepers' Assoc. Rates from D. B. N. Blair, 44 Dalhousie Rd., Kilbarchan, Renfrewshire, PA10 2AT, Scotland, U.K. Sample on request, \$1.

MISSOURI FARM magazine for all small farmers interested in sustainable and alternative farming. Bi-monthly \$18/year. Missouri Farm Magazine, 3903 W. Ridge Trail Rd., Clark, MO 65243; (314) 687-3525.

DIENEUE BIENZUCHT Monthly magazine for beekeepers interested in German beekeeping. Hamburger Str. 109, D-2360 Bad Segeberg, West Germany.

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SCOTTISH BEE JOURNAL. Monthly magazine. Sample copy from Robert NH Skilling, FRSA, 34 Rennie St., Kilmarnock, Scotland. \$4.00 per annum.

BEEKEEPING. The West of England bee journal. Subscription £7.75 (payable in £Sterling) (or £10.50 air mail) (£9.25 for subscribers in other countries) for 10 issues. Editor, P. P. Rosenfeld, Clifford Cottage, 42a Clifford St., Chualeigh, Devon, England TQ13 OLE.

BEE CRAFT — Monthly journal of the British Beekeepers Association. Subscription, including postage is \$21 surface mail and \$35 air mail, to Mr. J. Connor, P. O. 817, Chesire, CT 06410, USA.

THE AMERICAN BEEKEEPING FEDERATION needs your support in efforts to stop adulteration, improve marketing conditions and encourage research on African Bees and Varroa and Acarine Mites. For information, membership application and sample of bi-monthly News Letter write to: THE AMERICAN BEEKEEPING FEDERATION, INC., P. O. Box 1038, Jesup, GA 31545-1038.

Ar Guenan newsletter is for collectors of bee items: stamps, post cards, coins, post marks and cancellations. One year is \$12.00 U.S. With \$15.00 order you receive a U.S. honey bee stamped envelope, cancelled at the Honey Bee Station in Paris, IL. Make check payable to *Ar Guenan*, 7011 Spieth Road, Medina, OH 44256-8912.

THE BEEKEEPERS QUARTERLY. From the publishers of the BEEKEEPERS ANNUAL. \$8.00/year. The A. I. Root Co., Sub-Agents. P. O. Box 706, Medina, OH 44258.

IRISH BEEKEEPING. Read An Beachaire (The Irish Beekeeper) Published monthly. Subscription \$15.00/year, post free. Mr. Seamns Reddy, 8 Tower View Park, Kildare.

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THE AUSTRALASIAN BEEKEEPER. Published monthly by Pender Beekeeping Supplies Pty. Ltd. Send request to: The Australasian Beekeeper, PMB 19, Maitland NSW 2320, Australia. Subscription \$US 27.00 per annum, Surface Mail (in advance). Payment by Bank Draft. Sample copy free.

RARE BREEDS JOURNAL. Bi-monthly journal about exotic, minor & rare breeds of domesticated animals & their owners. \$18.00 (U.S.)/year, \$24.00 Foreign; \$2.50 for sample copy. Rare Breeds Journal, Dept. Bee, HCR 1, Box 45, Hebron, ND 58638 (701) 878-4970.

CANADIAN BEEKEEPING. The news media of the Canadian Honey Industry. Send \$15.00 for one year subscription to: CANADIAN BEEKEEPING, Box 128, Orono, Ontario, Canada LOB 1MO.

CORNUCOPIA. Quarterly newsletter for developmental beekeepers. Articles on low technology beekeeping, honey trees for agroforestry and marketing bee products. Rates \$10/year to IAAD, P. Spence-Allen editor, P.O. Box 206, Ostrander, OH 43061.

BRITISH BEE JOURNAL. Monthly, single copies 33p plus postage. \$15.00/yr. U.S. Annual subscription post paid. Sub-agent: The A. I. Root, Co., P. O. Box 706, Medina, OH 44258, U.S.A.

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THE AUSTRALIAN BEE JOURNAL. Monthly, Sea Mail \$27.50 (Aus.), Air Mail \$40.70 (Aus.). Write to: Ms. J. Peterson, P. O. Box 365, Emerald, Victoria, 3782, Australia. Sample \$3.00 (Aus.) on request.

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BOTTOM ... Cont. From Pg. 248

in particular is surprisingly active. Many bees are winging in with large loads of vivid orange pollen on their back legs. Somewhere in the vicinity dandelions are in bloom.

Some of the incoming bees light on the front of their hive, as though to catch their breath after an arduous journey. One in particular catches my attention. She has not only two large pellets of orange pollen in tow, but also a round orange spot on her head between her antennae. She looks, I think, quite elegant, in the fashion of those women from India who put a red dot on their foreheads. It takes me awhile to figure out the orange dot is, in reality, dandelion pollen. Apparently, while foraging in dandelion blossoms, this particular bee acquired her orange beauty mark.

She makes her way into the hive. I don't remember ever having noted a bee with a pollen beauty mark before. Perhaps such a bee is a great rarity.

Not so. A few minutes later, while pulling weeds, another bee with a spot of dandelion pollen on her head drops from the sky onto the bottom board, rests a moment, then hurries on into her hive. No doubt she has better things to do than linger outside under the scrutiny of some strange large creature.

A dark cloud scuds by, obscuring the sun. The temperature drops. No bees venture forth. Here and there a bee straggles in from the field. One does not make it back to her hive, dropping into the grass near my feet. I pluck her carefully from a blade and place her on the lid of a hive. If the sun comes out again, she might warm up enough to make it back to her hive before dark. If not, a hive lid is a safer place for a lone bee than down in the grass. I could place her near a hive entrance on the bottom board, but I have no way of knowing which hive is hers. If I pick the wrong hive, she is likely to receive a rough welcome. She'll have to take her chances where she is.

It will be May tomorrow but the weather still feels like March. It ought, by all odds, to warm up soon. The bees need warm days now. So do I. Come on, Spring. Assert yourself. The bees are ready for you. Ready and waiting. And so, for certain, am I. □

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April 10th – The apricot tree outside my door is bedecked with white blossoms. It hums with bees. The blossoms make a beautiful sight against the blue afternoon sky. The bees dart from blossom to blossom. The droning of their wings can be heard from some distance away. There are mysteries to ponder as these bees go about their fascinating business. Why do they never seem to fight with one another over the rights to a particular blossom? It would seem that such a thing would happen, at least occasionally. Yet seldom, if ever does. Instead, if two bees happen to alight on the same apricot blossom at the same time, one of them simply flies off to another, unattended blossom.

Another mystery. Why does the number of bees working these apricot blossoms seem to be just about right for the available blossoms? Put another way, why are there not double or triple the number of bees searching these blossoms for pollen and nectar? Especially since there are so few blossoms out this early. It would seem that most of the field bees from my colonies would descend upon this single apricot tree, for the hives are not far off and I know of no other plants nearby in bloom. Yet, of course, this never happens. Why? I don't pretend to know.

April 18th – A day of March weather in April. Rain clouds rolling in, brief showers, then periods of sunshine. The blossoms are all gone from the apricot tree, but the Santa Rosa plums are in full bloom. In the sunshine, after a few minutes of rain, the blossoms run white along the wet boughs. The temperature today never got above 60° according to my little thermometer out on the porch. Now, at 5:15 in the afternoon, the temperature is 54° and there are no bees working the blossoms. Yet earlier today, when the thermometer stood at 60° the plum trees were full of bees.

Bees are exquisitely attuned to the temperature. The critical point for bee flight seems to be between 56 and 60°. Below 56°, few or no bees will be flying. At 60° bees will be issuing from all my colonies. This is assuming there is no breeze. Bees are affected by the wind-chill factor. They may not fly even at temperatures above 60° if a breeze is blowing.

There is, I have observed, some variation among my colonies in the temperature at which the bees begin to fly. Other things being equal, the colony that begins flying at 56° ought to gather more nectar and pollen than one that ventures forth at 60°. Such a hive would begin flying earlier in the morning, depending on temperature, and presumably would fly more on cool days in the spring and fall, other things being equal. Where two hives of bees are concerned, things seldom are that equal.

April 24th – The weather suddenly changes. The temperature has been, for a few days, in the 70's and 80's. The Santa Rosa plums are still blooming and blossoms have started to appear on apple trees. This morning there are dark clouds hiding the mountains, and vagrant winds, and rains that fall gently on the earth. The afternoon temperature hovers at 50°. No bees are about. No hum of busy wings from among the wet blossoms.

April 25th – This afternoon, as a light rain is falling, I see a curious site in my apiary. From a number of my strongest colonies there are bees flying in the rain. They are obviously eager to get back to the business of gathering nectar and pollen. These eager beaver bees fly out a foot or two into the rain and cold, then return. I can easily understand their abrupt postponement of flight. To a creature the size of a honey bee, a drop of falling rain is no small hazard. But their resolve cheers me, and I wonder why so few people ever become beekeepers. For those who do,

the rewards are many, some obvious, some like this, very subtle.

April 30th – Unseasonably cold. Night before last it froze hard enough to blacken the tiny apricots on the tree outside. They had just started to form and were about half an inch long and plump and green. Now they are shrunken and withered. The Santa Rosa plums seem to have fared better. The tiny developing plums still look as they did before the frost. A small apple tree out in the yard whose branches were loaded with pink blossoms seems also to have escaped the frost. The flowers are still in fine shape. Frost is unpredictable. It will wither the blossoms on one tree and not touch others nearby.

This afternoon I go to my apiary to check the bees. The temperature on my outdoor thermometer reads 60°, but there is a breeze blowing from the north and it feels distinctly cool. I do not expect to find any bees flying, but I am pleasantly surprised. True, some colonies have no bees flying in or out, but others do, despite the chill breeze. C

Continued on Page 246

Pieces Of April

RICHARD DALBY

BOTTOM BOARD